



Designing a Mobile-Assisted Language Learning (MALL) App for Endangered Languages of Gilgit-Baltistan: A Linguistic Analysis

Sajid Ali¹, Dr Marriam Bashir² & Javaid Hussain³

¹Visiting Faculty, Department of Linguistics and Literature, Karakoram International University Gilgit,
Email: sajidali5517@yahoo.com

²Associate Professor of English, Minhaj University Lahore.
Email: marriambashir1@gmail.com

³Visiting Faculty Department of Linguistics and Literature, Karakoram International University Gilgit.
Email: javidhussain45@gmail.com

ARTICLE INFO

Article History:

Received: December 28, 2024
Revised: January 24, 2025
Accepted: January 26, 2025
Available Online: January 28, 2025

Keywords:

Mobile-Assisted Language Learning (MALL), Endangered Languages, Gilgit-Baltistan

Corresponding Author:

Sajid Ali

Email:

sajidali5517@yahoo.com

ABSTRACT

This research investigates the design and development of a Mobile-Assisted Language Learning (MALL) application to preserve and promote endangered languages in Gilgit-Baltistan, Pakistan. The study looks into the region's languages' distinct linguistic traits and how they might be commendably integrated into a mobile learning environment. The study underscores the importance of technology in language preservation, the necessity of community involvement, and MALL's potential to improve language acquisition among younger generations. The report finishes with recommendations for future research and development in MALL for endangered languages.



Introduction

Gilgit-Baltistan, a strategically crucial region in northern Pakistan, is known for its magnificent landscapes and rich cultural variety. This region is home to a number of languages, including Shina, Balti, Brushaski, and Wakhi, all of which are important to their speakers' cultural identities. However, several of these languages are listed as endangered due to a variety of circumstances, including globalisation, urbanisation, and the growing dominance of more commonly spoken languages like Urdu and English (Harrison, 2007; Rahman, 2010). The extinction of these

languages endangers not only the region's linguistic history, but also the cultural practices, traditions, and identities that are associated with them (UNESCO, 2010).

Gilgit-Baltistan has great linguistic diversity, with roughly 15 languages spoken in the territory. However, several of these languages are considered endangered, with a decreasing number of speakers (Maffi, 2005). This linguistic endangerment threatens not just the languages themselves, but also the cultural practices and identities that are associated with them (Harrison, 2007). Language loss can create a generation gap by preventing younger people from learning or using their ancestral languages, resulting in a steady deterioration of cultural heritage (Wurm, 2001).

The Role of MALL

Mobile-Assisted Language Learning (MALL) has become a promising approach to language education, using mobile technology to help learners (Kukulska-Hulme, 2009; Stockwell, 2010). The widespread use of smartphones and mobile internet access offers a special chance to reach language learners in remote areas where traditional educational resources might be scarce (Godwin-Jones, 2011). MALL applications can provide participatory and interesting learning experiences, making language acquisition more accessible and pleasurable (Chinnery, 2008).

According to Zheng and Warschauer (2015), MALL can be extremely helpful in reviving endangered languages by giving students instant access to language materials, chances for community involvement, and culturally appropriate content. Furthermore, through gamification, social interaction, and personalised learning experiences, mobile applications can help people practice their language skills. This is especially advantageous for younger generations (Hock, 2003; Liu & Zhang, 2013).

Objectives

This study's main objectives are to:

1. Perform a linguistic examination of Gilgit-Baltistan's endangered languages.
2. To determine which educational tenets ought to guide the creation of a MALL app.
3. To investigate potential issues and fixes for putting a MALL app for these languages into practice.

Review of Literature

Languages in Danger

Languages that are in danger of becoming extinct are referred to as endangered languages (Crystal, 2000). With differing levels of vitality, numerous languages in Gilgit-Baltistan are listed as endangered by UNESCO (UNESCO, 2010). Cultural identity and legacy may be significantly impacted by the disappearance of these languages (Harrison, 2007; Maffi, 2005). The number of speakers, the age distribution of speakers, and the existence of intergenerational transmission are some of the variables that are frequently used to classify languages as endangered (Fishman, 1991). Fluency and usage of their original languages are often declining as a result of younger generations not acquiring them (Hinton, 2001). Global languages like English and Urdu, which are becoming more and more popular in social and educational settings, are contributing to this tendency (Rahman, 2010).

Technology and Language Learning

Numerous studies have been conducted on the use of technology in language learning. MALL has been demonstrated to improve language proficiency, motivation, and engagement (Kukulska-Hulme, 2009; Stockwell, 2010). Additionally, mobile applications can give students access to real-world language practice opportunities and authentic language materials (Godwin-Jones, 2011; Chen & Chang, 2015).

According to Ally (2009), MALL environments facilitate individualised learning experiences that let students advance at their own speed and in accordance with their own requirements and interests. For students who live in remote locations with limited access to traditional educational resources, this flexibility is especially advantageous (Zheng & Warschauer, 2015). Furthermore, incorporating multimedia components like audio, video, and interactive activities can improve the educational process and accommodate various learning preferences (Doughty & Long, 2003).

Linguistic Characteristics of Languages in Gilgit-Baltistan

The phonological, morphological, and syntactic characteristics of each Gilgit-Baltistan language are distinct. For instance, Brushaski is a linguistic isolate with unique grammatical structures, but Shina is an Indo-Aryan language with a comprehensive system of inflection (Rahman, 2009; Miklos, 2011). Developing successful learning resources requires an understanding of these language characteristics (Gulzar, 2015; Rahman, 2010).

Features of Phonology

Gilgit-Baltistan's languages have a rich tapestry of phonological diversity, with a variety of vowel and consonant sounds that are typically absent in more regularly spoken languages. According to phonological study, these distinctive sounds greatly contribute to the region's linguistic identity (Rahman, 2009). Shina, for example, is a significant language in the area that uses retroflex sounds, which might be difficult for learners who are unfamiliar with such phonetic qualities. These retroflex sounds, made with the tongue curled back against the roof of the mouth, are not commonly encountered in English or Urdu, making them especially challenging for speakers of these languages to learn.

The phonetic inventory of Gilgit-Baltistani languages is essential not just for building pronunciation manuals, but also for creating compelling audio resources that authentically portray the languages' sounds. Native speaker recordings, phonetic drills, and interactive exercises that allow students to practise difficult sounds in context are examples of such materials. Furthermore, understanding the phonetic variances among the languages can assist in building specialised learning modules that address specific pronunciation challenges, thereby boosting the overall learning experience.

In addition to pronunciation guidance, the phonetic inventory can help shape the development of speech recognition functions in the MALL app, providing real-time feedback on learners' pronunciation. This instant corrective feedback can be extremely useful in assisting learners to alter their articulation and enhance their spoken ability. Furthermore, using visual aids such as spectrograms and articulatory diagrams can help learners grasp how these sounds are formed, bridging the gap between aural and visual learning styles.

Finally, by focusing on the phonetic characteristics of the languages, the MALL app can provide a more immersive and effective learning environment that honours Gilgit-Baltistan's distinct

linguistic legacy. This emphasis on phonology not only helps with language acquisition, but it also builds a deeper appreciation for the cultural meaning of these sounds, encouraging students to participate more completely with their languages and communities.

Qualities of Morphology

Languages like Brushaski and Balti have extensive inflectional systems in their morphology (Gulzar, 2015). Developing instructional resources that effectively assist students in understanding the subtleties of verb conjugation and noun declension requires an understanding of these systems (Rahman, 2010). The learning modules of the app should incorporate the several suffixes that indicate tense, aspect, and mood, for example, which are part of the inflectional morphology of Balti.

Syntactic Characteristics

English and other dominant languages frequently have syntactic structures that are very different from those of Gilgit-Baltistan languages. It can be difficult for learners used to Subject-Verb-Object (SVO) structures, for instance, to follow the Subject-Object-Verb (SOV) order seen in many local languages (Gulzar, 2015; Rahman, 2009). Developing successful teaching tactics within the MALL app requires an understanding of these syntactic differences.

The Cultural Background

Language use and acquisition are significantly influenced by the cultural context in which these languages are spoken. The MALL app's integration of cultural components can improve students' comprehension and admiration of the languages (Harrison, 2007; Maffi, 2005). To give students a comprehensive grasp of the languages and their cultural relevance, the app's content should incorporate folklore, cultural narratives, and customs.

Participation of the Community in Language Preservation

For language preservation efforts to be successful, community involvement is essential. According to studies, involving local populations in the creation of language learning materials can increase their usefulness and relevance (Harrison, 2007; McConvell & Thieberger, 2001). The significance of working with native speakers to build the MALL app is emphasized in this paper (Hinton, 2001).

It is possible to guarantee that the app captures the linguistic and cultural subtleties of the languages being taught by incorporating community members in the development process. Members of the community may feel more proud and invested as a result of this partnership, which may motivate them to take an active role in language revitalization initiatives (Harrison, 2007). To get community members' opinions and incorporate them into the app's design and content, workshops, focus groups, and feedback sessions can be used (McConvell & Thieberger, 2001).

Methodology

Study Design

This study uses a mixed-approaches strategy, which combines qualitative and quantitative research methods. Data were gathered through surveys, interviews with language experts and community members, and an examination of existing literature on Gilgit-Baltistan's languages (Creswell,

2014). The mixed-methods approach enables a thorough knowledge of the linguistic aspects, community requirements, and pedagogical issues involved in the MALL app's development.

Number of participants

Language teachers, linguists, and local community members proficient in Gilgit-Baltistan's endangered languages were among the participants. A total of 100 individuals were polled, and 15 language experts were interviewed in depth. The poll sought information from participants on their language learning experiences, mobile learning choices, and perceptions of endangered languages.

Data analysis

Quantitative data were analysed with statistical tools, while qualitative data were coded and thematically analysed to discover significant trends and insights into language learning preferences and problems (Braun & Clarke, 2006). The combination of quantitative and qualitative data provides a more complete picture of the factors impacting language acquisition in Gilgit-Baltistan.

Linguistic Analysis of Endangered Languages

Phonological features

According to phonological study, Gilgit-Baltistan languages contain a variety of vowel and consonant sounds, some of which are absent from more widely spoken languages. For example, the presence of retroflex sounds in Shina presents difficulties for learners unfamiliar with these phonetic distinctions (Miklos, 2011). The phonetic inventory of these languages is essential for producing pronunciation aids and audio content for the MALL app.

Vowel and consonant Systems

Gilgit-Baltistani languages include a wide range of vowel and consonant systems, with some including nasalized vowels and consonant clusters that dominant language speakers may be unfamiliar with (Rahman, 2009). Brushaski, for example, contains a diverse set of vowel sounds, including diphthongs, which can be difficult for students to acquire. Understanding these phonological nuances is critical for designing effective listening and speaking lessons for the MALL app.

Morphological Features

Languages like Balti and Brushaski use sophisticated inflectional systems (Gulzar, 2015). Understanding these systems is essential for creating effective teaching resources that help students understand the subtleties of verb conjugation and noun declension (Rahman, 2010). For example, Balti's inflectional morphology offers a variety of suffixes that communicate tense, aspect, and mood, which should be incorporated into the app's educational modules.

The Inflectional Morphology

Gilgit-Baltistani languages have a rich inflectional morphology, with verbs taking several different forms depending on tense, aspect, and subject agreement (Rahman, 2009). Balti verbs, for example, can assume many forms depending on whether the subject is solitary or plural, and whether the action is ongoing or concluded (Gulzar, 2015). To promote comprehension, interactive exercises and contextual examples will be required while teaching these morphological concepts using the MALL app.

Syntactic Features

Syntactic features in Gilgit-Baltistan languages frequently diverge greatly from those of English and other dominant languages. The Subject-Object-Verb (SOV) order, which is common in many local languages, can be difficult for learners accustomed to Subject-Verb-Object (SVO) structures. Understanding these grammatical differences is critical for creating effective educational tactics for the MALL app.

Sentence Structure

The sentence structure of Gilgit-Baltistani languages varies greatly, with certain languages allowing for varied word order dependent on context and emphasis (Rahman 2009). For example, in Shina, the arrangement of adjectives and adverbs can influence sentence meaning (Miklos 2011). The app's design must include clear examples and chances for learners to practice manipulating sentence structures.

Culture Context

Language use and acquisition are heavily influenced by the cultural environment in which they are spoken. Incorporating cultural components into the MALL app can help learners comprehend and appreciate the languages (Harrison, 2007; Maffi 2005). Cultural tales, folklore, and traditional practices should be incorporated into the app's content to give learners a comprehensive grasp of the languages and their cultural value.

Cultural narratives and folklore

Cultural narratives and folklore are fundamental to the identity of Gilgit-Baltistani populations. These stories frequently contain moral teachings, historical events, and traditions that are inextricably linked to the languages spoken (Harrison, 2007). Incorporating these narratives into the MALL app can help learners connect with the language's cultural background, resulting in a better understanding of its relevance.

Design of the MALL App

Teaching Principles

Established educational concepts should guide the design of the MALL app, which includes:

- a) Littlewood (2004) defines communicative language teaching as emphasising contact and communication in real-life circumstances.
- b) Ellis (2003) advocates for task-based learning, which focusses on meaningful language-related tasks.
- c) Piaget's (1976) constructivist approach encourages learners to actively participate and develop their own understanding.

These pedagogical concepts should guide the app's content creation, ensuring that learners are actively involved in the language-learning process.

App Features

The planned MALL app will consist of the following features:

1. Interactive lessons use audio, visual, and text-based resources (Godwin-Jones, 2011).
2. Cultural Content: Use cultural stories, music, and traditions to add context and significance (Hinton, 2001).
3. Gamification involves using elements like rewards and progress tracking to increase motivation and engagement (Deterding et al., 2011).
4. Community Forums provide opportunities for learners to interact with native speakers and other learners, building a sense of community (Harrison, 2007).

Interactive Lessons

The MALL app's key feature will be interactive lessons that provide learners with interesting and multimedia-rich content. Lessons should include audio recordings of native speakers, interactive quizzes, and graphic aids to help students understand. Vocabulary lessons, for example, can use visuals and audio pronunciations to help students learn.

Cultural Content

Cultural content contextualizes language learning. The app should include sections on cultural tales, traditional songs, and local customs (Hinton, 2001). By introducing cultural components, students can obtain an understanding of the beliefs and practices of the communities that speak these languages.

Gamification

Gamification can greatly improve learner motivation and engagement (Deterding et al., 2011). The app can include game-like aspects like points, badges, and leaderboards to encourage students to complete lessons and practise frequently. For example, learners could receive incentives for completing language challenges or participating in community conversations.

Community Forum

Community forums can promote contact between learners and native speakers, allowing for language practice and cultural exchange (Harrison, 2007). These forums can provide opportunities for learners to ask questions, exchange experiences, and receive comments from native speakers. This contact can instill a sense of belonging and support in learners.

Designing the user interface

The user interface should be simple and easy to use, appealing to people of various technological skill levels. User experience will be improved by simple navigation, clear directions, and visually appealing design (Nielsen, 2000). The interface should be created with the target audience in mind, making it user-friendly and entertaining.

User-Centered Design

The app's UI should be developed using user-centered design concepts. This includes doing usability testing with potential users to collect input on the app's functionality and design. By integrating users in the design process, developers may detect and address potential problems, resulting in a more effective and enjoyable learning experience.

Challenges and Solutions

Technological barriers

One of the key problems in adopting a MALL app in Gilgit-Baltistan is the low availability of smartphones and internet connectivity in some places (Ally, 2009). To address this, the software should be designed to work offline and with low data usage. Furthermore, providing downloadable content enables students to access materials without requiring constant online connectivity.

Language Proficiency Levels

Learners' proficiency in the target languages can vary (Kukulska-Hulme, 2012). The software should provide adaptive learning pathways that cater to varied skill levels, allowing students to develop at their own pace (Chen & Chang, 2015). Implementing a diagnostic evaluation at the start of the learning process can help determine learners' competence levels and modify the content accordingly.

Community Engagement

It is critical to ensure that the app is developed and implemented with community input. Regular workshops and feedback sessions with community members can assist the app's content meet their requirements and expectations (Harrison, 2007; McConvell & Thieberger, 2001). Collaborations with local organizations and educational institutions can further increase community participation and support for the app.

Cultural Sensitivity

Cultural awareness is essential when creating educational tools for various communities, especially for endangered languages because the cultural environment is inextricably linked to language use. It is critical that the MALL app respects and appropriately depicts the cultural subtleties and customs of Gilgit-Baltistan. This means that developers must consult with community leaders and cultural experts to ensure that the content is appropriate and reflective of local values (Harrison, 2007; Hinton, 2001).

To accomplish this, the app might have features like:

1. Use culturally relevant content, such as local folklore, proverbs, and colloquial idioms, to connect with learners and represent their heritage.
2. Encouraging community members to submit content for the app, such as stories or music, fosters a sense of ownership and pride.
3. Feedback Mechanisms: Allowing people to provide feedback on cultural content ensures its relevance and accuracy over time.

Training and Support for Users

Another problem is that older generations and those living in distant places may be unfamiliar with mobile technology. To address this, the app should contain:

1. Tutorials and guides provide step-by-step instructions for using the app's capabilities successfully.
2. Support Forums: Users can raise questions and get advice from peers and app developers.

3. Organizing community workshops to teach users how to use the app, resulting in increased engagement and usage.

Conclusion

Designing a Mobile-Assisted Language Learning (MALL) app for Gilgit-Baltistan's endangered languages is an important step towards conserving the region's linguistic and cultural legacy. We can use technology to create new solutions that empower communities and encourage young people to study languages.

Summary of findings

This study has emphasized the crucial need for a MALL app that is adapted to the specific linguistic and cultural circumstances of Gilgit-Baltistan. The linguistic analysis has highlighted the phonological, morphological, and syntactic richness of the region's languages, while the literature research has proved the role of technology in language preservation. The proposed app design adheres to pedagogical concepts that prioritize interactivity, cultural relevance, and community involvement.

Implications of Language Preservation

The consequences of this study go beyond the creation of a MALL application. The findings highlight the necessity of using technology to support language preservation efforts in endangered language environments. As mobile technology advances and becomes more accessible, it provides a tremendous chance to reach learners in rural locations and equip them with the tools they need to interact with their languages.

Furthermore, including mobile learning into language preservation programs might assist bridge generational gaps. Making language learning more engaging and accessible may encourage younger people to learn and use their ancestral languages, helping to revitalise these languages in their communities.

Suggestions for Future Research

Future study should concentrate on the MALL app's application and evaluation in real-world situations, particularly its impact on language acquisition and community participation. Longitudinal studies could shed light on the effectiveness of mobile learning in enhancing language competency and cultural awareness over time.

Furthermore, study on the long-term effects of mobile technology on language preservation will be critical to recognizing its potential in this field. Investigating how mobile learning can be integrated into formal education systems and community-based language programs can yield significant insights into best practices and language revitalization tactics.

Last Thoughts

To put it simply, the creation of a MALL app for Gilgit-Baltistan's endangered languages is an important step towards conserving the region's linguistic and cultural heritage. We can use the power of technology to build creative solutions that empower communities, boost language learning, and ensure that these vital languages thrive for future generations. Collaboration among linguists, educators, and community members is critical for the success of such programs, and a shared commitment to language preservation can deliver significant gains.

References

1. Ally, M. (2009). *Mobile Learning: Transforming the Delivery of Education and Training*. Athabasca University Press.
2. Braun, V., & Clarke, V. (2006). Using Thematic Analysis in Psychology. *Qualitative Research in Psychology*, 3(2), 77-101.
3. Chen, Y. M., & Chang, Y. S. (2015). The Effects of Mobile Learning on Students' Learning Outcomes: A Meta-Analysis. *Educational Technology & Society*, 18(1), 55-70.
4. Crystal, D. (2000). *Language Death*. Cambridge University Press.
5. Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Sage Publications.
6. Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From Game Design Elements to Gamefulness: defining "Gamification". In Proceedings of the 15th international academic MindTrek conference: Envisioning future media environments (pp. 9-15).
7. Ellis, R. (2003). *Task-based Language Learning and Teaching*. Oxford University Press.
8. Godwin-Jones, R. (2011). Emerging Technologies: Mobile Apps for Language Learning. *Language Learning & Technology*, 15(2), 2-11.
9. Gulzar, M. (2015). Syntax and Sentence Structure in Gilgit-Baltistani Languages. *Journal of Linguistic Studies*, 8(1), 45-67.
10. Harrison, K. D. (2007). *When Languages Die: The Hazards of Language Endangerment*. Oxford University Press.
11. Hinton, L. (2001). Language Revitalization: An Overview. In L. Hinton & K. Hale (Eds.), *The Green Book of Language Revitalization in Practice* (pp. 3-8). Academic Press.
12. Kukulska-Hulme, A. (2009). Will Mobile Learning Change Language Learning? *ReCALL*, 21(2), 157-165.
13. Kukulska-Hulme, A. (2012). Mobile and Online Learning in Higher Education. In M. Ally & A. T. W. (Eds.), *Mobile Learning: A Guide for Educators and Trainers*. Routledge.
14. Littlewood, W. (2004). *Communicative Language Teaching: An Introduction*. Cambridge University Press.
15. Maffi, L. (2005). Linguistic, Cultural, and Biological Diversity. In *Diversity and its Importance*, 1-15.
16. McConvell, P., & Thieberger, N. (2001). Language Documentation and Language Revitalization. *Language Documentation & Conservation*, 1(1), 1-16.
17. Miklos, A. (2011). Morphological Complexity in Gilgit-Baltistani Languages. *Linguistic Typology*, 15(3), 123-145.
18. Nielsen, J. (2000). *Designing Web Usability: The Practice of Simplicity*. New Riders Publishing.
19. Piaget, J. (1976). *The Child and Reality: Problems of Genetic Psychology*. Viking Press.
20. Rahman, T. (2009). *Language and Politics in Pakistan*. Oxford University Press.
21. Rahman, T. (2010). Language and Identity in Pakistan: A Sociolinguistic Perspective. *International Journal of the Sociology of Language*, 2010(205), 1-20.
22. Stockwell, G. (2010). Using Mobile Phones for Language Learning: A Review of the Literature. *Language Learning & Technology*, 14(2), 1-17.
23. UNESCO. (2010). *Atlas of the World's Languages in Danger*. UNESCO Publishing.
24. Yamada, H. (2015). The Role of Mobile Learning in Language Education: A Review of the Literature. *Journal of Language Teaching and Research*, 6(5), 1011-1017.
25. Zheng, D., & Warschauer, M. (2015). Language Learning in the Mobile Age: A Review of Research. *Language Learning & Technology*, 19(1), 1-16.

26. Baird, A. (2014). The Role of Mobile Technology in Language Learning. *International Journal of Mobile and Blended Learning*, 6(4), 1-12.
27. Chen, C. M., & Hwang, G. J. (2018). A Context-Aware Ubiquitous Learning Environment for Language Learning. *Educational Technology & Society*, 21(1), 1-14.
28. Chinnery, G. M. (2008). Emerging Technologies: Going to the MALL: Mobile Assisted Language Learning. *Language Learning & Technology*, 12(1), 3-5.
29. Doughty, C. J., & Long, M. H. (2003). *The Handbook of Second Language Acquisition*. Blackwell Publishing.
30. Hock, H. H. (2003). *Principles of Historical Linguistics*. Mouton de Gruyter.
31. Kress, G. (2003). *Literacy in the New Media Age*. Routledge.
32. Krashen, S. D. (1982). *Principles and Practice in Second Language Acquisition*. Pergamon Press.
33. Lantolf, J. P. (2000). *Sociocultural Theory and Second Language Learning*. Oxford University Press.
34. Liu, M., & Zhang, D. (2013). Mobile-Assisted Language Learning: A Review of the Literature. *International Journal of Mobile and Blended Learning*, 5(1), 1-15.
35. McLoughlin, C., & Lee, J. W. (2010). Personal Learning Environments: The Future of eLearning? *E-Learning and Digital Media*, 7(3), 1-9.
36. Meskill, C., & Anthony, N. (2010). Technology and Language Learning: A New Paradigm. *Language Learning & Technology*, 14(2), 1-4.
37. Pappas, C. (2014). The Future of Mobile Learning: Trends and Predictions. *E-Learning Industry*.
38. Reinders, H. (2012). Digital Language Learning: A Review of the Literature. *Language Learning & Technology*, 16(3), 1-10.
39. Warschauer, M. (2000). The Changing Global Economy and the Future of English Teaching. *TESOL Quarterly*, 34(3), 511-535.
40. Zheng, D., & Warschauer, M. (2015). Language Learning in the Mobile Age: A Review of Research. *Language Learning & Technology*, 19(1), 1-16