

The Investigation of the Role of Digital Microlearning Tools in Enhancing English Communicative Competence among Rural Undergraduates in Coorg

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Abstract

This research examines the contribution of digital microlearning technology to English communicative competence among rural university students in Coorg, which has a reputation for linguistic and learning difficulties. With increasing demands for English language skills in academia and professional careers, this study examines the contribution of brief, targeted digital learning modules delivered through mobile apps and websites to students' speaking, listening, reading, and writing abilities. The research employs a quantitative analysis that integrates quantitative questionnaires to determine the efficacy of microlearning resources like language learning software, video lessons, and online quizzes. The results reveal substantial improvement in communicative competence among learners, especially in vocabulary, pronunciation, and oral communication confidence.

Keywords: Digital Microlearning, English Communicative Competence, Rural Undergraduates, Coorg, Educational Technology, Language Acquisition, Mobile learning.

1. INTRODUCTION

New mobile-based microlearning solutions provide great hope to break through long-standing challenges in learning English, especially in rural areas where there is limited access to quality education and infrastructure. Students in rural Karnataka, particularly areas such as Coorg, are usually faced with English communicative competence due to conventional teaching, unavailability of qualified language teachers, and very little exposure to spoken English. Yet, recent developments in digital infrastructure led by efforts like Digital India and BharatNet have greatly enhanced mobile connectivity and internet penetration in rural regions, providing a favorable setting for incorporating digital learning tools into education [1]. This shift offers a singular chance to utilize mobile-based microlearning to fill language learning gaps. Microlearning, in the form of brief, focused, and interactive learning modules provided through smartphones, facilitates self-paced learning and internalizes basic language skills like listening, speaking, reading and writing [2]. The study grounds its theory in constructivist learning principles and the increasing volume of research on mobile-assisted language learning (MALL) [3].

1.1 Background of the Study

English has been a significant part of India's education system for a very long time now, acting as a major medium of higher learning, government work, and world communication. Still, there is a large imbalance in English language skills between those living in towns and rural folks. In rural India, particularly in states such as Karnataka, the position of English education is limited because of infrastructural shortcomings, inadequate trained teachers, and the absence of immersive English-speaking environments [4]. Rural students like those in Coorg usually learn through local languages, and English is a subject taught, not a functional language, limiting their capacity to use it effectively in actual situations. Consequently, these students are disadvantaged in terms of higher education opportunities, competitive exams, and job markets that require effective English communicative skills.

English communicative competence, the capacity to use English effectively to communicate in various contexts is increasingly being seen as an essential skill for social mobility and employability in India. English proficiency frequently decides access to high-level academic courses, professional development,

and membership in the international economy. For rural children, communicative competence in English is not only an academic aspiration but also a tool for change that can elevate communities through enhanced employment opportunities and cross-cultural communication [5].

1.2 Statement of the Problem

Despite the growing significance of English communicative competence in academic, professional, and social contexts, rural learners in India continue to face structural barriers that hinder their ability to acquire spoken English proficiency. In areas like Coorg, these barriers are deeply rooted in systemic issues such as under-resourced schools, limited access to trained English language educators, large student-teacher ratios, and outdated teaching methodologies that focus more on rote memorization than on interactive communication. Furthermore, English is often treated as a subject rather than a skill, resulting in students having limited opportunities to practice speaking or listening to English in meaningful contexts [6].

1.3 Purpose and Objectives

The purpose of this study is to investigate the challenges faced by rural undergraduates in Coorg District in developing English communicative skills, with a focus on the role of digital microlearning tools. It aims to understand the socio-cultural, educational, and infrastructural influences shaping these challenges and to identify strategies that can enhance language learning outcomes in rural settings.

Objectives of the Study

- To identify and analyze the specific challenges hindering English communicative skills development among rural undergraduates in Coorg District.
- To examine the influence of socio-cultural, educational, and infrastructural factors on these challenges.
- To propose effective strategies and solutions to enhance English communicative skills among rural undergraduates in Coorg District.
- To assess the impact of parental attitudes and community perceptions on the motivation levels of rural undergraduates toward learning English.
- To evaluate the effectiveness of existing educational policies and programs in Coorg District aimed at enhancing English communicative skills among rural undergraduates.

1.4 Research Questions

The study is guided by the following research questions:

1. What types of digital microlearning tools are accessed by rural undergraduates in Coorg District?
2. How do these digital tools impact learners' fluency, accuracy, and confidence in using English?
3. What infrastructural and pedagogical challenges exist in the implementation of these digital microlearning tools in rural educational contexts?

2 LITERATURE REVIEW

2.1 Digital Microlearning in Language Education

Digital microlearning has emerged as an innovative approach to education that leverages technology to deliver short, focused learning units, typically through mobile or web-based platforms. According to Fedorova et al. (2022) [7], digital microlearning is characterized by bite-sized instructional segments designed to be completed in brief sessions, making them highly suitable for on-the-go learning and

retention. These segments often include multimedia content such as videos, quizzes, audio clips, and interactive modules, which are particularly effective in language learning as they encourage repeated exposure and practical usage. The concise and engaging nature of microlearning supports learners in acquiring specific language skills, especially in speaking and listening, by reinforcing small, manageable chunks of information over time.

Silva et al. (2025) [8] provide strong empirical evidence supporting the effectiveness of microlearning in developing English-speaking abilities. Their study demonstrated that learners exposed to regular microlearning interventions showed significant improvements in pronunciation, vocabulary recall, and conversational confidence. In India, while digital learning initiatives like DIKSHA and ePathshala have attempted to bridge the digital divide, there remains a disparity in their reach and effectiveness, especially in rural and tribal regions. Studies by Azharani (2023) [9] and Prasittichok and Smithsarakarn (2024) [10] highlight both the benefits and limitations of microlearning approaches. Azharani's (2023) [9] research, for instance, emphasizes how microlearning boosts learner autonomy and real-time feedback but also notes challenges such as content oversimplification and lack of contextual relevance. Similarly, Fedorova et al. (2022) [7] discuss how short learning bursts may fail to promote deep understanding if not integrated into a broader pedagogical framework.

2.2 Mobile-Assisted Language Learning (MALL)

Mobile-Assisted Language Learning (MALL) has emerged as a transformative approach in the field of language education, leveraging the ubiquity and versatility of mobile technologies to facilitate more accessible, personalized, and interactive learning experiences. MALL encompasses the use of mobile applications, social media platforms, voice-based messaging tools, and micro-video content to enhance language acquisition outside traditional classroom settings. As highlighted by Ning et al. (2024) [11], MALL enables learners to engage in language learning through tools such as WhatsApp voice notes, interactive mobile apps, and short video modules, which not only supplement formal instruction but also create immersive environments conducive to language use in real-life scenarios. These tools support auditory and visual learners, offering multimodal experiences that improve pronunciation, comprehension, and spontaneous communication skills.

The integration of WhatsApp voice notes, for instance, allows learners to record, replay, and reflect on their spoken English, promoting self-assessment and gradual confidence-building. Similarly, mobile apps that offer gamified exercises and micro-videos targeting specific language functions—such as greeting someone, describing events, or asking for directions—help break down complex language structures into manageable, context-specific units. These micro-interactions mirror real-world conversational English, making them more relatable and easier to internalize. Ning et al. (2024) [11] argue that such tools are particularly valuable for learners in rural settings, where continuous exposure to English through traditional means is limited or absent.

2.3 Barriers to Implementation in Rural Contexts

Despite the growing promise of digital microlearning and mobile-assisted language learning (MALL), several persistent barriers hinder their effective implementation in rural contexts like Coorg, Karnataka. One of the foremost challenges is limited access to reliable technology. Although smartphone penetration has increased in rural India, access to high-speed internet, consistent electricity, and updated devices remains uneven, particularly in remote or economically disadvantaged areas. Many students share mobile devices within families, reducing individual learning time and continuity. Digital literacy is another critical issue—many rural learners lack the necessary skills to navigate learning platforms or troubleshoot technical issues, limiting their ability to independently engage with mobile-based learning tools.

2.4 Theoretical Framework

This study is grounded in three interrelated educational theories that provide a robust foundation for analyzing the role of digital microlearning tools in enhancing English communicative competence among rural undergraduates in Coorg. They are- Sociocultural Theory, Constructivist Learning Theory, and Connectivism. Vygotsky's Sociocultural Theory posits that language learning is fundamentally a social process, where learners acquire knowledge through interactions within their cultural and social environments. The concept of the Zone of Proximal Development (ZPD) emphasizes that learners can

achieve higher cognitive functions when guided by more knowledgeable others, such as teachers, peers, or even mobile applications that provide immediate feedback.

Complementing this, Constructivist Learning Theory emphasizes learner autonomy and active engagement in meaning-making. This approach aligns closely with microlearning, as it encourages learners to construct their own understanding through brief, contextual, and relevant learning activities. Microlearning modules delivered via mobile platforms empower learners to progress at their own pace and apply language skills in real-life situations, fostering deeper retention and motivation.

Finally, Connectivism, a learning theory for the digital age as it explains how knowledge is distributed across networks and acquired through interactions with digital tools. It acknowledges that learning in the 21st century often occurs outside formal classrooms, facilitated by smartphones, apps, and social platforms. This framework is especially pertinent in rural India, where digital microlearning allows undergraduates to form knowledge networks beyond traditional boundaries.

2.5 Research Gap

While considerable global research has explored the use of digital microlearning and Mobile-Assisted Language Learning (MALL) in enhancing English language skills, there remains a notable gap in literature specifically addressing the unique challenges and opportunities in rural Indian undergraduate contexts. Studies by Fedorova et al. (2022) [7] and Silva et al. (2025) [8] have demonstrated the effectiveness of microlearning in improving English communicative competence; however, their focus has largely been on urban or well-resourced academic environments.

3 METHODOLOGY

3.1 Research Design

This study adopts a quantitative research design aimed at identifying the key challenges rural undergraduate students in the Coorg district face in developing English communication skills. A descriptive cross-sectional survey design was employed to gather data from a large sample of rural undergraduates. The design facilitates the analysis of patterns and correlations between demographic, institutional, and technological factors and the students' self-reported English communication proficiency.

3.2 Participants

The sample included 194 undergraduate students enrolled in various programs across 2–3 rural higher education institutions in the Coorg district. Participants were selected using stratified sampling to ensure representation across gender, age groups, parental education levels, and academic disciplines. Data regarding their access to digital tools, frequency of technology use, and previous English learning exposure were also collected.

3.3 Data Collection Tools

The primary data collection tool for this study was a structured questionnaire designed to capture a comprehensive overview of the participants' backgrounds, learning environments, and perceptions regarding English communication skills. The questionnaire included items covering key demographic variables such as age, gender, parental education levels, and household income to examine how socio-economic factors influence language learning.

3.4 Data Analysis

Data were analyzed using descriptive and inferential statistical methods. Frequencies, percentages, means, and standard deviations were used to summarize demographic variables and access patterns. ANOVA and t-tests were applied to explore differences in English proficiency and challenges across various demographic groups. Correlation analysis was also conducted to determine relationships between variables such as technology use and language confidence.

3.5 Ethical Considerations

Ethical clearance was obtained from the relevant academic authority. Participants provided informed consent prior to participation. All responses were kept anonymous and confidential, and participation was voluntary. Special attention was paid to ensuring that students with limited digital literacy received assistance while maintaining the integrity of their responses.

4. FINDINGS

Demographic information

The study surveyed 194 undergraduate students from the Coorg district, encompassing a diverse mix of academic disciplines and socio-economic backgrounds. Among the participants, the largest proportion (29.3%) were enrolled in the Bachelor of Commerce program, followed by 24.7% in Bachelor of Arts, and 21.6% each in Bachelor of Business Administration and Bachelor of Computer Science. A smaller segment (2.5%) represented other courses. The distribution across academic years was also well-balanced, with 39.2% in their first year, 28.9% in the second year, and 32% in the third year, ensuring a representative sample across different stages of undergraduate study.

Figure 1: Discipline Distribution Among Survey Participants

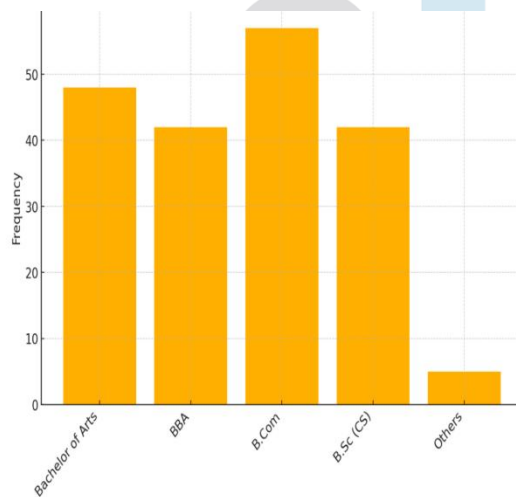
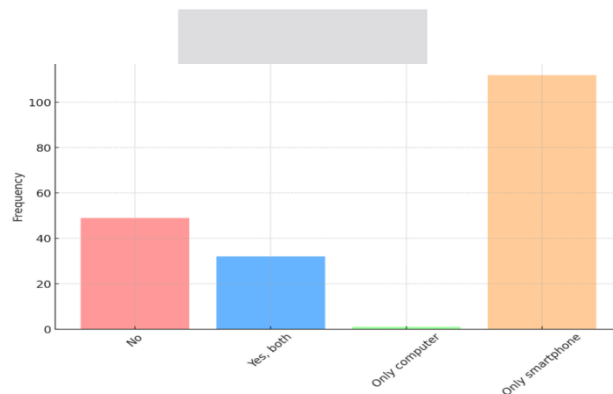


Figure 2: Access to Technology and Internet at Home



4.1 Tool Usage Patterns

The study revealed that WhatsApp, YouTube, and Duolingo were the most commonly used platforms among rural Indian learners for English language development. WhatsApp was widely used due to its familiarity and low data requirements, while Duolingo was favored for its gamified lessons and daily reminders. The frequency of tool usage varied, with students typically engaging with these platforms during evening hours after school or work, reflecting the need to balance learning with other responsibilities. Informal settings, such as home environments or community centers with internet access, were the primary locations for engagement. This pattern underscores the importance of convenience and flexibility in digital learning tools for rural users.

4.2 Impact on Communicative Competence

Learners reported noticeable improvements in fluency, particularly in constructing sentences and engaging in basic conversations. Many attributed this progress to repeated exposure and practice opportunities offered by microlearning apps. Self-correction also improved, as tools like Duolingo provided instant feedback, encouraging learners to refine their pronunciation and grammar. Vocabulary acquisition was bolstered through consistent interaction with visual and audio inputs. Furthermore, students expressed increased confidence in participating in both classroom and community conversations in English, reflecting a positive shift in communicative competence fostered by digital engagement.

4.3 Contextual Challenges and Opportunities

The study identified several contextual challenges that influenced tool effectiveness. Gender-based differences were particularly evident, with female students facing more barriers in accessing mobile devices due to social norms and limited autonomy. Institutional (Is it not readiness?) also posed a challenge, as many rural schools lacked adequate digital infrastructure, including stable internet connectivity and teacher familiarity with educational technologies. However, these challenges also presented opportunities: where infrastructure existed, the use of mobile-based microlearning allowed learners to bypass traditional barriers and participate in self-paced language acquisition, opening the door to scalable and inclusive education solutions.

5. DISCUSSION

5.1 Interpretation of Findings

The findings highlight the core strengths of microlearning accessibility, learner agency, and flexibility which align with studies such as Azharani (2023) [9] and Silva et al. (2025) [8]. These characteristics were particularly crucial in rural settings, where learners could customize their learning schedules and access lessons at their own pace. However, the study also pointed out significant barriers, including insufficient faculty training, network instability, and sociocultural constraints that restricted female learners' access. These limitations underline the importance of context-aware implementation strategies for microlearning in rural education ecosystems.

5.2 Comparison with Prior Studies

The results align with the conclusions of Ning et al. (2024) [11], who emphasize the role of mobile tools in improving linguistic competence in under-resourced areas. However, the present study diverges from urban-centric investigations, which often overlook the infrastructural and socio-cultural limitations unique to rural learners. Unlike urban counterparts with more consistent access to digital tools and teacher support, rural learners required higher degrees of self-motivation and resilience to engage meaningfully with these platforms.

5.3 Theoretical Implications

The study validates key assumptions of sociocultural and connectivity learning theories in rural contexts. Learners' interactions with peers via mobile platforms, and their ability to co-construct language knowledge through shared experiences, reaffirm the sociocultural perspective of learning as a socially mediated activity. Additionally, the integration of multiple tools and the emphasis on learner-driven exploration reflect connectivity ideals, demonstrating how knowledge is constructed across networks of digital and human resources.

6. CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The study concludes that digital microlearning offers a promising, cost-effective solution to address English language learning gaps in rural India. Tools like WhatsApp and Duolingo successfully enhanced students' spoken English by building vocabulary, improving fluency, and increasing learner confidence [12]. Despite infrastructural and gender-based barriers, the flexibility and accessibility of mobile tools made them well-suited for rural learners. The findings stress the need to view microlearning not just as a temporary supplement but as a core strategy for equitable language education.

6.2 Recommendations

Based on these insights, several recommendations emerge. Educational policy must support the integration of microlearning into rural school curricula, especially through mobile-based tools that are accessible and intuitive. Teacher training is critical for sustainable impact; educators need to be equipped with digital literacy skills and instructional strategies that complement these tools [9]. Additionally, flexibility in curriculum design and investment in digital infrastructure, such as local Wi-Fi hubs or device-sharing models, can bridge existing gaps and amplify impact across rural learning communities.

7. FUTURE RESEARCH DIRECTIONS AND LIMITATIONS

7.1 Future Research Directions

Future studies should explore the longitudinal impact of microlearning tools on language acquisition, particularly in terms of sustained gains in communicative competence. Comparative studies across various Indian states would offer insights into regional disparities and the influence of local dialects and digital access levels [13]. Additionally, gender-specific interventions and digital literacy training programs could be designed to assess how targeted support improves participation and learning outcomes, especially among female students in conservative rural settings.

7.2 Limitations

The study faced limitations related to sample size, which may restrict generalizability. The focus on a limited number of digital tools, primarily WhatsApp and Duolingo, might have introduced tool-specific bias in results. Moreover, the short duration of the study did not allow for the observation of long-term language development or the sustainability of engagement [14]. These constraints highlight the need for more extensive, multi-phased research to establish robust conclusions and inform scalable educational strategies.

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