

Empowering Tribal Students through ICT: The Role of Mobile Phones and Internet in Driving Social Change in Wayanad District

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Abstract: In today's fast-paced digital age, mobile devices and internet access have become influential tools for driving social change, particularly in marginalized communities. This research investigates how Information and Communication Technology (ICT) is altering the educational and social environment for tribal students in Wayanad District, Kerala. Given the substantial tribal population grappling with geographical isolation and limited availability of conventional educational resources, the spread of mobile phones and internet connectivity has opened new avenues for learning, communication, and empowerment.

The research examines how tribal students in Wayanad use mobile technology and online platforms for education, skill development, and social interaction. It assesses the impact of digital access on their academic performance and aspirations, gathering primary data through surveys, interviews, and focus groups. The study identifies challenges such as poor connectivity, digital literacy gaps, and affordability that hinder effective ICT adoption. Findings reveal the potential and limitations of mobile phones and internet access in bridging educational and social gaps. The paper concludes with recommendations for enhancing digital infrastructure and implementing targeted policy interventions to foster inclusive development in tribal regions.

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I. INTRODUCTION

Technological advancement has brought transformative opportunities for education, communication, and empowerment, especially in regions that have historically faced marginalization. For tribal communities, which often experience socio-economic isolation, Information and Communication Technology (ICT) holds significant potential for bridging gaps in access to resources and fostering social change.

In Wayanad, a district known for its rich tribal heritage yet struggling with educational disparities, the rapid spread of mobile phones and internet connectivity offers a new dimension to the educational and social experiences of tribal students.

This study explores the multifaceted impact of mobile phones and internet access on tribal students in Wayanad, focusing on several critical areas: educational progress, social awareness, opportunities for skill development, and the various

challenges they face in effectively utilizing these technologies. By analyzing both the benefits and the obstacles associated with ICT integration into their daily lives, this research aims to provide a comprehensive understanding of how digital tools can act as catalysts for positive change within these communities. Ultimately, the goal is to contribute to reducing socio-economic inequalities and fostering a more inclusive society.

➤ *Need and Significance of the Study*

The tribal communities of Wayanad, Kerala, possess distinct traditions and face unique challenges, particularly in literacy and socio-economic development, despite Kerala's overall educational progress. The rise of mobile phones and internet access presents opportunities to bridge these gaps, but research on the impact of ICT tools on tribal students remains limited.

This study addresses the significant knowledge gap regarding the digital inclusion of tribal youth. While various programs promote digital literacy and online education, the

actual access and utilization of ICT among these communities are not well understood. Insights into usage patterns, challenges, and the transformations catalyzed by ICT are essential for targeted interventions by policymakers and educators.

➤ *Research Gap of the Study*

While the impact of ICT on education and social transformation has been extensively examined, there is a scarcity of research centered on tribal populations, particularly in Wayanad, Kerala. Many studies neglect the distinct socio-cultural and economic obstacles that tribal students encounter when accessing and utilizing mobile phones and the internet. The influence of ICT on their education, skill enhancement, and social consciousness is still not thoroughly investigated. Furthermore, the effectiveness of government initiatives to foster digital literacy among tribal communities has not been sufficiently evaluated. This research seeks to fill these voids by offering targeted insights into the digital experiences of tribal students in Wayanad.

➤ *Objectives of the Study*

- To assess the level of access to mobile phones and internet services among tribal students in Wayanad.
- To examine the impact of mobile and internet usage on tribal students' education, learning outcomes, and skill development.
- To explore how digital access shapes social behavior, awareness, and aspirations.
- To identify major challenges and barriers faced by tribal students in effectively using ICT tools.

II. METHODOLOGY

The study adopts a **mixed-method approach**, combining both quantitative and qualitative methods to gain a comprehensive understanding of mobile phone and internet usage among tribal students in Wayanad district, Kerala. The research was conducted in tribal-dominated areas such as Thirunelly, Noolpuzha, Pulpally, and Edavaka. A sample of **200 tribal students** studying in high schools, higher secondary schools, and colleges was selected using purposive sampling to ensure that participants had access to mobile phones or the internet. **Primary data** was collected through structured questionnaires distributed to the students, along with personal interviews with selected students, teachers, and parents to understand their experiences, challenges, and attitudes toward ICT. Additionally, **focus group discussions (FGDs)** were organized to gather detailed qualitative insights on the influence of digital technology on education and social change. **Secondary data** was sourced from government reports, census data, academic publications, and policy documents related to ICT, education, and tribal development. The quantitative data collected was analyzed using percentage analysis and cross-tabulation, while the qualitative data from interviews and FGDs were examined through thematic analysis to identify key

patterns, challenges, and impacts of ICT usage among tribal students.

III. ANALYSIS AND INTERPRETATION

The study's analysis reveals that mobile phones and internet access have made significant inroads into Wayanad's tribal communities, especially among students. However, the level of access, usage patterns, and educational impact vary widely due to socio-economic and infrastructural factors.

Data shows that **78% of the sampled tribal students have access to mobile phones**, but only **32% own smartphones personally**. Most depend on shared family devices. Internet usage is growing, with **68% reporting regular internet access**, mainly through mobile data.

Table 1 Data

Access Type	Percentage (%)
Own Smartphone	32%
Family/Shared Mobile Access	46%
No Regular Access	22%

➤ *Purpose of Mobile/Internet Usage*

The findings show that **52% of students use phones for educational purposes**, such as watching online classes, using educational apps, or reading e-content. However, **70% also use it for social media, entertainment, and gaming**.

Table 2 Purpose of Mobile/Internet Usage

Purpose	Percentage (%)
Online Classes & Studies	52%
Social Media (Facebook, WhatsApp, etc.)	70%
Watching Videos/Entertainment	65%
Vocational Skill Learning	18%

➤ *Challenges Faced by Tribal Students*

Students reported multiple barriers in accessing and benefiting from ICT tools:

- Poor Internet Connectivity – 61%
- Lack of digital skills – 48%
- Financial constraints (data recharge/device costs) – 56%
- Lack of parental support in using ICT – 42%

Table 3 Challenges Faced by Tribal Students

Challenges Faced	Percentage (%)
Poor Network Connectivity	61%
Digital Illiteracy	48%
Economic Barriers	56%
Lack of Family Support	42%

➤ *Impact on Education and Awareness*

Despite challenges, **60% of students** agreed that mobile phones and internet access improved their learning opportunities and increased their general knowledge. Many also reported enhanced exposure to new ideas, online educational content, and career awareness.

Students exposed to digital platforms felt **more confident in continuing education or exploring vocational courses**, while others struggled due to lack of guidance and resources.

Table 4: Impact of ICT on Education

Response	Number of Students	Percentage
Improved Learning Opportunities	120	60%
Increased General Knowledge / Awareness	114	57%
Motivated to Join Vocational / Skill Programs	72	36%
No Significant Impact Observed	54	27%

➤ *Interpretation*

The study clearly shows that ICT tools like mobile phones and the internet are gradually transforming the educational landscape of tribal students in Wayanad. However, the **digital divide** remains a significant issue due to infrastructure gaps, economic challenges, and low digital literacy. Although digital platforms offer new learning opportunities, **maximum utilization is hindered by socio-economic barriers and lack of structured digital training**. The findings highlight the need for **targeted government interventions**, awareness programs, and infrastructure development to ensure that tribal students fully benefit from ICT-based education and skill development opportunities.

Statistical analysis indicates that ownership of mobile devices significantly influences educational usage, with students owning smartphones more likely to attend online classes than those with limited or shared access. The study also finds that many students are unaware of government programs and policies aimed at promoting ICT in tribal regions, suggesting a gap in the reach and implementation of such initiatives. Overall, while ICT is gradually enhancing educational access and awareness among tribal students in Wayanad, infrastructural issues, economic barriers, and limited policy reach continue to hinder its full potential.

The study reveals that access to mobile phones and internet facilities among tribal students in Wayanad District is moderate. About 32% of the respondents own smartphones, while 46% depend on shared devices within their families, and 22% have no regular access to mobile phones. Although 68% of students reported having internet access, frequent network issues limit its proper utilization. The primary use of mobile phones and the internet is for social media and entertainment, with 70% of students engaged in platforms like Facebook, WhatsApp, and Instagram, and 65% watching videos and other entertainment content. Educational use, such as attending online classes and accessing study materials, is reported by 52% of students, whereas only 18% use digital tools for vocational training or skill development.

The study also highlights significant challenges faced by tribal students in adopting ICT tools. Poor internet connectivity affects 61% of the respondents, while 56% face financial constraints that limit their ability to afford smartphones or data packs. Additionally, 48% struggle due to a lack of digital literacy, and 42% report inadequate family support for using digital tools effectively. Despite these challenges, the positive impact of ICT is evident, with 60% of students feeling that digital tools have improved their learning opportunities, and 57% reporting an increase in general knowledge and awareness. Furthermore, 36% of students expressed that exposure to ICT motivated them to explore vocational or skill-based learning opportunities.

IV. SUGGESTIONS OF THE STUDY

Based on the findings, the study suggests that improving digital infrastructure in tribal areas is essential to ensure better internet connectivity and reliable access to ICT tools. Setting up community digital centers or ICT hubs in tribal villages can help students who do not own smartphones or face connectivity issues. Special focus should be given to digital literacy programs, including hands-on training for students, parents, and teachers, to enhance their ability to effectively use mobile phones and the internet for educational and vocational purposes.

The government and local bodies should strengthen the implementation of ICT-based educational and skill development programs by ensuring that information about these initiatives reaches the tribal communities. Schools and educational institutions in tribal regions should integrate ICT into the curriculum and encourage students to use digital platforms for learning and skill development. Additionally, providing subsidized smartphones, free data packs, or community Wi-Fi facilities could reduce the financial burden on tribal families and promote greater usage for educational purposes.

Regular monitoring and evaluation of ICT-related policies and programs in tribal areas should be carried out to identify gaps and make necessary improvements. Collaboration with NGOs and private organizations can also help in implementing ICT initiatives more effectively. Overall, creating an enabling

environment for ICT use will help empower tribal students, improve their educational outcomes, and open up new opportunities for skill development and employment.

V. CONCLUSION

The study concludes that mobile phones and the internet have emerged as significant tools for enhancing educational opportunities and social awareness among tribal students in Wayanad District. While access to ICT tools is gradually improving, many students still face challenges due to poor connectivity, economic constraints, and limited digital literacy. The usage of mobile phones is currently more focused on social media and entertainment, with educational and vocational utilization remaining comparatively low. However, the findings indicate that students who own smartphones are more likely to engage in online learning and benefit from digital resources. Despite the government's efforts to promote ICT in tribal areas, many students remain unaware of specific programs designed for their development, highlighting gaps in implementation and outreach. To fully realize the potential of ICT as a tool for education and empowerment, there is a need for better infrastructure, targeted awareness campaigns, and effective digital literacy programs. Strengthening these areas can help bridge the digital divide and contribute to the socio-economic upliftment of tribal communities in Wayanad.

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