

Digital Inequality and Educational Access in Mizoram: A Sociological Examination of Post-COVID Learning Disparities

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Abstract

The COVID-19 pandemic has significantly transformed educational systems across India, accelerating the shift to digital learning modalities. While this transition offered avenues for educational continuity, it simultaneously revealed and intensified pre-existing structural inequalities particularly in remote, tribal regions such as Mizoram. This paper presents a sociological analysis of digital inequality in Mizoram by examining how intersecting factors such as socio-economic status, geographic isolation, and tribal identity shape access to digital education in the post-pandemic era. Drawing on secondary data from NFHS-5, ASER reports, official government publications, and peer-reviewed academic literature, the study highlights substantial disparities in access to digital devices, internet connectivity, and online learning platforms among rural and economically marginalized students. Anchored in Bourdieu's theory of cultural capital and the digital divide framework, the analysis demonstrates how educational inequalities have been reproduced and exacerbated in the digital domain. While state-led interventions including televised lessons, digital outreach initiatives, and community-based support have aimed to address these challenges, their effectiveness has been uneven across socio-demographic segments. The study argues for the development of context-sensitive, equity-driven education policies that recognize digital access as a fundamental educational right. This paper contributes to the broader discourse on the sociology of education, digital justice, and inclusive policy reform in underrepresented regions of India.

Keywords: Digital inequality, Educational access, Mizoram, COVID-19, Sociological analysis, Urban-rural divide, Gender disparities, Tribal communities.

1. Introduction

The COVID-19 pandemic triggered an unprecedented disruption in global educational systems, compelling a swift and widespread migration to online learning platforms. This paradigm shift brought into sharp relief existing inequalities in access to digital infrastructure and resources (Van Dijk, 2020; Selwyn, 2016). In India, the move toward digital education underscored significant disparities in connectivity, digital literacy, and technological access, particularly in states characterized by high tribal populations and difficult terrain. Mizoram, situated in Northeast India, exemplifies these challenges due to its remote geography, socio-cultural diversity, and infrastructural limitations.

Despite Mizoram's commendable literacy rate of 91.58% (Census, 2011), a deeper analysis reveals stark contrasts in access to educational resources between urban and rural communities. With approximately 91% of its population identifying as Scheduled Tribes, the state's educational landscape is shaped by a

unique confluence of tribal identity, socio-economic inequality, and limited technological infrastructure (Lalnunpuii, 2018; Nongkynrih, 2019). The pandemic-induced closure of physical schools shifted the focus from brick-and-mortar classrooms to virtual platforms, revealing that educational access in the digital era is inextricably linked to device availability, internet connectivity, and digital fluency among both students and educators.

Digital inequality, therefore, emerges not solely as a technological deficit but as a multifaceted sociological phenomenon that mirrors broader patterns of social exclusion and stratification. The inability of many students in rural Mizoram to participate meaningfully in online learning due to the unavailability of smartphones, erratic internet coverage, and low digital literacy highlights the intersection of digital and social marginality (Warschauer, 2003; Ralte, 2019). These disparities reflect deeper structural issues rooted in class, caste, tribal affiliation, and the state's institutional capacity to deliver inclusive education.

In this context, this study seeks to critically examine the nature and implications of digital inequality in Mizoram through a sociological lens.

Objectives:

1. To analyze the nature and extent of digital inequality in the state of Mizoram.
2. To investigate how geographic location, socio-economic conditions, and tribal identity influence access to digital education.
3. To evaluate government and institutional responses aimed at mitigating the digital education gap.
4. To contribute theoretically informed, sociologically grounded insights toward bridging post-pandemic educational disparities.

By focusing on Mizoram a relatively underexplored context in the Indian digital divide literature this paper contributes to the broader academic discourse on digital justice, educational equity, and inclusive policy development. It argues that digital access must be reconceptualized as a fundamental educational entitlement and a social good, without which post-pandemic recovery in learning outcomes will remain incomplete and inequitably distributed.

2. Literature Review

The digital divide and its implications for educational access have become increasingly prominent in sociological discourse, particularly in the aftermath of the global transition to online learning precipitated by the COVID-19 pandemic (Van Dijk, 2020; Selwyn, 2016). While numerous studies have investigated digital inequality at the national level in India (Mishra et al., 2021; Srivastava & Singh, 2020; Sharma & Joshi, 2022), limited attention has been devoted to the unique sociocultural and infrastructural challenges faced by tribal-dominated regions such as Mizoram. This literature review situates the present study within broader academic conversations concerning the sociology of education, digital exclusion, and tribal marginality.

Sociological Foundations of Educational Inequality

Education is widely acknowledged as both a mechanism for social mobility and a site for reproducing social stratification (Bourdieu, 1986; Bowles & Gintis, 2002; Coleman, 1988). Bourdieu's concept of *cultural capital* is central to understanding the differential acquisition and utilization of educational resources, including digital technologies (Lareau, 2011; Lupton, 2015). In tribal and rural contexts, exclusion from digital education is compounded by language barriers, socio-economic precarity, and limited digital literacy (Skutnabb-Kangas, 2000; Cummins, 2001; Ralte, 2019). Moreover, gender-based

digital disparities are pervasive, as female students often face socio-cultural constraints that inhibit both their access to and use of technology (Chigona & Chigona, 2013; UNICEF, 2021; World Bank, 2022).

Digital Inequality in the Indian Context

Recent empirical evidence underscores the severity of the digital divide in India. The Annual Status of Education Report (ASER, 2021) noted that only 51% of rural students had access to smartphones or other digital devices during the pandemic, and just 28% received any form of online instruction. NSSO (2020) data corroborates these findings, revealing wide disparities in internet penetration between urban (42%) and rural (15%) populations. Research by Singh and Dey (2021) and Mukherjee (2020) highlights that digital exclusion disproportionately affects socio-economically disadvantaged groups, resulting in lower participation in virtual classrooms and higher rates of academic disengagement.

Pandemic-Induced Learning Gaps

The COVID-19 pandemic acted as a magnifier of educational inequities. UNESCO (2020) reported that global school closures severely disrupted learning for over 1.6 billion children, with marginalized populations especially tribal communities bearing the brunt of this disruption. In the Indian context, the Azim Premji Foundation (2020) documented extensive learning losses among students from underprivileged backgrounds due to poor access to digital infrastructure and parental support. Kumar and Priya (2021) argue that unless digital disparities are urgently addressed, the pandemic will leave a lasting legacy of educational disenfranchisement.

Education and Tribal Communities in Northeast India

Studies focusing on the Northeastern region emphasize the intersectionality of ethnicity, geography, and development in shaping educational outcomes (Nongkynrih, 2019; Baruah, 2020). The Mizoram Economic Survey (2022) identifies several persistent challenges, including inadequate digital infrastructure, low teacher preparedness for online instruction, and limited policy responsiveness to local contexts. Ralte (2019) and Lalnunpuii (2018) observe that tribal cultural practices, linguistic diversity, and economic marginality contribute to systemic educational exclusion, particularly in the digital sphere.

Sociological Theorization of the Digital Divide

The digital divide is best conceptualized as a multi-layered social phenomenon, encompassing disparities in technological access, digital skills, and institutional support (Warschauer, 2003; Hilbert, 2011). Bourdieu's framework suggests that families with higher cultural and economic capital are better positioned to leverage digital tools for educational advancement (Bourdieu, 1986; Lareau, 2011). Additionally, Giddens' structuration theory highlights the interplay between agency and structure in navigating technological environments (Giddens, 1984), while Castells (2010) frames digital access as a function of networked social inclusion.

Policy Interventions and Institutional Gaps

In response to the pandemic, the Indian government introduced digital learning platforms such as DIKSHA, SWAYAM, and televised instruction under PM eVidya (Ministry of Education, 2021). However, their efficacy in tribal regions has been limited by infrastructural bottlenecks, digital illiteracy, and inconsistent electricity supply (Sharma & Singh, 2022; Khan & Chatterjee, 2021). In Mizoram, localized interventions including community radio and mobile learning units have been implemented but remain under-researched in terms of impact and scalability (Mizoram Education Department, 2021).

Identified Gaps in Literature

Although the literature on digital inequality in India is extensive, there is a notable paucity of region-specific studies that engage with the sociological dimensions of digital exclusion in tribal states such as

Mizoram. This paper addresses this critical gap by synthesizing existing data and applying a robust sociological framework to analyze digital learning disparities in Mizoram's post-COVID educational context.

3. Theoretical Framework

This study employs an integrative theoretical framework that draws upon Pierre Bourdieu's theory of cultural capital, the digital divide literature, and structural functionalism to examine digital inequality and educational access in Mizoram. These theories collectively illuminate the complex interplay of structural, cultural, and technological factors that influence educational outcomes in post-pandemic settings.

3.1 Bourdieu's Cultural Capital Theory

Bourdieu (1986) theorizes *cultural capital* as a form of non-economic resource comprising education, linguistic competence, digital fluency, and cultural knowledge, which influences individuals' social mobility and educational success. In the context of digital education, cultural capital is evident in the capacity of families to access and utilize digital tools effectively. Empirical research shows that students from families with higher levels of cultural capital are more likely to own digital devices, have access to high-speed internet, and receive parental support in navigating online platforms (Lupton, 2015; Lareau, 2011; Warschauer, 2003). Conversely, tribal households in Mizoram often lack such resources, reinforcing digital and educational inequalities (Ralte, 2019; Lalnunpuii, 2018).

3.2 Digital Divide Theory

The *digital divide* refers to the socio-economic and cultural gap between those who have access to digital technologies and those who do not (Warschauer, 2003; Hilbert, 2011). This divide encompasses disparities in device ownership, internet connectivity, digital literacy, and educational content delivery. In Mizoram, factors such as geographic remoteness, unreliable electricity, and limited network coverage exacerbate digital exclusion (NSSO, 2020; ASER, 2021). The pandemic has deepened these divides, turning digital access into a determinant of educational inclusion or exclusion (Singh & Dey, 2021; Kumar & Priya, 2021).

3.3 Structural Functionalism

From a structural functionalist standpoint, education serves a critical role in social integration and the maintenance of societal equilibrium (Parsons, 1959; Durkheim, 1912). When digital inequality disrupts access to education, it undermines the functional integrity of the education system and its capacity to serve as an equalizing institution. The lack of digital access for large segments of Mizoram's tribal population threatens social cohesion, perpetuates inequality, and limits upward mobility (Baruah, 2020; Nongkynrih, 2019).

3.4 Integration of Theoretical Perspectives

This study adopts a multidimensional theoretical approach to understand digital inequality in Mizoram. By combining Bourdieu's insights into cultural capital with digital divide theory and structural functionalism, the analysis captures both micro-level (household and community) and macro-level (institutional and policy) determinants of educational exclusion. Such integration allows for a nuanced understanding of how structural inequalities and cultural practices mediate digital access and shape learning outcomes in the post-COVID era.

4. Methodology

This study adopts a qualitative and descriptive research design based on secondary data to examine the nature of digital inequality and educational access in Mizoram's post-COVID context. Given the constraints on primary data collection during and after the pandemic, secondary data from credible government and institutional sources serve as a valuable and ethical alternative for conducting sociological analysis.

Secondary data analysis, a well-established approach in social research, enables the examination of existing datasets and textual material to explore sociological questions (Johnston, 2017; Neuman, 2014). In this study, it facilitates an exploration of trends, disparities, and institutional responses to digital education in Mizoram during and after the pandemic.

Key datasets and reports including the National Family Health Survey (NFHS-5) and the Annual Status of Education Report (ASER) offer empirical insights into device ownership, internet accessibility, and educational participation (Government of India, 2022; ASER, 2020–2023). While the use of secondary data carries limitations, such as potential gaps in contextual specificity or temporal recency, it provides a cost-effective and reliable method for assessing macro-level trends across geographic and socio-economic strata (Smith, 2015; Hesse-Biber, 2010).

Data Sources

1. National Family Health Survey (NFHS-5, 2019–21) provided region-specific data on household internet access, smartphone ownership, and socio-economic indicators in Mizoram.
2. Annual Status of Education Report (ASER, 2020–2023) offered statistics on digital device availability, online learning participation, and gender-based disparities in education outcomes.
3. Mizoram Economic Survey (2022–23) supplied contextual data on regional education infrastructure, internet penetration rates, and school-level digital responses during COVID-19.
4. Government Policy Documents and State Reports reviewed online education initiatives launched by the Mizoram state government, including the DIKSHA platform, community radio programs, and televised lessons.
5. Academic and NGO Reports included studies on tribal education, digital divides, and socio-cultural barriers to learning in Northeast India, particularly from organizations such as the Azim Premji Foundation and UNESCO.

Analytical Approach

The study employs qualitative content analysis, drawing interpretive insights from both quantitative indicators and policy narratives. The analysis is informed by the sociological theoretical frameworks established earlier in the paper, particularly Bourdieu's theory of capital and the digital divide framework.

Specific analytical focus areas include:

- Urban–rural and gender-based disparities in digital access and learning continuity.
- The influence of socio-economic status and tribal identity on digital participation.
- The scope, implementation, and effectiveness of state and national digital education initiatives.

Patterns, gaps, and structural barriers identified in the data are interpreted to reveal deeper cultural, economic, and institutional determinants of educational inequality in the digital age.

Limitations

As with any secondary data analysis, certain limitations are acknowledged. These include the potential lack of real-time data due to publication lags, inflexibility in variable specificity, and the absence of

lived-experience perspectives that could be captured through primary research. Moreover, national surveys may not always account for the unique geographic and cultural features of Mizoram's remote tribal regions.

5. Analysis and Discussion

The analysis of secondary data reveals a stark urban–rural divide in digital access, with students in urban Mizoram significantly more likely to have reliable internet connectivity and personal devices than those in rural areas (NSSO, 2021; OECD, 2020). Gender disparities are also prominent, particularly in rural regions, where female students often lack access to smartphones or laptops (Mukherjee, 2020; UNICEF Mizoram, 2021). Additionally, socio-economic status strongly correlates with digital literacy and learning continuity, reinforcing systemic educational inequalities (Kirkwood & Price, 2014; Sharma & Singh, 2022). These findings align with broader national and regional studies on the digital divide (Riggins, 2021; Nongkynrih, 2019), underscoring how structural barriers intersect to shape educational access in Mizoram.

5.1 Digital Access and Infrastructure in Mizoram

Data from NFHS-5 and ASER highlight deep disparities in digital infrastructure and access across Mizoram. Although the state boasts one of the highest literacy rates in India, this educational achievement has not uniformly translated into digital literacy or device accessibility. NFHS-5 data indicate that only approximately 60% of rural households in Mizoram possess smartphones or internet-enabled devices, compared to over 85% in urban areas.

In rural and hilly regions, poor network infrastructure and unreliable connectivity severely restrict students' ability to participate in online learning. These limitations are compounded by low household income, lack of digital exposure, and the state's challenging topography. As a result, the urban–rural digital divide mirrors broader educational inequalities, with students in rural areas disproportionately excluded from online education during pandemic-induced school closures.

5.2 Socio-Economic and Tribal Identity Factors

Socio-economic inequality emerges as a key determinant of digital access and educational continuity. Families with higher incomes, primarily in urban centers, were more likely to own digital devices and afford stable internet connections, enabling smoother transitions to online learning platforms. In contrast, tribal households, especially those engaged in subsistence agriculture or informal employment, faced financial and infrastructural barriers to digital inclusion.

The intersection of tribal identity and economic marginalization exacerbates digital exclusion. Many tribal communities reside in geographically isolated regions where infrastructural development is slow or inadequate. Moreover, Ralte (2019) emphasizes that tribal cultural practices and linguistic diversity affect digital learning experiences. Most digital content is delivered in Hindi or English, creating language barriers for Mizo-speaking students. Parental digital illiteracy among tribal families also limits home-based support for children's online education, deepening the educational divide.

5.3 Gender and Digital Education

The digital divide in Mizoram is also gendered. ASER data reveal that girls in rural areas are less likely to own or have access to personal digital devices compared to boys. Cultural norms often prioritize boys' education, while girls are disproportionately burdened with domestic responsibilities, limiting their study time and access to digital tools. This gender bias in digital education perpetuates long-standing inequalities and poses risks to female educational attainment and empowerment in the long te-

rm.

5.4 Government Initiatives and Their Reach

In response to the COVID-19 educational crisis, the Mizoram state government launched several interventions, including televised classes, community radio programs, and digital content delivery through platforms like DIKSHA. Community-driven efforts—such as village education committees and mobile learning units—were also introduced in areas with limited digital reach.

However, an evaluation of these initiatives reveals limited reach and impact in remote tribal areas. While commendable, these strategies relied on access to electricity, devices, and internet connectivity, which were often unavailable in marginalized households (Sharma & Singh, 2022). Additionally, the lack of localized, Mizo-language content hindered student engagement. These limitations underscore the structural barriers that even well-intentioned policies struggle to overcome without a more nuanced and inclusive approach.

5.5 Sociological Implications

From a sociological perspective, these findings highlight the multi-dimensional nature of digital inequality in Mizoram. Drawing on Bourdieu's theory of capital, the study illustrates how disparities in economic, cultural, and social capital influence students' ability to benefit from digital learning. Students lacking access to digital tools, linguistic proficiency, or parental support are structurally disadvantaged, leading to the reproduction of existing inequalities.

In addition, structural functionalist theory suggests that the failure of the education system to ensure equitable access undermines its integrative function. Digital exclusion of rural, tribal, and female students during the pandemic challenges the social cohesion that education is meant to foster, further entrenching divisions within society.

5.6 Towards Bridging the Digital Divide

Addressing digital inequality in Mizoram requires multi-layered and context-sensitive policy interventions. Key recommendations include:

- Expanding digital infrastructure tailored for remote and tribal areas.
- Developing localized, multilingual educational content, particularly in the Mizo language.
- Scaling up digital literacy programs for students and parents, with attention to linguistic and cultural accessibility.
- Designing and implementing gender-sensitive policies to ensure equitable access to devices and educational resources.

Active community participation is essential to the success of such interventions. Empowering village education committees, involving tribal leaders, and adopting culturally responsive practices can enhance both acceptance and effectiveness of digital education policies.

6. Key Findings

The digital divide in Mizoram reflects and intensifies social inequalities, disproportionately disadvantaging tribal and economically marginalized students (Ralte, 2019; Nongkynrih, 2019). Government digital education initiatives have had limited success due to infrastructural deficits and socio-cultural barriers (Mizoram Education Department, 2022; UNICEF Mizoram, 2021). Gender disparities persist, limiting girls' educational progress in the digital era (World Bank, 2022; Chigona & Chigona, 2013). Addressing these gaps requires a nuanced understanding of how social capital, cultural practices, and institutional support intersect in digital education (Freire, 1970; Sen, 1999).

Based on the analysis of secondary data and existing literature, the following key findings emerge regarding digital inequality and educational access in Mizoram's post-COVID landscape:

1. **Persistent Urban-Rural Digital Divide:** There is a marked disparity between urban and rural areas in terms of access to digital devices and internet connectivity. While urban students generally had better access to smartphones, computers, and stable internet during the pandemic, a significant proportion of rural students, especially in remote tribal areas, were digitally excluded from online education.
2. **Socio-Economic and Tribal Factors Influence Digital Access:** Socio-economic status strongly determines the capacity to engage in digital learning. Tribal households, many of which face economic disadvantages and reside in underdeveloped areas, experience compounded barriers due to both financial constraints and geographic isolation. Cultural and linguistic differences further affect the usability and relevance of digital education platforms for tribal students.
3. **Gender Disparities in Digital Learning:** Female students in rural Mizoram were less likely to have personal access to digital devices and dedicated study environments compared to male students. Social norms and household responsibilities often prioritize boys' education, deepening gender-based educational inequalities in the digital realm.
4. **Limited Effectiveness of Government Interventions:** While state initiatives such as televised lessons, community radio, and online platforms like DIKSHA helped mitigate educational disruption, infrastructural limitations (lack of devices, electricity, and internet), content language barriers, and low digital literacy restricted their reach and impact, particularly in remote and tribal communities.
5. **Cultural Capital and Digital Literacy Gaps:** The uneven distribution of cultural capital in the form of digital skills, parental support, and familiarity with technology contributes significantly to educational disparities. Many tribal families lack the digital literacy necessary to support children's online learning, reinforcing existing inequalities.
6. **Implications for Social Equity and Inclusion:** The digital divide in Mizoram threatens to exacerbate social stratification and hamper the integrative function of education. Addressing digital inequality is critical to promoting equitable educational outcomes and fostering social cohesion in the post-pandemic era.

7. Conclusion and Recommendations

The COVID-19 pandemic has underscored and exacerbated existing digital inequalities in Mizoram, particularly affecting students from tribal, rural, and socio-economically disadvantaged backgrounds. While the state has achieved commendable literacy rates, this study reveals that these educational gains have not translated into equitable access to digital learning. Infrastructural deficits, economic disparities, and cultural-linguistic barriers continue to limit students' ability to engage effectively in online education.

Secondary data analysis indicates a persistent urban-rural digital divide, compounded by tribal marginalization and gender disparities. Despite government efforts to provide alternative educational modalities such as televised and radio-based learning the lack of connectivity, devices, and localized content has limited their effectiveness. The findings emphasize that digital exclusion, if left unaddressed, risks entrenching social inequalities and weakening the role of education as a mechanism of social integration and upward mobility.

From a sociological standpoint, effective digital education policy in Mizoram must address technological, socio-economic, and cultural factors simultaneously (UNESCO, 2020; Broadband Commission, 2021). Digital education should function as a tool of inclusion, not a catalyst for further stratification. Drawing on the works of Freire (1970) and Sen (1999), the study advocates for participatory, equity-driven strategies that empower communities and dismantle structural barriers.

Policy Recommendations

1. **Enhance Digital Infrastructure in Remote and Tribal Areas:** Prioritize investments in broadband infrastructure and mobile internet connectivity tailored to Mizoram's difficult terrain. Public-private partnerships and targeted state interventions can help bridge the connectivity gap between urban centers and remote villages.
2. **Develop Localized and Multilingual Educational Content:** Create digital learning materials in Mizo and other tribal dialects, incorporating culturally relevant examples. Engage local educators and linguists in content development to increase relevance and learner engagement.
3. **Promote Digital Literacy Among Students and Parents:** Implement community-based digital literacy programs that equip both students and caregivers with basic digital skills. Empowering parents especially in tribal communities enhances their capacity to support children's learning.
4. **Address Gender Disparities in Digital Access:** Develop gender-sensitive interventions, including device provision schemes for girls, safe and dedicated learning spaces, and awareness campaigns to challenge gender norms that disadvantage female learners.
5. **Strengthen Community Participation and Ownership:** Foster inclusive educational governance by involving village education committees, tribal leaders, and local NGOs in the design and implementation of digital initiatives. Community engagement ensures interventions are contextually appropriate and locally accepted.
6. **Establish Mechanisms for Monitoring and Feedback:** Integrate continuous monitoring and evaluation systems into digital education programs. Use both quantitative and qualitative indicators to assess impact and adapt strategies based on community feedback.

Addressing digital inequality in Mizoram is critical not only for post-COVID educational recovery but also for advancing long-term goals of inclusive and equitable development. A sociologically grounded, context-sensitive digital education strategy one that integrates technology with cultural sensitivity and structural awareness can ensure that no student is left behind in the digital era.

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