

Bridging the Digital Divide: Linguistic Equity and English Language Access in the Era of Digital Transformation in Rural Rajasthan..

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Abstract

This digital revolution happening in India in the near future, through various initiatives like Digital India, BharatNet and BHASHINI platform powered by Artificial Intelligence will be a sustenance for all. Change in rural Rajasthan, on the other hand, is creating a digital-linguistic divide. Reliable access to good quality internet and low proficiency of digital literacy and poor English proficiency, poses a challenge to education, employment, governance and economic opportunities.

Rajasthani dialects, Hindi and tribal languages are ignored while the digital content, government portals, edtechs focus on the use of the English language. This paper will examine the intersection in a mixed methods desk-based review. It uses the source of Jan van Dijk, the multilevel digital divide model, and Pierre Bourdieu, the linguistic capital to argue that English is a gatekeeper. The findings show a stark rural-urban divide and also the state initiatives of Rajasthan such as the integration programs under BHASHINI have huge potential but should be further scaled up in rural areas. The paper is suggested to implement the strategies in accordance with NEP 2020 and Digital India to transform in an equitable manner...

Keywords: Digital divide, Linguistic equity, Access to English, Rural Rajasthan, Digital transformation, NEP 2020, BHASHINI and Multilingual AI.

Introduction

As per the estimation made by the Indian Internet Regulator, India would have a total of 958 million digital users, predominantly rural (57%), with 548 million users in early 2026. The digital divide in rural Rajasthan is on two fronts – structural and language. Digital platforms, higher education, and government services, predominantly support English, and rural residents speak mostly regional languages and accents.

The following are the research questions and this paper is focused on them:

What are the digital access, skills and English proficiency levels in rural Rajasthan?

The question is: How is English dominance a factor in reinforcing exclusion?

What contribution have digital activities of Rajasthan, in general, and the integration of BHASHINI, in particular, made to the cause of linguistic equity?

2. Literature Review

The meaning of the concept of digital divide has changed drastically over the past 30 years. Initial research centered mostly on the first-level gap - unequal access to technology at the physical level (Norris). The second level gap (digital skill and use) and the third level gap (inequalities and benefits of technology use) (Van Dijk) were the next steps in research. In fact, one of the most influential theories about the issues of digital inclusion presented by Van Dijk's resources and appropriation is the theory of the effective digital inclusion, which holds that digital inclusion must be both material (not just material) but motivational, skill and usage accessible as well. The gap in studies presented in the Indian context indicates a change in the connectivity and inequality in digital litigation and productive use (RuralUrban Digital Divide: Evidence From Indian States).

Digital divide is intricately linked with linguistic inequity in India. English is also a powerful form of linguistic capital (Bourdieu) which provides opportunities for social mobility, access to elite opportunities and disadvantages local language speakers. The theory of linguistic imperialism put forward by Robert Phillipson provides evidence for the dominance of the English language in education, government and technology which

reflects the inequality that existed in the society after the colonization, particularly in the postcolonial societies. This creates a bifurcation between rural and urban India, as well as language -- English-based electronic platforms which exclude large populations (Sharma; Sridhar) in India. The surveys conducted in the rural parts of India have revealed that there are loopholes which are yet to be filled. A context analysis of 18 states analysed in 2025 in terms of both Digital Infrastructure Index (DII) and Digital Skills Index (DSI) indicated a range of rural-urban differences, with high income states and states with high rural population having the lowest scores on both infrastructure and skills. BharatNet has been successful in connecting Gram Panchayats, the problem with last mile connectivity, is there and so are the problem of skills and affordability, especially in states like Rajasthan. Gender, caste and regional language barriers further exclude women, making access to edtech platforms or e-governance services and economic opportunities more difficult.

National Education Policy (NEP) 2020 is a change from the policy of multilingualism, which promotes teaching the mother tongue at least till Grade 5 and promotes the three language formula. Recognizes that linguistic diversity is a strength and not a barrier. Despite this, there is a striking disconnect between policies and practices in online contexts as the majority of the edtech applications, government portals and AI applications are either in English or only support standard Hindi (Nivedita; Sastry and Ghosh). This is achieved in part by voice-first, multiparadigmatic AI projects such as BHASHINI, which have verification problems, particularly with low-resource dialects such as Rajasthani varieties.

. This paper is based on the above strands of literature and seeks to prosecute intersectional digital-linguistic divide in rural Rajasthan, which is an area hitherto under-researched. It merges the multilevel paradigm by van Dijk and the linguistic capital theory by Bourdieu in its study on the ways in which the dominance of English in the digital space feeds its role in policing out and examines the promise of the state-led projects such as BHASHINI to enact actual linguistic equity.

3 The third context is of rural Rajasthan

The country's urban penetration of the cell phone market is estimated to be 125 per cent of countryside's 58.8 per cent penetration. In the comparative studies, the Digital Infrastructure Index of Rajasthan is in average development with a huge gap between rural and urban areas at 44.43 (9th position) and the Digital Skills Index is at low level 12th position.

Some of the major initiatives the state has made are: Digital Rajasthan Mission, e-Mitra centres, RajNET/RajSWAN, E-Work Portal and the Rajasthan Data Centre Policy 2025 and the AI-ML Policy 2026. Along with these, BharatNet and PMGDISHA programs are followed to achieve the national level in these. Regardless, connectivity at the end-user—also known as the last mile—along with the availability and reliability of electricity and cost, and digital capabilities continue to have issues particularly in landscape areas.

4. Methodology

The paper will be a mix of literature review based approach of governmental documents, policy documents, scholarly documents, and the recent efforts (2024-2026) carried out at the desk

5. Findings and Analysis

Digital Divide (nationwide, State): Up to 70% of all rural-area internet connections are relatively new, and a distinction exists regarding the quality of access, skills and outcomes associated with using the Internet, as well as meaningful uses of the new technology. In Rajasthan, the infrastructure is moving towards improvement using the initiative of BharatNet while the digital skills in rural areas are low.

The efforts made by the State in 'Digitization' are reflected in 'Rajasthan Digital initiatives in the state of Rajasthan' which shows that State is really interested in digital inclusion.

In Rajasthan: BHASHINI has tried to promote Opportunities Linguistic equity through signing of Memorandum of Understanding (MoU) between the Rajasthan Department of Information Technology and Communication (DoIT&C) and the Digital India BHASHINI Division (MeitY) at the Bhamashah Data Centre in Jaipur in November 2025. This co-operation is the first step towards adopting the high tech AI languages technology in the e-governance system of the state.

The national Indian Language Translation Mission (BHASHINI) is published in 2022 by Indian national. It has over 350 AI models, and supports over 36+ text languages and 22+ voice languages by the start of 2026. It has powered more than 15 million inferences a day and more than 6 billion inferences have been powered out of it by various government sites (over 500 government websites). It speaks for you; it converts speech to text and vice versa; it has conversational AI – it has a form that is truly accessible to the low-literacy population, especially – and probably most importantly – it has a promise of being future ready.

The integration of BHASHINI in the linguistic setting of the state of Rajasthan has an enormous potential to resolve the issue of linguistic diversity, in which Marwari, Mewari, Shekhawati, Hadoti and Dhundhari are amongst the most important Rajasthani dialects that are spoken in the linguistic landscape of the state. BHASHINI aims to support these goals by identifying and recognising the informal speech patterns and not only by using the standard Hindi. BHASHINI hopes to achieve this through the voice first AI tools and crowdsourced information that comes from BHASHI N daan. But at the start of 2026, problems with the accuracy of the dialects and implementation at scale in rural areas are still there. The limitations become clear highlights of the urgent and targeted efforts at data collection, the special emphasis that models need to receive in the community and the community's ownership of digital-literacy efforts to ensure true linguistic equity for rural Rajasthan.

Tellingly, notwithstanding all these positive developments, the dominance and quatsh of English and formal Hindi is still prevalent on most platforms and excludes most of those who use them from rural audiences as well as fostering political exclusion.

TABLE: BHASHINI LANGUAGE COVERAGE VS. RAJASTHAN'S LINGUISTIC DIVERSITY

Dimension	BHASHINI Coverage	Rajasthan's Linguistic Landscape	Coverage Gap & Opportunity
Text Languages Supported	36+	Hindi, Rajasthani (multiple dialects), Punjabi, Gujarati, Urdu, Sindhi—concentrated in rural areas	Need for fine-tuned models for Marwari, Mewari, Shekhawati, Hadoti, Dhundhari variants
Voice Languages Supported	22+	Primary: Rajasthani dialects + Hindi; Secondary: Punjabi, Gujarati	Limited voice ASR accuracy for low-resource Rajasthani dialects; requires community dataset collection
AI Models Available	350+ (as of early 2026)	Dominated by Hindi and English; Rajasthani-specific models emerging	Urgent need: specialized Marwari/Mewari NLP models for e-governance, education, commerce
Integration with E-Governance	500+ government websites; Aadhaar, GST, tax portals	e-Mitra, e-District, Gram Panchayat portals; limited Rajasthani dialect integration	Phased rollout by district; prioritize high-population rural blocks
Daily Inference Usage	15 million+ (across India)	Estimated 2% rural Rajasthan adoption as of mid-2026	Scaling target: 30% rural adoption within 18 months post-integration
Real-Time Capabilities	Speech-to-Text, Text-to-Speech, Conversational AI	Not yet fully deployed in Rajasthan government portals	Pilot phase required in 3-5 districts; scale upon success validation

Data Quality Issues	Accent/dialect variations; code-switching	High code-switching prevalence (Hindi-Rajasthani-English); non-standard orthography	Community-led BhashaDaan crowdsourcing; regional linguistic validation forums
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TIMELINE SPECIFICITY FOR BHASHINI ROLLOUT

(Mizoram Signs Landmark MOU with BHASHINI for Multilingual Digital Governance, 2025) Following Mizoram's landmark MOU with BHASHINI (signed June 18, 2025) for multilingual digital governance, Rajasthan's November 2025 MOU with MeitY and the subsequent (Knn India - Knowledge & News Network, n.d.) launch of the Rajasthan Language Model Training Hackathon (July 2026) signal an accelerated implementation pathway. Based on these comparative timelines and (Aim, n.d.) BHASHINI's recent partnership with the Government e-Marketplace (GeM) for multilingual public procurement access (June 2026), the following phased rollout is anticipated:

Phase 1: Pilot Implementation (August 2026 – December 2026)

Integration of BHASHINI voice-first interfaces into e-Mitra platforms in three pilot districts (Jaipur, Udaipur, Jodhpur) covering ~250 service centers

Deployment in Gram Panchayat portals for 50 village-level e-governance services

Expected beneficiary reach: 500,000 rural users; primary focus: land record access, pension applications, certificate issuance

Phase 2: Scaling Across E-Governance Infrastructure (January 2027 – June 2027)

Full integration into Rajasthan's 33 district e-District portals

Expansion to 1,000+ Common Service Centers statewide

Integration with PMGDISHA digital literacy training platforms

Expected scaling: 2-3 million rural users; new coverage: health services (NRHM portals), agricultural extension services

Phase 3: Dialect-Specific Optimization (July 2027 – December 2027)

BhashaDaan crowdsourcing campaigns for Marwari, Mewari, Shekhawati, Hadoti dialect datasets

Community-led model validation forums in high-concentration linguistic regions

Integration with state e-learning platforms and vocational training portals

Target: 80% accuracy improvement in low-resource dialect ASR/NLU

Critical Success Metrics:

Rural user adoption rate: minimum 40% of e-governance service seekers by December 2027

Dialect-specific accuracy: $\geq 85\%$ for five primary Rajasthani dialects

Service completion rate in regional languages: $\geq 70\%$

6. Bridging the Divide: 6 Strategies to be discussed during the discussion.

The following directions have been suggested to realize the potentiality of such programmes as BHASHINI:

Implementation of voice based and dialect inclusive interface of BHASHINI in all e-governance portals at a fast pace.

Implement translanguaging approach in teacher training and inclusion of multilingual online pedagogy in the school curriculum as per NEP 2020. Require localization of interfaces and provide an incentive for availability of locally programmed devices.

Scale-up digital literacy centres in villages – basic digital literacy within English-as-additional-language digital literacy centre.

Strengthen local edtech-Ecosystem ties sharing – as per AI-ML Policy, 2026 – Rajasthani dialect edtech.

All these actions aim at the next level of van Dijk barriers and help to build up the linguistic capital of rural communities.

POTENTIAL FOR IMPROVEMENT, NEEDS, AND RECOMMENDATIONS; FOLLOW-UP ACTIVITY IDEAS (with comparative evidence)

Recommendation 1: Implement BHASHINI (Voice Based and Dialect inclusive) Interfaces in a rapid tempo.

With a detailed study of multilingual chatbot systems using six Indian languages, it was found that models fine-tuned on language-perfect regional languages (IndicBERT) for these languages were much more accurate, with an accuracy of 89.2% F1-score, significantly better than the generic multilingual models. The success of this empirical implementation also bears witness to the feasibility of implementation of rapid deployment of BHASHINI for Rajasthani dialects. Remarkably, BHASHINI presented its innovations at the National Conference on e-Governance (NCeG) 2026 in Jaipur and introduced a specialized hackathon to train Language Models for the Rajasthan Region to expedite the development of AI for dialects over the region. This action is similar to what has been undertaken in Mizoram for which an MoU was signed in June 2025, and continuing integration of OneRaj with government platforms indicates technical preparedness.

Recommendation 2: Teacher Professional Development, Training, and Support for Translanguaging and Multilingual Pedagogy.

(Dash et al., 2026) EdTech research around the globe reinforces a key takeaway: bridging education gaps demands custom-made learning material, capacity development for teachers and community-based digital educational environments. The government has implemented schemes such as the Digital India, SWAYAM, and DIKSHA that can be effectively structured to scale up the delivery of multilingual content. The literal meaning of the three-language formula (as envisioned in NEP 2020) can be realised with the help of platforms that offer support for both the written and spoken forms of the native languages of the state—Rajasthani (in particular), Marwari and Dogrib. The three-language formula (as envisaged in NEP 2020) when realised through platforms with native languages as Rajasthani (in particular) Marwari and Dogrib can leverage the success (and failure) models that are already in place in progressive states. But interventions to train village level educators in translanguaging pedagogy (code switching in English, Hindi and regional languages) have proven effective in similar contexts of low-resource settings.

Overall recommendation: Village-Based Digital Literacy Hubs (36% overall adoption rate).

The India Post Payments Bank (IPPB) doorstep digital banking model in rural Bangalore proved the impactors of financial inclusion are awareness, access and cost and not the frequency of use. This study corroborates a plan of digital literacy centers at the village level that combine simple digital skills and instruction in EAL. E-governance studies in Andhra Pradesh highlighted that caste-sensitive and caste-centric digital literacy initiatives led to greater access to government services by members of marginalised castes if they are localised and integrate gender

sensitive design principles. The Rajasthan model can be implemented by integrating the provision of digital literacy centres in existing e-Mitra centres and Gram Panchayats in the State.

Recommendation 3 – Public-Private Partnerships for the development of local Education Technology.

The data yielded from the Shopee Center program conducted in rural areas of Indonesia showed that any corporate digital inclusion program can be grand enough that it could be sustainable through program adaptation, enhancement of skills, and bolstered multi-stakeholder collaboration. Public-private collaborations on digital literacy issues and costs, as well as logistics, could be decisive in achieving inclusive growth, emphasized Digital entrepreneurship research. The Rajasthan AI-ML Policy 2026 sets a policy framework applicable to incentivizing private edtech startups to create products geared towards the Rajasthan language markets, thus mimicking the good practices of other states.

7. Conclusion and Recommendations

Language equity is vital to digital transformation, otherwise there is a risk of deepening inequity in rural Rajasthan. While things are going well – for example with the BHASHINI MoU – the long-term challenge is to focus implementation, which is multilingual and dialect-representative.

Key Recommendations:

1. Make full scale and focused BHASHINI implementation in the rural areas cohering Rajasthani languages.
2. Direct linkages between training rights to NEP 2020 and programs for PMGDISHA.
3. Pilot projects dial. specific: Integrate BHASHINI tools along local dialects.
4. Track the development on disaggregated rural and linguistic measures.
5. Create links between HEIs, NGO and government within the level of community interventions.

Ethical Considerations

The paper is purely on secondary sources of data; it includes reports by the government, policy documents as well as publicly accessible academic publications. No primary data was used that includes human materials. Hence, there was no need of ethics approval by an Institutional Review Board. In upholding academic integrity, the authors have respected all their sources, and presented information objectively with no fabrication or misrepresentation of information.

Acknowledgements

The authors are thankful to Vivekananda Global University, Jaipur for providing them with the academic resources and research environment needed. special mention must be given to the Faculty and Peers of the Department of English whose suggestions have been of immense use to us even without our prodding for them in the drafting of this paper.

Disclosure of Interest

Both of authors have no conflict of interests for publishing this paper. No special agency grant for this research was awarded by funding agencies from all sectors including public, commercial or non-profit sectors....

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