Digital Literacy Initiatives and Rural Youth Empowerment in India: Challenges and Opportunities

Dr. Shekhar Pasaragonda
Assistant Professor of Education, RGR Siddhanthi College of Education, Secunderabad,
ICSSR Full-Term Centrally-Administered Fellowship

Abstract **—This research is being conducted to comprehend and to investigate the various national and international initiatives for promoting and applying digital technologies among youth from rural areas in India. The paper aims demonstrating how electronic campaigns and empowering for rural youth can relate to the accessibility and ease of use of different online resources in their practical connections to cultivation, dairy products, gardening, schooling, etc.., it is conducted to understand and explore the various national and international initiatives for using and utilising digital literacy among rural youth Digital literacy has emerged as a critical instrument for empowering rural youth in India by enhancing access to information, education, employment, and digital services. In the context of the Government of India's initiatives under the Digital India framework, programmes such as Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA), Skill India, and other digital education platforms aim to bridge the digital divide between rural and urban populations. The present study examines the role of digital literacy initiatives in promoting rural youth empowerment while identifying the major challenges and opportunities associated with their implementation. Adopting a descriptive and analytical research design, the study analyses secondary data drawn from government reports, policy documents, and relevant literature, supplemented by primary observations from rural contexts. The findings reveal that digital literacy initiatives have positively contributed to skill development, employability, access to e-governance services, and socio-economic participation among rural youth. However, persistent challenges such as inadequate digital infrastructure, limited access to devices, low levels of awareness, language barriers, and insufficient advanced digital skills continue to hinder the full realization of these initiatives. The study concludes that while digital literacy programmes hold significant potential for transforming rural youth into active participants in the digital economy, focused policy interventions, improved infrastructure, and sustained capacity-building efforts are essential to maximize their impact. The study offers policy-relevant insights for strengthening digital literacy initiatives and enhancing rural youth empowerment in India. in India.**

Index Terms**— Digital Literacy, Rural Youth Empowerment, Digital Divide, Digital Inclusion, Skill Development, and Government of India Initiatives.**

I. INTRODUCTION

Youth constitute the most dynamic, active, and productive segment of any society, playing a decisive role in shaping its present and future. The size and composition of a nation's youth population largely determine its developmental capacity, economic growth, and social transformation. It is widely acknowledged that developing nations endowed with a large youth population can experience accelerated economic progress if adequate investments are made in health, education, skill development, and the protection of youth rights. Undoubtedly, today's youth are the leaders, innovators, entrepreneurs, and change-makers of tomorrow.

In the contemporary context, addressing the multifaceted challenges faced by youth such as access to quality education and healthcare, meaningful employment opportunities, digital inclusion, and gender equality has become increasingly critical. Young people are actively demanding more just, equitable, and progressive solutions that enable their full participation in social, economic, and political life. Empowering youth, therefore, is not merely a social responsibility but a strategic necessity for sustainable national development.

India, with a population of 1,469,521,738 as of November 20, 2025, according to Worldometer estimates based on the latest United Nations data,

stands as the most populous country in the world. Significantly, India also possesses the largest youth population globally. As defined by the National Youth Policy of India, youth comprise individuals aged 15–29 years, and this group is estimated to number approximately 370–375 million in 2025, accounting for nearly 26–27 percent of the total population. This vast youth demographic represents a substantial demographic dividend, offering unprecedented opportunities for economic growth, innovation, and social advancement.

However, the realization of this demographic advantage depends largely on the extent to which youth are equipped with relevant skills and competencies, particularly in the digital domain. In an era characterized by rapid technological advancement and digital transformation, digital literacy has emerged as a critical enabler of youth empowerment. Access to digital skills enhances employability, facilitates participation in e-governance, promotes entrepreneurship, and fosters inclusive socio-economic development, especially among rural youth. Effectively harnessing India's youthful human capital through targeted digital literacy initiatives is therefore essential for achieving the Sustainable Development Goals (SDGs) and for building a resilient, inclusive, and knowledge-driven economy.

Entity/Instrument/ Organization Age (years)	Entity/Instrument/ Organization Age (years)
UN Secretariat/UNESCO/ILO	15–24 Years
UN Habitat (Youth Fund)	15–32 Years
UNICEF/WHO/UNFPA	Adolescent: 10–19 Years Young people: 10–24 Years Youth: 15–24 Years
UNICEF/ The Convention on Rights of the Child	Child under 18 Years
The African Youth Charter	Youth: 15–35 Years

II. DIGITAL LITERACY AND RURAL YOUTH

The use of digital media and new technology by youth is growing. In order to effectively utilize a new area for rural youth work, promote digital literacy, and help young people manage some of the hazards involved, there is undoubtedly a place for online rural youth work practices. It allows the younger generation to benefit from the wealth of new and emerging opportunities associated with digital technologies whilst also remaining alert to the various challenges technology can present. In short, digital literacy is the 'savvyness' that allows young people to participate meaningfully and safely as digital technology becomes ever more pervasive in society.

Figure 1: Rural Youth on Digital Mode

Digital literacy encompasses a variety of skills, from multimodal text creation to fundamental computer proficiency. Eleven papers that monitor the digital literacy practices of young populations or people between the ages of 12 and 17 are examined in this survey of the literature. Three perspectives are used to describe the practices of these people: general youth population studies, programs that target low-income students as the focus of innovative research, and articles that monitor the digital literacy skills of young immigrant learners. The articles mostly focus on the efforts made by young people to express themselves online. In order to achieve this, teachers must continue to link classroom education to students' own digital literacy practices in school.

Youth are vital for the progress and success of a nation. Most of the United Nations' (UN) Sustainable Development Goals (SDGs) focus on the youth, identifying them as a critical national demographic and highlighting the need for investing in them. With 66 percent of its population (808 million) below the age of 35, India has the world's largest youth population. Despite the estimated decline in the numbers, India will still remain a relatively 'young' country in 2030, with 24 percent of its population (365 million) in the 15-29 age group. At a time when several countries across Europe, the United States and even China are grappling with the twin problems of an

ageing population and declining youth, how India nurtures its youth population will determine its future growth trajectory.

Digital India is a flagship programme of the Government of India with a vision to transform India into a digitally empowered society and knowledge economy, E-governance initiatives in India took a broader dimension in the mid-1990s for wider sectoral applications with emphasis on citizen-centric services. The major ICT initiatives of the Government included, inter alia, some major projects, such as railway computerization, land record computerisation etc., which focused mainly on the development of information systems. Later on, many states started ambitious individual e-governance projects aimed at providing electronic services to citizens.

Though these e-governance projects were citizen-centric, they could make less than the desired impact due to their limited features. The isolated and less interactive systems revealed major gaps that were thwarting the successful adoption of e-governance along the entire spectrum of governance. They clearly pointed towards the need for a more comprehensive planning and implementation for the infrastructure required to be put in place, interoperability issues to be addressed etc., to establish a more connected government.

The vision of Digital India Programme is to transform India into a digitally empowered society and knowledge economy.

III. RURAL YOUTH CAMPAIGNS AND EMPOWERMENT PROGRAMS

DIGISHALA

It is a "Educational TV Channel for Digital Payments on DD Free Dish", Digital Finance for Rural India: Creating Awareness and Access through Common Service Centres (CSCs), and Vittiya Saksharta Abhiyan (Visaka) by Ministry of Human Resource Development (MHRD)

Vision Areas of Digital India: The Digital India programme is centred on three key vision areas:

Digital Infrastructure as a core utility to Every Citizen

- Availability of high-speed internet as a core utility for delivery of services to citizens
- Cradle to grave digital identity that is unique, lifelong, online and authenticable to every citizen
- Mobile phone & bank account enabling citizen participation in digital & financial space
- Easy access to a Common Service Centre
- Shareable private space on a public cloud

Governance & Services on Demand

- Safe and secure cyber-space
- Seamlessly integrated services across departments or jurisdictions
- Availability of services in real time from online & mobile platforms
- All citizen entitlements to be portable and available on the cloud
- Digitally transformed services for improving ease of doing business
- Making financial transactions electronic & cashless
- Leveraging Geospatial Information Systems (GIS) for decision support systems & development.

IV. DIGITAL EMPOWERMENT OF CITIZENS

Universal digital literacy, universally accessible digital resources, Availability of digital resources / services in Indian languages, Collaborative digital platforms for participative governance, Citizens not required to physically submit Govt. documents / certificates, Empowering Indian Rural Youth Through Digital Literacy - The UDG Foundation

In a rapidly evolving digital age, access to information and digital skills have become essential for personal and economic growth. Unfortunately, many rural areas in India still lack the necessary resources and training required to bridge the digital divide. This is where organizations like the UDG Foundation step in to make a significant impact on the lives of the Indian rural youth.

The UDG Foundation, committed to driving digital empowerment in rural India, has been playing a pivotal role in transforming the lives of young individuals living in remote areas. By providing access to technology, digital training, and resources, the foundation is instrumental in enhancing the digital literacy of the rural youth.

Here are some key points illustrating the UDG Foundation's role in this transformative journey:

Access to Technology: UDG Foundation recognizes that access to technology is the first step towards

digital literacy. They work tirelessly to ensure that rural communities have access to computers, the internet, and other digital devices.

Digital Skill Development: The foundation offers comprehensive digital literacy programs that encompass basic computer skills, internet usage, and more advanced topics like coding, digital marketing, and data analysis. These skills empower rural youth to explore new career opportunities.

Awareness and Education: UDG Foundation conducts awareness campaigns to educate rural youth and their communities about the importance of digital literacy. By understanding the potential benefits, more young individuals are motivated to participate in digital training programs.

Job Opportunities: With the acquired digital skills, rural youth gain the ability to access various online job opportunities, work remotely, or start their own online businesses. This not only boosts their income but also contributes to the economic development of their communities.

Digital Inclusion: UDG Foundation promotes inclusivity, ensuring that individuals with disabilities and marginalized sections of society also benefit from their digital literacy initiatives.

Digital Citizenship: The foundation emphasizes responsible digital citizenship, teaching rural youth how to navigate the digital world safely and ethically.

Focus on Digital Literacy

The foundation recognizes the importance of digital fluency in today's world. By providing access to technology, digital training, and essential resources, they're equipping these young individuals with the skills they need to thrive in the digital age. This focus on digital literacy bridges the gap between urban and rural communities, fostering a more equitable future.

Reaching Over 10,000 Students

The impact of UDGI Foundation's work is undeniable. They've successfully trained over 10,000 students in digital literacy programs. This accomplishment signifies a significant step towards closing the digital divide in rural India.

UDGI Academy: Free Online Courses

The UDGI Foundation leverages online learning through their UDGI Academy platform. This platform offers a free digital literacy course designed for beginners. The course covers essential topics like:

- Introduction to digital devices
- Operating digital devices effectively
- Understanding the internet
- Communicating and using the internet for various purposes
- Exploring the applications of the internet

With these fundamental skills, students gain the confidence to navigate the digital world and unlock its potential.

Empowering The Future

The UDGI Foundation's commitment to digital literacy empowers young people in rural India. By equipping them with the tools they need, they're not only shaping individual futures but also paving the way for a more digitally inclusive and prosperous rural India. In an era of increasing digital dependence, our reliance on digital technologies grows with each passing day, fuelled by the vast opportunities the virtual world presents. While we celebrate the boundless potential of the digital age, we must also recognize its shadows – a division known as the "digital divide", separating those with unrestricted access to the digital realm from those at its periphery.

As we observe International Youth Day, dedicated to honouring the aspirations of young individuals, let us delve into comprehending the impact of the digital divide on the prospects of our youth and explore the measures being undertaken to bridge this gap.

Digital Divide

The digital divide, as defined by the Organisation for Economic Co-operation and Development (OECD), pertains to the disparity among individuals, households, businesses, and geographic regions of varying socio-economic standings affecting their access to information and communication technologies (ICTs) and their utilization of the Internet for a diverse range of activities.

V. IMPACT OF THE DIGITAL DIVIDE ON YOUTH:

The digital divide has a deep effect on young individuals, who are the future of the nation. Lack of access to digital resources or inability to use them hinders their educational opportunities and limits their potential for career growth.

As education increasingly relies on online platforms and digital tools, especially after the Covid-19

pandemic, digitally disadvantaged youth face challenges in keeping up with their peers with better access to these resources. This can lead to a vicious cycle of reduced academic performance and limited job prospects, perpetuating social and economic exclusion.

VI. ROLE OF EDUCATION:

Education stands as a pivotal force in empowering youth and closing the digital gap. In today's digital landscape, digital literacy holds equal importance to traditional literacy. Online learning platforms, complementing conventional teaching methods, offer students engaging and interactive learning experiences. This underscores the need for government educational institutions to integrate technology into curricula, ensuring students are well-prepared for the digital age.

One significant effort in this direction is the DIKSHA (Digital Infrastructure for Knowledge Sharing) platform. Initiated by the National Council for Educational Research and Training (NCERT) under the Ministry of Education, Government of India, DIKSHA was launched in 2017. It has gained widespread adoption across States, Union Territories, and educational bodies, including CBSE.

Addressing the digital divide challenge, the National Education Policy (NEP) of 2020 places special emphasis on expanding online education to remote regions, facilitated by robust network connections. To enhance this approach, pilot studies have been conducted by organizations such as NETF, CIET, NIOS, IGNOU, IITs, and NITs. These studies evaluate the integration of online learning into education, focusing on annual assessments and improvements in E-content.

VII. DIGITAL LITERACY INITIATIVES IN INDIA

1. Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA). Part of the Digital India program, this scheme helps people learn IT skills so they can participate in the democratic process.
2. National Digital Literacy Mission (NDLM): This initiative aims to improve technical literacy and ensure internet access for all.
3. Digital Literacy Program: Launched in 2023, this program aims to make at least one member of every household in India digitally literate.

When assessing the effectiveness of digital literacy initiatives, it's important to consider factors like age, gender, education, and technology experience. Other challenges include low internet bandwidth and low literate learners.

Digital Literacy Programmes	Year of Initiatives	Objectives
Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA)	Ongoing (Expanded by 2025	Empower rural citizens with basic digital skills (computer/phone use, internet, digital payments, accessing e-services), bridging urban–rural digital divide.
Digital India Programme	Launched 2015; expanding through 2025	Create an inclusive digital ecosystem, enhance digital access/infrastructure, and promote citizen digital literacy as part of a digitally empowered society.
Skilling for AI Readiness (SOAR)	2025	Build foundational AI awareness and skills among school students and teachers under Skill India Mission, preparing learners for future tech needs.
PM-WANI (Prime Minister Wi-Fi Access Network Interface (PM WANI)) scheme	2024	PM-WANI scheme to establish public Wi-Fi networks, targeting 2 million hotspots. And invest in 5G infrastructure, aiming for 40% population coverage by 2025.
“India Digital Ecosystem of Agriculture (IDEA)”	2020	The IDEA Ecosystem shall help the Government in effective planning towards increasing the income of farmers in particular and improving the overall efficiency of the agriculture sector. In the process towards building the Agristack, the Ministry is undertaking pilot projects in collaboration with leading technology companies and ‘Agtechs’.

Pradhan Mantri Gramina	2019	2019 Empower rural citizens with information, knowledge and skills and enable them in Digital Saksharat Abhiyan actively participate in governance
PM Kisan	2019	PM Kisan is a Central Sector scheme with 100% funding from Government of India.
National Digital Literacy Machine	2018	To impart IT training to Anganwadi and ASHA workers and authorized ration literacy mission dealers in all the States/UTs across the country so that the non-IT literate citizens are trained to become IT literate so as to enable them to actively and effectively participate in the democratic and developmental process and also enhance their livelihood
Unified Mobile Applications for New-Age Governance	2017	To provides a single platform for all Indian Citizens to access pan India e-Gov Application for New-age services ranging from Central to Local Government bodies and other citizen Governance centric services
Digital India	2015	To make government's services made available to every citizen electronically through online infrastructure, increase internet connectivity all over the country and to make country digitally empowered
Digi-Locker	2015	Aimed at providing paperless governance to the citizen of India
Bharat Bill Payment	2013	Bharat Bill Payment System is an integrated bill payment system in India offering System interoperable and accessible bill payment service to customers through a network of agents of registered member as Agent Institutions, enabling multiple payment modes, and providing instant confirmation of payment
e-Sampark	2004	It enables the government to communicate with the citizens about several programs and initiatives

- Digital technology has been acknowledged by the Committee on Doubling Farmers' Income (DFI) in its report as having the potential to revolutionize and streamline the agricultural practices of rural India. Farmers are growing more knowledgeable as a result of several efforts to give them ready access to technology and information, and digital technologies are being used more and more in the agricultural value chain. The following are some of the steps the government has done to encourage digital agriculture in the nation:
- The fundamental idea of the India Digital Ecosystem of Agriculture (IDEA) framework, which would establish the structure of the federated farmers' database, has been finalized by the government. Moreover, there has been an integration of the databases pertaining to the programs overseen by the Department. The IDEA would provide as a basis for the development of creative, agriculturally-focused solutions that make use of cutting-edge technologies in order to significantly improve India's agricultural ecosystem. This ecosystem will support the government's strategic planning efforts to boost farmer incomes in particular and boost the productivity of the agriculture industry overall.
- Funds are granted to the State(s) or UT(s) for projects incorporating the application of new technologies, such as artificial intelligence (AI), machine learning (ML), robotics, drones, data analytics, block chain, etc., under the National e-Governance Plan in Agriculture (NeGP-A) plan scheme.
- Commencing in April 2014, the Sub Mission on Agricultural Mechanization (SMAM) is being executed. By bringing small and marginal farmers into the centre of farm mechanization and providing them with the benefits of it, the program seeks to "reach the unreached." It does this by promoting "custom hiring centres," establishing hubs for high-tech and valuable farm equipment, distributing a variety of agricultural equipment, raising awareness among stakeholders through demonstration and capacity building activities, and guaranteeing performance testing and certification at specially designated testing centres spread throughout the nation.

- In order to establish a single national market for agricultural commodities, the National Agriculture Market (e-NAM), an electronic trading platform that spans all of India, networks the current Agricultural Produce Market Committee (APMC) mandis. The e-NAM platform offers digital services to traders, farmers, Farmers Producer Organizations (FPO), and Mandis through a number of modules, including the warehouse-based trading module and the FPO trading module.
- Funds are promptly deposited into the bank accounts of qualified farmers under the PM KISAN Scheme's Direct Benefit Transfer mechanism. Through the Farmers Corner on the web, farmers can self-register. To increase the program's reach, the PM-KISAN Mobile App was introduced. With it, farmers can now check the progress of their applications, update their Aadhaar card information, or make name adjustments.
- Integrated Scheme for Agricultural Marketing plans (AGMARKNET) to support State, cooperative, and private sector investments with backend subsidies in order to encourage the development of agricultural marketing infrastructure Services are offered through the (AGMARKNET) portal, a business-to-consumer e-governance platform that offers agricultural marketing-related information from a single window to meet the demands of a variety of stakeholders, including farmers, businesses, policymakers, and academic institutions. It makes it easier for web-based information on commodity pricing and daily arrivals in the nation's agricultural produce marketplaces to flow.
- The Agriculture Infrastructure Fund (AIF) aims to enhance the nation's agricultural infrastructure by providing incentives and financial support to invest in sustainable projects for post-harvest management infrastructure and community farming assets. It does this by mobilizing a medium- to long-term debt financing facility. For the purpose of establishing post-harvest management infrastructure, financial assistance is given digitally to recipients such as farmers, primary agricultural credit societies (PACS), farmer producers organizations (FPOs), self-help groups (SHG), state agencies, and APMCs. The assistance takes the form of interest subsidization and credit guarantee.
- The National Mission on Horticulture (which includes bamboo and coconut) aims to develop the industry holistically. A web-enabled work flow-based solution for MIDH financial support is the HORTNET project. Complete transparency has been envisioned in all workflow procedures, including online application filing, authentication, processing, and online payment to the beneficiary's bank account through DBT. This is a unique intervention to achieve e-Government in NHM.
- The National Soil Health and Fertility Project aim to deliver soil health cards to farmers nationwide, serving as a foundation for addressing nutrient inadequacies in fertilization techniques. Farmer access to the Soil Health Card Portal allows them to track soil samples. The creation of the Kisan Suvidha mobile application aims to make it easier for farmers to receive information on crucial factors such as weather, market prices, plant protection, input dealers (such as seed, fertilizer, and pesticides), farm machinery, soil health cards, cold storage and godowns, veterinary clinics, and diagnostic laboratories. Farmers that have access to market data are better able to determine which markets to sell their goods in, as well as the amount that consumers are willing to pay. As a result, they are able to decide with knowledge to sell produce at the appropriate price and moment.
- Additionally, over 100 smartphone apps created by the Indian Council of Agricultural Research (ICAR), State Agricultural Universities, and Krishi Vigyan Kendras have been gathered and posted on its website. These smartphone applications, which have been created in the fields of agriculture, horticulture, veterinary care, dairy, poultry, fisheries, natural resource management, and integrated subjects, provide farmers with useful data such as market prices for different commodities, weather-related information, package of practices, and advisory services. The government uses SMSs to notify registered farmers about various matters pertaining.

- Giving young people access to and abilities in the digital sphere helps close the gap and promotes a more inclusive future. Governments, organizations, and individuals working together may establish a setting that will enable every young person to succeed in the digital age.

VIII. CONCLUSION

Digital literacy initiatives play a pivotal role in empowering rural youth in India by enhancing access to education, employment, and digital governance. Government programmes have contributed significantly to reducing the digital divide and fostering socio-economic participation among rural youth. However, challenges related to infrastructure, access, awareness, and advanced digital skills continue to limit their full impact. Strengthening and scaling digital literacy initiatives is therefore essential for effectively harnessing India's demographic dividend and achieving inclusive and sustainable development. The findings of the study highlight the need for policy frameworks that prioritize digital literacy as a core component of rural development and youth empowerment strategies. Policymakers must focus on strengthening digital infrastructure in rural areas, ensuring equitable access to digital devices, and integrating digital literacy with skill development and employment programmes. Aligning digital literacy initiatives with national policies such as Digital India, Skill India, and NEP 2020 can enhance coordination, effectiveness, and long-term impact. Additionally, continuous monitoring and evaluation mechanisms are required to ensure the quality and inclusiveness of digital literacy programmes.

IX. RECOMMENDATIONS

- Infrastructure Development: Expand reliable internet connectivity and digital infrastructure in rural and remote areas.
- Access to Devices: Provide affordable digital devices to rural youth through subsidies or community-based digital centres.
- Skill Enhancement: Move beyond basic digital literacy to include advanced and employability-oriented digital skills.
- Awareness Programmes: Conduct targeted awareness campaigns to increase participation in digital literacy initiatives.
- Institutional Collaboration: Strengthen collaboration among government agencies, educational institutions, and local communities for effective implementation.
- Monitoring and Evaluation: Establish robust mechanisms to regularly assess programme outcomes and impact.

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Dr. Shekhar Pasaragonda holds a Ph.D. in Education from Osmania University, supported by the ICSSR Full-Term Doctoral Fellowship (2018–2020). His academic background spans Education, Philosophy, Computer Science, and Mathematics. He qualified UGC-NET (2016) and SET (2015) in Education. Dr. Pasaragonda is currently an Assistant Professor of Education at RGR Siddhanthi College of Education, Secunderabad. He has published over 18 research papers and has participated in more than 45 national and international seminars across India.