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UNDERSTANDING DIGITAL INEQUALITY: A REVIEW OF GOVERNMENT INITIATIVES TO REMOVE DIGITAL INEQUALITY IN INDIA

Mehreen Mustafa

ABSTRACT

Technology has become an essential element of contemporary education and significantly contributes to improving teaching and learning processes. However, despite the expanding use of Information and Communication Technology (ICT), digital inequality continues to grow at an alarming rate. This paper provides an in-depth examination of digital inequality and its various levels. Digital inequality, which is characterized by disparities in access to digital devices, internet connectivity, technological skills, and digital benefits, poses serious challenges to achieving educational equity. The paper also discusses major government initiatives designed to bridge the digital divide. In the Indian context, persistent gaps related to socioeconomic status, gender, and rural–urban differences continue to hinder equal participation in technology-based opportunities. This review-based study integrates existing research on digital skills and the dimensions of digital inequality while evaluating policies and initiatives aimed at fostering digital inclusion.

KEYWORDS: Information and Communication Technology (ICT), Digital Inequality, Digital Inclusion, Digital Skills, Government Initiatives

INTRODUCTION

Technology has become increasingly important in recent years and is now considered a key part of modern society. Interest in technology has grown since the 1980s (Nueva, 2019), and many scholars describe it as one of the greatest gifts for human development (Raja & Nagasubramani, 2018). In education, information and communication technology (ICT) can improve access to learning and raise the quality of teaching (Tinio, 2002). However, even as technology continues to advance, not everyone benefits equally. Many people still lack access to devices, internet connectivity, or the digital skills needed to use these tools. This gap, known as digital inequality or the digital divide, has serious effects on learning and educational opportunities (Miah, 2024). Digital inequality affects how people learn, communicate, and access public services. In India, the

digital divide is especially visible. Digital inequality is not only about owning technology but also about knowing how to use it effectively and being able to gain meaningful outcomes from it (van Dijk, 2005; Hargittai, 2002). India's diverse social and economic conditions make it an important setting to study these inequalities. Researchers identify three levels of digital inequality. The first level involves access—whether people have devices and internet connections (van Dijk, 2020). This can be limited by high costs, poor infrastructure, or low income (Helsper, 2018). The second level involves digital skills and their use. Even with access, people may not know how to operate technology confidently or use it for meaningful tasks (Zillien & Hargittai, 2009). The third level concerns outcomes—whether people can actually benefit from technology. Even when users have devices and skills, they may not

achieve the same results (Van Deursen & Helsper, 2015; Chan Wei & Tan, 2011). While much research focuses on the first level of the digital divide, there is still limited work on the second and third levels, which involve skills and outcomes (Lythreatis et al., 2022).

LITERATURE REVIEW

Studies show that digital inequality remains a serious problem and affects social development and education. Kumari et al. (2024) explain that many people still cannot access digital services due to poverty, low education and lack of awareness, which slows national progress. The study looks at reasons behind digital inequality and suggests ways to improve access for everyone. Shivangi Kumari, Singha, and Gardia (2024) report major gaps in students' access to computers and the internet, especially among girls and students in Northeast India, creating unequal learning opportunities. Shukla & Singh (2023) analyse the government's flagship mission Digital India and associated infrastructure programmes (such as BharatNet) aimed at narrowing the digital gap. They analysed the different types of programs that enhance digital literacy and remove digital inequality.

Suri and Sharma (2023) highlight that women and girls face cultural barriers in accessing digital technology, leading to a gender digital divide in Jammu & Kashmir. Caste-based inequality also shapes access to digital resources, with disadvantaged groups lacking skills and tools (R. Vaidehi et al., 2021). Similarly, Tiwari and Srivastava (2020) find that rural areas face poor infrastructure and low income, which deepens digital inequality. This paper discusses the Digital India programme, which aims to provide fast, safe and affordable online government services and make India digitally empowered. It highlights the benefits of digitalisation and the need for better infrastructure, education and awareness. (Tewathia et al., 2020). International studies confirm that even after improvements, inequalities remain due to age, income and education differences (Reddick et al., 2020). Research also shows that digital inequality has three levels: access, skills, and outcomes, and even educated youth experience unequal digital benefits (Avinash & Ashvini Pandey, 2020; Ashvini Pandey, 2018). Earlier research also found deep rural-urban and socioeconomic gaps linked to education, income

and occupation (Guha, 2018). Overall, the literature shows that digital inequality affects marginalised communities the most and continues to widen social and educational gaps in India.

Objectives

To understand the concept and definition of digital inequality, highlighting how unequal access, skills, and opportunities related to digital technologies create socio-economic gaps among individuals and communities.

To identify and explain the different levels of digital inequality, including disparities in access to digital devices and infrastructure, variations in digital skills and usage patterns, and differences in the ability to meaningfully benefit from digital technologies.

To examine the various government initiatives aimed at reducing digital inequality by exploring policies, programmes, and schemes that promote digital inclusion, improve connectivity, enhance digital literacy, and ensure equitable access to digital resources for all sections of society.

METHODS OF THE STUDY

This study followed a systematic literature review methodology. Relevant research was identified through major electronic databases, including Scopus, Google Scholar, ResearchGate, and ERIC, using keywords such as digital inequality, digital divide, ICT access, digital skills, and digital inclusion. Peer-reviewed articles published in English were included. Studies unrelated to the topic or lacking conceptual relevance were excluded. Titles, abstracts, and full texts were screened, and key findings were extracted and compared.

Concept and definitions of Digital inequality

Digital inequality refers to the unequal distribution of access, skills, and opportunities related to digital and information technologies. It encompasses disparities in the availability and effective use of digital tools such as computers, smartphones, broadband internet, and other ICT resources. These inequalities arise due to differences in socioeconomic status, educational background, geographic location, and levels of digital literacy, which influence individuals' ability to meaningfully engage with online platforms and

services (van Dijk, 2020). Digital inequality is not limited to the physical availability of technology; it also involves variations in the skills and competencies required to utilize digital resources for personal, social, educational, and economic advancement (Berkman et al., 2016).

In practical terms, digital inequality represents the divide between individuals who possess strong digital skills and can easily access and benefit from digital opportunities such as online education, e-governance services, digital financial transactions, and telemedicine, and those who, due to limited knowledge or restricted access, cannot derive similar benefits. As Lee (2016) highlights, digital inequality also reflects discrepancies in ICT usage based on demographic and socioeconomic differences. Therefore, digital inequality results in a scenario where some people can fully participate in the digital society, while others remain marginalized and unable to access essential online services for learning, employment, healthcare, communication, or financial inclusion.

Fig. 1: Concept of Digital Inequality



Levels of Digital Inequality

Digital inequality manifests at multiple levels, reflecting not only disparities in access but also differences in skills, engagement, and the capacity to derive meaningful outcomes from technology use. Contemporary research shows that the notion of the “digital divide” has evolved from a simple binary of access to a multidimensional framework encompassing motivation, skills, usage, and digital

benefits (van Dijk, 2020; Helsper, 2018). The literature commonly classifies digital inequality into three interrelated levels: access, skills and use, and outcomes.

1 Access (First-Level Digital Inequality)

The first level of digital inequality—often termed infrastructural inequality—concerns disparities in material access to ICTs. This includes unequal availability of devices, internet connectivity, and supporting infrastructure (van Dijk, 2005, 2020). High costs, unreliable networks, and low household income are typical determinants of this inequality. Furthermore, variations in internet speed and adoption rates significantly influence individuals’ ability to engage in digital environments, shaping broader digital inclusion agendas (Helsper, 2018; Hilbert, 2016).

2. Skills and Use (Second-Level Digital Inequality)

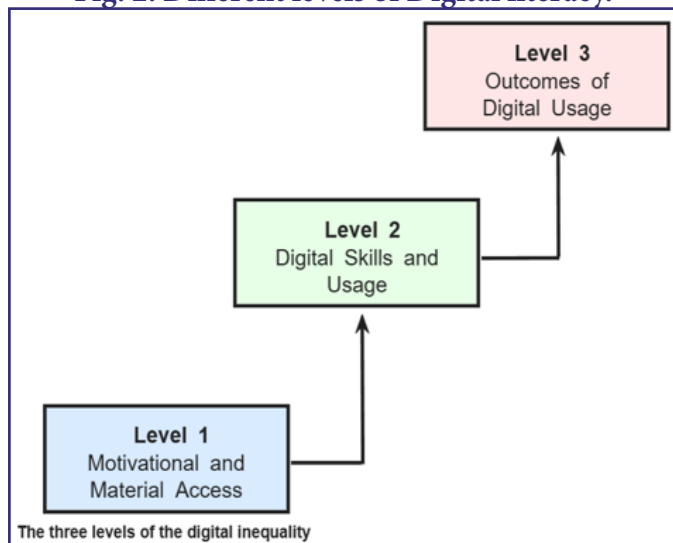
Even when access is ensured, inequalities persist due to differences in users’ digital skills, confidence, and patterns of engagement. This second level highlights disparities in how individuals navigate, understand, and apply digital tools (Hargittai, 2002). Limited digital literacy, lack of operational skills, and low motivation or interest in ICTs often hinder effective use. This level extends beyond basic technical know-how to include higher-order skills such as information navigation, communication, and platform-specific competencies (Zillien & Hargittai, 2009). It reflects not just the ability to connect, but the capacity to meaningfully participate in digital environments.

3. Outcomes (Third-Level Digital Inequality)

The third level of digital inequality focuses on the unequal benefits individuals derive from digital engagement. Introduced conceptually by van Deursen and colleagues, this level explains how similar patterns of ICT use can lead to markedly different outcomes (Van Deursen & Helsper, 2015; Van Deursen et al., 2017). Individuals may possess adequate access and skills, yet systematic disparities emerge in their ability to convert digital use into tangible benefits, such as improved education, employment opportunities, social capital, or economic gains (Chan et al., 2011; Amichai-Hamburger et al., 2008). This level underscores that digital engagement does not automatically translate into equal returns; rather,

outcomes depend on how effectively individuals leverage digital tools to achieve their objectives.

Fig. 2: Different levels of Digital literacy.



Measures to Address Digital Inequality and Access Disparity: Government Initiatives and Policies The Government of India has introduced many ICT initiatives to reduce the digital gap and support inclusive development in areas like education, health, finance, land records, and governance (Government of India, 2015). The Smart Cities Mission planned to develop 100 modern digital cities, and the Digital India programme aimed to transform the country into a knowledge-based digital economy by 2019 (Digital India, 2015).

Common Service Centres (CSCs):

Common Service Centres (CSCs) are digital service centres in rural areas that provide government, financial, health, and education services. Run by local Village Level Entrepreneurs, they help people access online services and support digital inclusion for those without internet or digital skills.

Digital Sakhi:

It is a program that trains rural women to use digital technology and teach others in their communities. These women help people learn digital payments, online banking, and basic computer skills, promoting financial independence and digital awareness in villages.

PMGDISHA (Pradhan Mantri Gramin Digital Saksharta Abhiyan):

It is a scheme to make rural people digitally literate. It provides basic computer training so villagers can use mobile phones, the internet, online banking, and digital services confidently.

Gram Panchayat Digital Literacy Program:

This program trains people in villages, through Gram Panchayats, to learn basic digital skills. It helps citizens use computers, smartphones, online services, and digital payments to improve daily life and local governance.

Digital Literacy Initiatives:

Digital literacy programmes aim to equip citizens with essential skills required to access and effectively use digital devices, online services, and emerging technologies. Digital literacy initiatives focus on equipping citizens with essential skills to access and effectively use digital devices, online platforms, and emerging technologies. These programmes enable individuals to participate in digital services, improve employment opportunities, and support inclusion in a technology-driven society (Kaur & Rampal, 2020).

National Digital Literacy Mission (NDLM)

The National Digital Literacy Mission is a government initiative that aims to equip citizens with basic computer and internet skills. It primarily targets individuals who have limited exposure to digital technologies, enabling them to perform essential online tasks such as accessing information and using digital services (MeitY, 2014).

DISHA – Digital Saksharta Abhiyan:

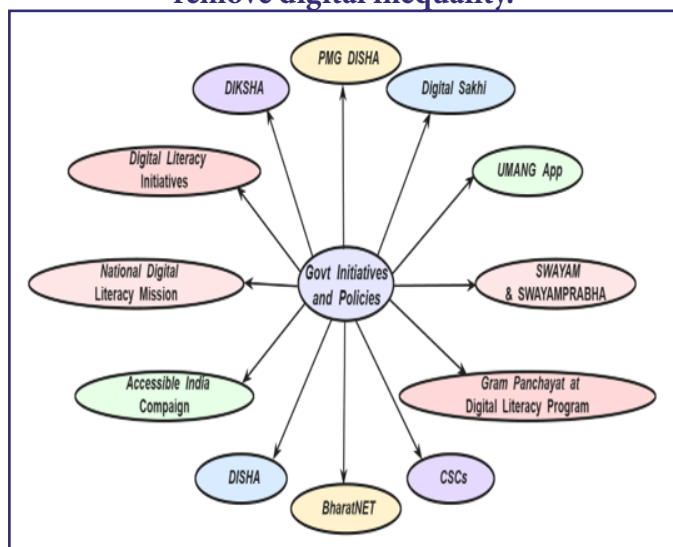
DISHA is a large-scale digital learning programme designed to provide digital education to disadvantaged and marginalized communities. Its purpose is to empower people to use ICT tools for everyday needs, including digital payments, online communication, and accessing government services (MeitY, 2015).

DIKSHA (Digital Infrastructure for Knowledge Sharing)

It is a national digital learning platform launched by the Government of India to support school education. It provides teachers and students with access to e-content, interactive learning materials,

training modules, and teaching resources through mobile apps and online portals. The platform aims to improve learning outcomes and promote digital education across the country.

Fig. 3: Various Govt initiatives and policies to remove digital inequality.



SWAYAM & SWAYAM PRABHA

SWAYAM (Study Webs of Active-Learning for Young Aspiring Minds)

It is a national online learning platform that offers free Massive Open Online Courses (MOOCs) for school, college, and university students, as well as for skill development.

SWAYAM PRABHA

It is a group of 24x7 free educational television channels that broadcast high-quality learning content for students who do not have reliable internet access. These platforms aim to provide inclusive and equitable education for all learners.

UMANG App (Unified Mobile Application for New-Age Governance)

It is a government mobile application that provides access to various e-government services, such as Aadhaar, PAN, DigiLocker, bill payments, and public welfare schemes, all within one digital platform. It makes public services easier, faster, and more accessible for citizens.

Accessible India Campaign:

A national initiative to make government services, digital platforms, and public spaces accessible for

persons with disabilities, helping them participate fully in digital activities.

NDCP (National Digital Communications Policy)

It is a government policy that aims to improve internet connectivity and make digital communication affordable and accessible to all citizens.

BharatNet

A major project to provide high-speed broadband in rural areas, connecting villages to digital services and reducing the rural-urban digital gap.

CONCLUSION

The review highlights that technology has become an essential component of contemporary education, yet its effective integration largely depends on the attitudes and beliefs of the people. There exist three levels of digital inequality among people in India. The first level of inequality is due to access, the second level of inequality arises due to skill and usage, while the third level of inequality arises due to outcome. In India, digital inequality remains a persistent challenge shaped by socioeconomic, gender, and rural–urban divides. Although government initiatives such as Digital India, BharatNet, PMGDISHA, CSCs, DIKSHA, and SWAYAM have contributed to expanding digital infrastructure and literacy, gaps still exist in practical usage and meaningful educational outcomes. These programmes and initiatives taken by govt help in improving digital skills and removing digital inequality.

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