EXPLORING DIGITAL LITERACY AMONG TEACHERS: A DESCRIPTIVE ANALYSIS WITHIN THE NEP 2020 FRAMEWORK

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Introduction

Exploring digital literacy among teachers within the framework of the National Education Policy (NEP) 2020 is crucial for understanding how effectively educators are adapting to technological advancements and integrating them into their teaching practices. Digital literacy is an essential competency in today's technology-driven world, encompassing a broad range of skills that enable individuals to engage with digital tools and resources effectively. It goes beyond mere technical proficiency with devices like computers, smartphones, and tablets, extending into the ability to critically navigate, evaluate, and create digital content. At its core, digital literacy involves understanding how to access and manage information online, discerning credible sources from unreliable ones, and using digital platforms for effective communication and collaboration (Eshet, (2012). Digital literacy, defined as the ability to effectively and critically navigate, evaluate, and create information using a range of digital technologies, is increasingly recognized as a fundamental skill for teachers (Jenkins, 2009).

Despite the clear directive from NEP 2020, there remains a significant variance in digital literacy levels among teachers, influenced by factors such as geographical location, access to resources, and prior exposure to technology (Harris & Hofer, 2009). For instance, rural and under-resourced schools often face substantial barriers to accessing and utilizing digital tools, which impacts teachers' ability to integrate technology effectively into their teaching practices (Nugroho & Budiarto, 2020). Furthermore, research indicates that while many teachers recognize the importance of digital literacy, they often lack the necessary skills and confidence to implement these tools in their classrooms (Ertmer & Ottenbreit-Leftwich, 2010). Moreover, digital literacy empowers people to participate in the digital economy, engage with social media responsibly, and contribute to online communities. As the digital landscape continues to evolve, the importance of digital literacy grows, making it a critical component of education and lifelong learning. Without these skills, individuals may struggle to fully participate in society, as digital literacy is increasingly linked to opportunities for

personal and professional development, civic engagement, and social inclusion (Buckingham, 2015). Professional development programs play a pivotal role in enhancing teachers' digital literacy. However, the effectiveness of these programs varies widely. Many training initiatives focus on basic technological skills rather than the pedagogical integration of these tools, leaving a gap between technological proficiency and practical application in teaching (Gulbahar, 2008).

NEP 2020 underscores the need for comprehensive training programs that not only build technical skills but also demonstrate how technology can be seamlessly integrated into the curriculum to support student learning (Ministry of Education, 2020). To address these challenges, several recommendations emerge. First, there is a need for targeted professional development that aligns with the specific technological needs and contexts of different educational settings. This could involve creating customized training modules that cater to varying levels of digital literacy and providing ongoing support to help teachers apply these skills in their teaching practices (Brinkerhoff, 2006). Additionally, increasing access to digital resources and infrastructure in under-resourced areas is essential for ensuring that all teachers can benefit from digital literacy initiatives (Zhao & Frank, 2003). while NEP 2020 provides a robust framework for enhancing digital literacy among teachers, significant challenges remain. Addressing these challenges through tailored professional development, improved access to resources, and support systems can help bridge the digital divide and ensure that all educators are equipped to leverage technology effectively in their teaching (Hobbs, (2010). Future research should focus on evaluating the impact of specific digital tools and training programs on teaching effectiveness and student outcomes to refine and enhance digital literacy initiatives (Hew & Brush, 2007).

Related review

Aluko and Ooko, (2022) studied on involving 840 teachers examined their experiences with digital literacy, uncovering significant gaps between the expectations placed on teachers and the realities they face. Despite these challenges, the findings highlighted a strong eagerness among teachers to engage in and enhance their digital literacy skills.

Kosdak, Koca and Kaya (2022) conducted a study on assess the digital literacy levels of 543 Social Studies teachers working in secondary schools across Turkey, utilizing an explanatory sequential design, a mixed-method approach. The findings revealed that the teachers perceive their own digital literacy skills to be below the level of today's Z generation.

Ariastya et al. (2023) examined whether significant differences exist in teachers' digital literacy abilities based on gender, socioeconomic status, and age across different generations. The study surveyed 200 volunteer teachers from 50 elementary and junior high schools in Singkawang City. The results revealed that) there was no significant difference in digital literacy skills based on gender and locale-wise.

Cosby (2023) examined the digital literacy and self-efficacy of 185 Australian Technology Mandatory teachers who participated in a one-day workshop. The findings indicated that while teachers possessed reasonable basic digital literacy, they lacked confidence in conducting more detailed analytics. Additionally, the study suggested that a teacher's digital literacy might influence their perception of their students' skills.

Olajumoke, Timileyin, and Taiwo (2023) evaluated the digital literacy levels of 200 science teachers at Junior Secondary Schools in Ibadan, Oyo State, Nigeria. The results revealed that 82% of respondents had fewer than 5 computers equipped with digital tools, while 18% had more than 5. The science teachers demonstrated basic digital literacy skills, with the highest proficiency in internet usage and the lowest proficiency in basic computer repairs and maintenance.

Korkmaz and Akçay (2023) assessed the perceptions of digital literacy proficiency among 733 primary school teachers. The results indicated that the teachers perceive themselves as highly proficient in various areas of digital literacy and feel they have a strong command of these competencies. Significant differences were observed in the digital literacy levels of the teachers based on factors such as age, gender, educational status, professional seniority, ownership of a personal computer, constant internet access, the technologies/practices used in education, and their exposure to technological education.

Haeroni et al. (2023) analyzed the impact of digital literacy on students' reading interests. The population consisted of all 6th-semester students, with a purposive sampling technique selecting 44 participants. The results demonstrated that digital literacy had a significant and positive influence on students' reading interests.

Zhang et al. (2023) investigated the relationship between different dimensions of digital literacy competence, digital literacy practices in teaching, and teacher identity among 910 pre-service teachers in China. The findings highlighted the importance of enhancing digital literacy competence and integrating digital technology as pedagogical tools. These efforts are crucial in helping pre-service teachers bridge the gap between their personal use of technology and their professional teacher identity to digital literacy.

Ayu et al. (2024) assessed the digital literacy levels of 158 pre-service teachers at a public university in Bali, Indonesia. The study found that most pre-service teachers reported high levels of digital literacy across all areas. These findings are valuable for reflecting on the current state of digital literacy among pre-service teachers and can inform the institution's regular curriculum reviews or training programs.

Fazis, Safrizal, and Yulia (2024) measured the digital literacy skills of 73 elementary school teachers in Tanah Datar regency. The results indicated that the teachers' skills in media literacy, information literacy, and technology literacy were generally low. Specifically, the average achievement scores were 2.41 for teachers' age and 2.43 for years of service, reflecting a need for improvement in digital literacy across these dimensions.

Pizarro et al. (2024) explored the digital literacy of public elementary school teachers (N=225) in four core schools in Bataan's second congressional district, Philippines. The findings revealed that no significant association was found between teachers' characteristics (such as age and sex) and their digital literacy. However, a substantial relationship was discovered between teachers' digital literacy and their overall performance, suggesting that higher digital literacy is linked to better performance outcomes.

Significance of the study

As NEP 2020 prioritizes the integration of technology in education, understanding and enhancing digital literacy among teachers is crucial for realizing this vision. Teachers who are adept in digital skills can effectively use educational technologies to create more engaging and interactive learning experiences, thereby improving student engagement and learning outcomes (Hew & Brush, 2007). The effective use of digital tools enables educators to personalize learning, access a broader range of resources, and employ innovative teaching strategies, which are aligned with the goals of NEP 2020 to foster a more inclusive and dynamic educational environment (Ministry of Education, 2020). Additionally, addressing digital literacy is vital for bridging the digital divide, particularly in regions with limited access to technology. Disparities in digital skills among teachers can exacerbate educational inequalities, making it essential to identify and address these gaps to ensure equitable access to quality education for all students (Nugroho & Budiarto, 2020). This study's findings can inform targeted professional development programs, equipping teachers with the necessary skills and confidence to integrate technology effectively into their teaching practices (Ertmer & Ottenbreit-Leftwich, 2010).

Moreover, by fostering a culture of digital innovation, teachers can contribute to the broader educational reform envisioned by NEP 2020, encouraging continuous improvement and adaptation to emerging technologies (Jenkins, 2009). The insights gained from this research can guide policymakers in developing evidence-based strategies to support digital literacy initiatives, ensuring that educational policies and practices are aligned with the needs of the modern classroom and the aspirations of NEP 2020 (Gulbahar, 2008). Thus, this study is instrumental in advancing our understanding of digital literacy among teachers and essential for shaping effective educational policies and practices in the context of a rapidly evolving digital landscape.

Objective of the study

- To study the locale-wise differences in digital literacy among prospective teachers.

Hypotheses of the study

- There will be no significant locale-wise differences in digital literacy among prospective teachers.

Research Method

This paper is based on the descriptive research method which has undoubtedly been the most commonly used method of education.

Research Tools

Digital literacy questionnaire prepared by Singh (2019). It contains 39 simple questions and 5 dimensions viz., Participating and Understanding of digital practices, Access and integrate information, Critically evaluate information, online interaction and online tools, Manage and communicate information, Collaborate and share digital content. The reliability of the scale is 0.85.

Sample

The study's respective sample was 260 elementary teacher trainees affiliated with Punjab University, Chandigarh. The researcher used a stratified random sampling technique to collect the sample from the population.

	Group	N	Total
Gender	Urban	138	260
	Rural	122	

Statistical techniques to be used

The researcher used a t-test as a statistical technique in this study.

Results

Locale-wise differences in digital literacy among prospective elementary teacher trainees.

To study the locale-wise differences in digital literacy and its dimensions (Participating and Understanding of digital practices, Access and integrate information, Critically evaluate information, online interaction and online tools, Manage and communicate information, Collaborate and share digital content) among prospective elementary teacher trainees. The Mean, SDs along with t-tests were employed.

Table I: Locale-wise differences in digital literacy among prospective elementary teacher trainees.

Sr. No	Digital Literacy Dimensions	Group	N	Mean	SD	t-value
1.	Participating and Understanding of digital practices	Urban	138	9.82	1.54	0.89 NS
		Rural	122	8.98	1.62	
2.	Access and integrate information	Urban	138	7.89	1.41	2.52*
		Rural	122	6.28	1.52	
3.	Critically evaluate information, online interaction and online tools	Urban	138	4.52	1.47	1.56NS
		Rural	122	3.68	1.52	
4.	Manage and communicate information	Urban	138	7.04	1.62	1.62NS
		Rural	122	6.74	1.47	
5.		Urban	138	4.02	1.23	0.98NS

	Collaborate and share digital content	Rural	122	3.89	1.20	
6.	Total Digital Literacy	Urban	138	31.89	5.89	1.73[NS]
		Rural	122	30.06	4.90	

Significant at 0.05 level, df=258.

The table presents a comparison of digital literacy between urban and rural prospective elementary teacher trainees across several dimensions. In the dimension of "Participating and Understanding of Digital Practices," urban trainees scored slightly higher (Mean = 9.82) compared to rural trainees (Mean = 8.98), but this difference is not statistically significant, as indicated by the t-value of 0.89. A notable difference is observed in the "Access and Integrate Information" dimension, where urban trainees scored significantly higher (Mean = 7.89) than their rural counterparts (Mean = 6.28), with a t-value of 2.52, indicating a statistically significant difference at the 0.05 level.

In the "Critically Evaluate Information, Online Interaction, and Online Tools" dimension, urban trainees again scored higher (Mean = 4.52) compared to rural trainees (Mean = 3.68), but the t-value of 1.56 shows that this difference is not significant. Similarly, for "Manage and Communicate Information," urban trainees had a slightly higher mean score (Mean = 7.04) compared to rural trainees (Mean = 6.74), but the t-value of 1.62 indicates no significant difference between the groups. In the final dimension, "Collaborate and Share Digital Content," urban trainees had a mean score of 4.02, slightly higher than the rural trainees' mean of 3.89, but the t-value of 0.98 shows this difference is not statistically significant.

Overall, while urban trainees generally scored higher across all dimensions of digital literacy, the only dimension with a statistically significant difference was in accessing and integrating information, suggesting that urban trainees have a clear advantage in this area. However, for other dimensions, the differences between urban and rural trainees are minimal and not statistically significant.

Conclusion and discussion

The analysis of locale-wise differences in digital literacy among prospective elementary teacher trainees provides important insights, particularly in the context of India's National Education Policy (NEP) 2020, which mainly emphasizes the integration of digital literacy skills

developed in the education field. The findings show that urban trainees generally scored higher across all dimensions of digital literacy, with a statistically significant difference in the dimension of "Access and Integrate Information," where urban trainees demonstrated a clear advantage. This suggests that urban environments, with better access to technology and internet infrastructure, may offer trainees more opportunities to develop certain digital literacy skills. However, the lack of significant differences in other dimensions, such as "Participating and Understanding of Digital Practices," "Critically Evaluating Information," "Managing and Communicating Information," and "Collaborating and Sharing Digital Content" dimension indicates that when basic facilities are tailored to their needs and preferences, urban and rural elementary teacher trainees exhibit comparable levels of digital literacy.

These results resonate with the objectives of NEP 2020, which aims to bridge the digital divide and ensure that all students, regardless of their location, have access to high-quality digital resources and training. The policy underscores the importance of digital literacy as a foundational skill in the 21st century, advocating for the use of technology in education to enhance learning outcomes and prepare students for the digital economy. The findings suggest that while urban trainees may have better access to digital tools, the overall parity in digital literacy across locales indicates that the policy's emphasis on equitable access to digital education is well-founded.

Moreover, the minimal differences in most dimensions of digital literacy suggest that, with the right interventions, the gap between urban and rural trainees can be further narrowed. NEP 2020's focus on teacher training and professional development, particularly in digital literacy, is critical in this regard. By equipping teachers in both urban and rural areas with the necessary digital skills, the policy aims to ensure that all students receive a uniform quality of education, regardless of their geographical location.

In conclusion, the study highlights the potential of NEP 2020 to address the disparities in digital literacy and underscores the importance of targeted digital literacy programs in rural areas to bridge specific gaps. The findings align with previous research indicating that access alone does not guarantee higher digital literacy (Katz & Rice, 2002; Dijk, 2005), and emphasize the need for a holistic approach to digital literacy education. As NEP 2020 continues to be implemented, ongoing research will be essential to monitor progress and ensure that all teacher trainees are equally prepared to navigate and leverage digital tools in their professional practice, thereby fulfilling the policy's vision of an inclusive and equitable education system.

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