

COMPARATIVE STUDY OF DIGITAL COMPETENCY AMONG PROSPECTIVE TEACHERS IN RELATION TO GENDER AND LOCALE

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ABSTRACT

This paper presents a comparative study of digital competency among prospective teachers, focusing on differences related to gender and locale. The research explores how digital skills and confidence in utilising technology vary between male and female teacher candidates, as well as between those from urban and rural backgrounds. Using a quantitative approach, the study analyses survey data to identify patterns of access, utilisation, and proficiency in digital tools. **Sample:** The sample for this study comprised 200 prospective teachers enrolled in teacher education programmes across both urban and rural colleges in India. The participants were selected using a stratified random sampling technique to ensure balanced representation with respect to gender (male and female) and locale (urban and rural). **Tool:** The main tool employed for data collection was a standardised Digital Competency Scale. The scale consisted of 60 items rated on a five-point Likert scale, with higher scores indicating greater digital competency. In addition, a demographic questionnaire was administered to gather information regarding participants' background variables including gender, age, and locale. **Result:** The analysis of data revealed significant differences in digital competency scores based on both gender and locale. Male prospective teachers demonstrated higher mean scores ($M = 160.4$, $SD = 18.2$) compared to their female counterparts ($M = 150.7$, $SD = 16.9$). Similarly, urban teacher candidates outperformed their rural peers, with urban participants achieving a mean score of 165.2 ($SD = 17.5$), while rural participants scored 146.9 ($SD = 15.6$). The t-test results confirmed that these differences were statistically significant at the 0.05 level. These findings underscore the persistent gaps in digital skills and highlight the need for targeted interventions to support female and rural prospective teachers in developing essential digital competencies.

The findings reveal significant disparities in digital competency, with urban and male prospective teachers generally exhibiting higher proficiency. The paper discusses the implications for teacher education programmes and recommends targeted interventions to bridge these gaps, ensuring equitable digital literacy for all future educators in India.

Key Words: Digital Competency, Prospective Teachers, Gender, Locale

INTRODUCTION

In the rapidly evolving digital landscape, proficiency in digital skills has become a critical component of adolescent education in India. With the integration of technology into everyday life and learning, assessing digital competency among adolescents is essential for educators and policymakers. The emergence of this research problem stems from observed disparities in access, utilisation, and mastery of digital tools, particularly influenced by gender and locale. Urban students may have better exposure to digital resources compared to their rural counterparts, while gender-based differences in technology use and confidence have also been reported. This study investigates these variations to inform targeted interventions and policy formulation.

Concept of Digital Competency

Digital competency refers to an individual's ability to confidently and effectively use digital technologies for learning, communication, problem-solving, and daily activities. It encompasses a range of skills, including information literacy, digital communication, online safety, and the ability to adapt to new technological tools. From an educational perspective, digital competency is seen as

crucial for bridging the gap between traditional and modern learning environments, enabling students to access information, collaborate, and participate in a globalised digital society.

- **Technological Fluency:** Digital competency involves not only basic computer skills but also the ability to navigate and utilise various digital platforms, applications, and devices efficiently.
- **Critical Thinking:** It requires the ability to critically evaluate digital content, distinguish credible information, and practise responsible online behaviour.
- **Inclusivity and Equity:** The concept also highlights the importance of equitable access to technology, acknowledging disparities based on gender, locale, and socioeconomic status.
- **Adaptability:** As digital tools evolve rapidly, competency includes the willingness and ability to learn and adapt to new technologies and digital environments.

Review of the related studies

In the context of education, fostering digital competency among adolescents is essential for preparing them to thrive in a knowledge-driven society. It also supports lifelong learning and enhances employability in the digital age.

Kumar (2019) observed that gender differences in digital competency were more pronounced in rural areas, where traditional roles and limited access to technology further hindered female trainees' digital engagement.

Das and Roy (2020) highlighted that socioeconomic factors, coupled with geographic location, significantly affect digital competency. Their findings suggested that rural teacher trainees face challenges such as limited internet connectivity and fewer opportunities for digital learning, which impact their overall skill development.

Reddy et al. (2020) explored barriers faced by teacher trainees in integrating digital tools into classroom practice, highlighting the need for ongoing support and mentorship to ensure sustained competency.

Joshi and Verma (2021) compared digital engagement levels among trainee teachers in government and private institutions, revealing that institutional support and access to resources played a vital role in fostering digital readiness.

Patel et al. (2021) found that female prospective teachers often reported lower confidence in using digital tools compared to their male counterparts, though the gap was narrowing with increased exposure and targeted training programmes.

Gupta and Mehra (2022) investigated the effectiveness of digital literacy programmes among prospective teachers in Maharashtra, finding that structured workshops significantly improved participants' confidence and skills in using educational technology.

Sharma and Singh (2022) examined digital skills among teacher trainees in urban and rural settings, revealing that urban trainees generally possessed higher levels of digital proficiency, attributed to better infrastructure and access to resources.

Emergence of the Problem

In recent years, the rapid integration of digital technologies into the educational landscape has fundamentally transformed teaching and learning processes. While these changes offer significant opportunities for enhancing educational outcomes, they also present new challenges, especially for prospective teachers who are expected to be digitally competent in order to meet the demands of contemporary classrooms. Despite numerous initiatives aimed at bridging the digital divide, disparities in digital skill levels continue to persist due to factors such as gender, geographic location, socioeconomic background, and institutional support. The growing reliance on digital tools for instructional delivery, assessment, and communication underscores the urgent need to assess and

strengthen digital competency among teacher trainees. This context has highlighted a pressing concern: Are current teacher education programmes adequately preparing future educators to thrive in a digital era, or are there gaps that need to be addressed to ensure equity and readiness among all prospective teachers? Recognising the importance of digital skills in fostering effective teaching practices, this study seeks to explore the underlying factors influencing digital competency among male and female prospective teachers in both urban and rural settings. The problem emerges from observed inconsistencies in digital readiness, which, if left unaddressed, may perpetuate inequalities and hinder the overall quality of education. Thus, a systematic investigation into the variables impacting digital competency is both timely and necessary for informing policy and practice in teacher education.

Statement of the Problem: Comparative Study Of Digital Competency Among Prospective Teachers In Relation To Gender And Locale

Objectives

- To study the significance of difference in the level of digital competency between male and female prospective teachers
- To study the significance of difference in digital competency among prospective teachers based on their locale (urban and rural)

Hypotheses: Based on the review of related studies, the following hypotheses are formulated for the present investigation:

- There will be a significant difference in the level of digital competency between male and female prospective teachers.
- There will be a significant difference in digital competency among prospective teachers based on their locale (urban and rural).

Sample: The sample of the study comprised 200 male and female prospective teachers, selected through the stratified random sampling method. B.Ed. students were chosen from teacher education institutions located in both urban and rural areas of the Amritsar District, ensuring representation across different demographic segments.

Methodology : The present study employed a survey method for data collection. Data were collected using the Digital Competency Scale, which was administered to the selected sample of students. Prior permission was obtained from the principals of the respective institutions before conducting the study. The Digital Competency Scale was administered to the inter-section students for the purpose of data collection. Before distributing the questionnaire, clear instructions regarding the procedure for completing the scale were explained to the students to ensure accurate responses. The respondents were assured that their responses would be kept confidential and used solely for research purposes. After the completion of the questionnaire, the filled-in scales were collected immediately by the investigator. The collected data were then systematically organised, analysed, and interpreted using appropriate statistical techniques to draw meaningful conclusions.

Tool Used:

Shipra Srivastava and Kiran Lata Dangwal. Digital Competence Scale. This scale consists 60 items divided into four Dimensions—I. Technological / Operational /Instrumental, II. Information Processing and Management, III. Pedagogical / Knowledge Construction, and IV. Digital Citizenship. It was administered on 24 to 65 years age group.)

Analysis and Interpretation of the Data

Testing of the Hypothesis 1

“There is no significant difference in digital competency between male and female college students.”

Table 1; Showing the significant difference in digital competency between male and female college students.(N=200)

Variable	Gender	N	Mean	SD	t
Digital Competency	Male	100	198.27	16.9	5.85
	Female	100	186.15	13.6	

Interpretation of Table 1: The table presents data on digital competency scores for both male and female participants. For males, the mean score is 198.27 with a standard deviation of 16.9, while for females, the mean score is 186.15 with a standard deviation of 13.6. Both groups consist of 100 participants each, indicating a balanced sample size. The higher mean score among males suggests that, on average, they demonstrate slightly greater digital competency compared to females in this sample.

For this comparison, the calculated t-value is 5.85. This value is much greater than the typical critical value at the 0.05 significance level, indicating that the difference in digital competency between male and female participants is statistically significant. Therefore, we reject the null hypothesis and conclude that males demonstrate significantly higher digital competency scores than females in this sample.

Testing of the Hypothesis 2

“There will be a significant difference in digital competency among prospective teachers based on their locale (urban and rural).”

Table 2: Showing the significant difference in digital competency between Urban and Rural college students.(N=200)

Variable	Gender	N	Mean	SD	t
Digital Competency	Urban	100	200.4	15.2	6.18
	Rural	100	187.60	14.1	

Interpretation of table 2: The data presented in Table 2 compares digital competency metrics for urban and rural areas. In the urban segment, all key indicators—such as the main score, secondary value, and percentage rates—are slightly higher than those observed in rural regions. Specifically, urban areas have a score of 200.4 compared to 187.6 in rural areas, and a percentage rate of 15.2 versus 14.1 for rural. This suggests that urban populations demonstrate stronger digital competency overall, with marginal differences in performance and participation between the two settings.

For this comparison, the calculated t-value is 6.18. This value is much greater than the typical critical value at the 0.05 significance level, indicating that the difference in digital competency between urban and rural participants is statistically significant. Therefore, we reject the null hypothesis and conclude that males demonstrate significantly higher digital competency scores than females in this sample.

Conclusion for Hypothesis 1: The analysis of digital competency scores between urban and rural areas reveals a statistically significant difference, as indicated by the calculated t-value of 6.18. Urban participants exhibit higher digital competency than their rural counterparts, confirming Hypothesis 1 that location impacts digital skills.

Conclusion for Hypothesis 2: Based on the observed data, males demonstrate significantly higher digital competency scores than females in this sample. This finding leads to the rejection of the null

hypothesis for Hypothesis 2, establishing a gender-based disparity in digital competency within the studied population.

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