CONTEMPORARY SOCIAL SCIENCES

PEER REVIEWED, INDEXED & REFEREED QUARTERLY INTERNATIONAL JOURNAL

ISSN 0302-9298

https://www.jndmeerut.org

[Vol. 34, No. 3 (July-September), 2025]

https://doi.org/10.62047/CSS.2025.09.30.154

Digital Competence in Pre-Service Teachers: A Comparative Study

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Abstract

In the 21st century, digital competence has become an essential skill for educators, particularly in the context of teacher education. Pre-service teachers are expected to be proficient in integrating digital tools and technologies into pedagogical practices. This study aims to analyze the level of digital competence among B.Ed. trainees in Lakhimpur- Kheri district, Uttar Pradesh, with a comparative focus on trainees from government and self-financed colleges. A survey method was employed, using Digital Competence Assessment Questionnaire constructed by Shipra Srivastava and Kiran Lata Dangwal based on four dimensions viz. Technological/Operational/Instrumentor, Information Processing and Management, Pedagogical/Knowledge Construction and Digital Citizenship. A sample of 102 B.Ed. trainees was selected through stratified random sampling from both government and self-financed institutions across the district. The data were analyzed using descriptive and inferential statistics to identify differences in digital competence levels across institutional types and demographic variables. The findings reveal significant disparities in digital competence between trainees of government and self-financed colleges. While most trainees demonstrated basic ICT literacy, the pre service teachers from Government College have scored better than that of Self Finance College. The study highlights the urgent need for targeted digital literacy programs within B.Ed. curricula, especially in rural and under-resourced colleges. This research contributes to the understanding of digital preparedness among future educators and underscores the need for policy reforms to bridge the digital divide in teacher education across districts like Lakhimpur Kheri.

Keywords

Digital competence, B.Ed. students, Government college, Self-finance college.

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1. Introduction

Today's age is age of technology. Each and every field is in grip of technology. It is as much challenging as much beneficial for us. In this technological era to be efficient and skilled in any profession is not only satisfactory but everyone needs to be digitally competent too. After the Pandemic Covid-19, there is a tremendous transformation in field of education whether it is school education or higher education. To cope up with this new normal situation we need to be upskilled and make ourselves digitally competent. The concept of digital competence can be defined as a set of abilities to use technology to optimize our daily lives effectively (Ferrari, 2017). It is understood as, "the confident, critical and responsible use of the technologies from the society of information for work, entertainment and education" (European Commission, 2018). There are eight key competences have been identified for life long learning and digital competence is one of them (European Commission, 2006). United States Department (1996) defined digital competence as, "having computer skills and abilities to use computers and other technology to improve learning, productivity and performance.

Digital competence has been frequently investigated and discussed by academic scholars and in policy documents. Now when the teaching and learning environment has indeed changed, the use of ICT has penetrated into the study process and is closely linked to the academic performance of teachers and students alike. In today's society, new generations are required to have an advanced level of digital competence, as they are in continuous transformation, the learning habits of students have changed, their needs and circumstances are no longer the same as ten years ago, that is why it is essential that schools can learn how to provide an educational, didactic and safe response to the needs of students. To achieve this, it requires a teacher with an updated training and possessing a degree of digital competence to undertake the teaching- learning process of students and to promote the acquisition of key competencies in students.

The accelerated growth of digital technologies has revolutionized the educational landscape to its very foundation. Now, digital literacy is not only a plus point but a compulsory necessity for teachers at all levels. As aspiring teachers, B.Ed. trainees need to be proficient in the skills required to work and manage digital tools within teaching-learning contexts. In the Indian scenario, especially among the semi-urban and rural areas such as Lakhimpur Kheri district of Uttar Pradesh, inclusion of digital literacy in teacher training is a task and a requirement.

Lakhimpur Kheri is one of the largest districts in Uttar Pradesh and is home to a variety of teacher education institutions, both government and self-financed (private) B.Ed. colleges. Even so, differences in resources, infrastructure, faculty orientation, and student exposure to technology frequently result in gaps in digital skill acquisition. With growing pressure towards digital learning platforms, online testing, and virtual classrooms, the readiness of pre-service teachers in such districts becomes an issue of paramount concern.

The purpose of this study is to carry out a district-level assessment of digital competence among Lakhimpur Kheri B.Ed. trainees. The research aims to determine the prevailing status of digital skills, detect gaps, and recommend improvement measures through comparative analysis of government and self-financed college trainees. The study is designed across different dimensions of digital competence.

The significance of this study is its potential to influence teacher education policies and institutional practices. By dealing with digital competence at the ground level of teacher education, this research helps in constructing a digitally empowered teaching force that can respond to the changing educational environment in India.

2. Objectives

The main objective of this study is to compare digital competence of B.Ed. students of Government Colleges and Self Finance Colleges of Lakhimpur-Kheri district area of Uttar Pradesh..

3. Hypothesis

There will be no significant difference in digital competence of B.Ed students of Government colleges and Self Finance Colleges of Lakhimpur- kheri district.

4. Research Methodology

This study is descriptive in nature. Survey method has been used in the study.

4·1 Population and Sample

All pre service teachers who are enrolled in B.Ed. Course in Government colleges and Self-finance colleges of Lakhimpur-kheri district were the population of the study. Sampling has been completed in two phases—in phase one government and one self finance college has been selected through random sampling method. In phase two through random sampling 102 pre service teachers have been selected as sample of the study.

4·2 Tool of the Study

In this study, investigators have used a tool to assess digital competence which was constructed by Shipra Srivastava and Kiran Lata Dangwal. It consists of 60 items (questions), divided into 4 dimensions viz. Technological/operational/Instrumental, Information Processing and Management, Pedagogical/ knowledge construction and Digital citizenship.

4·3 Procedure

After sampling, selected pre service teachers were provided tool of digital competence to fill accurately along with personal information. Their scores have been recorded through manual.

4·4 Statistical Analysis

Mean, Standard deviation and t-test has been used to analyze the data of the study.

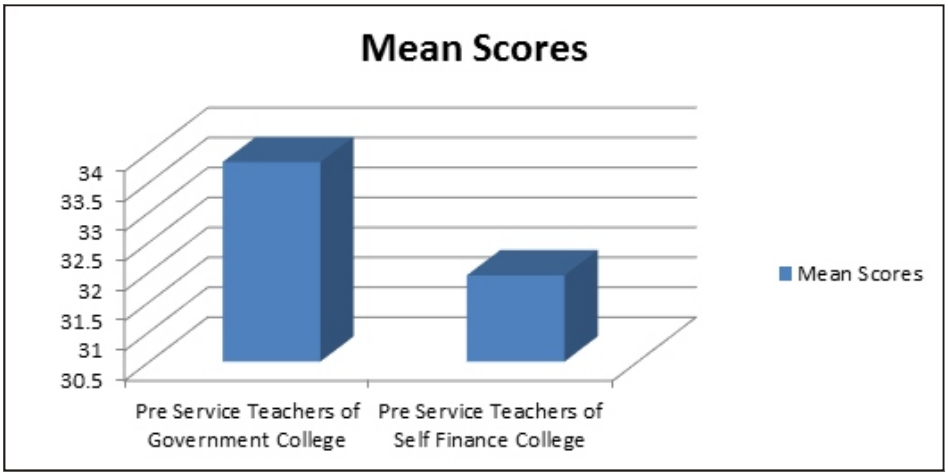
5. Results and Discussion

Results of the study are presented in the following table:

Table-1: Comparison of Digital Competence of B.Ed Students of Government and Self Finance Colleges of Lakhimpur-Kheri district

Groups	Number	Mean	SD	t-value	Significance Level
Pre Service Teachers of Government College	50	33.836	5.080	2.03	0.05
Pre Service Teachers of Self Finance College	52	31.942	4.244		

Preceding table indicates the mean score and SD score for Government and Self finance colleges of B.Ed. students in Digital competence. Mean score and SD value of Government college were 33.837 and 5.0803 respectively. Same Value for the Self finance college were 31.942 and 4.2445 respectively. t-value in the table is 2.03 which is significant to 0.05level.Thus the hypothesis i.e there is no significant difference in digital competence of B.Ed. students of Government and Self- finance colleges of Lakhimpur- kheri district has been rejected. This can be represented graphically as below:



The statistical result indicates difference in levels of digital competency between government and self-financed college pre-service teachers in Lakhimpur Kheri district. Students from government colleges performed better compared to students from self-financed colleges, as reflected in a greater mean value (33.836 vs. 31.942) and a statistically significant t-value of 2.03 ($p < 0.05$).

This result is in contrast to some prior presumptions and even to patterns observed in some urban studies, where private/self-funded institutions tend to have improved digital integration. In this rural setting, the outcome could be due to the government colleges' exposure to state-supported ICT programs, structured training schemes, or stronger support systems for academics. It also implies that qualified teachers and curriculum compliance in government colleges could help in enhancing digital skill acquisition.

By contrast, self-financed colleges may have uneven quality in digital resources, infrastructures, and teacher training, leading to lower mean performance among their trainees. The relatively low

standard deviation in the self-financed group (SD = 4.244) suggests higher uniformity in their scores, though at a lower mean level.

This evidence-backed understanding supports the imperative of focused ICT training and curriculum fortification in self-financed colleges. It also indicates that policy actions should not across-the-board assume private institutions are better prepared-particularly in semi-rural or rural areas like Lakhimpur Kheri.

6. Conclusion

The current study examined the digital competence of B.Ed. trainees in Lakhimpur Kheri district, drawing a comparison between students studying in government and self-financed colleges. The findings bring out the fact that despite pre-service teachers from both types of institutions having a basic level of digital competence, there are differences in their levels of proficiency.

Government college trainees showed a significant higher mean score in digital competence than their counterparts from self-financed colleges, with the difference being statistically significant at the 0.05 level. This result is indicative of the impact of institutional support, structured training, and access to government ICT schemes on the development of digital skills.

Yet, the overall competence levels are such that there remains scope for improvement in domain areas like digital content creation, cyber safety, and use of digital tools in pedagogy. The rural and semi-urban setting of Lakhimpur Kheri imposes further challenges like limited internet connectivity, poor digital infrastructure, and lack of trained staff, which further impede digital competence building.

Finally, the research highlights the urgent need to enhance digital education in B.Ed. courses so that prospective teachers can be equipped with a technologically integrated classroom. This will not only improve teaching-learning practices, but also prepare them to meet the demands of 21st-century learners. Narrowing the digital divide between institutions of varying categories is necessary to achieve equity and quality in teacher training. Emphasizing the importance of digital competence among pre-service teachers is now one of the starting points for ensuring the smooth process of the digitization of education (Tomczyk, 2024).

7. Educational Implications of the Study

The conclusions of this study have a number of key implications for teacher education, especially in rural and semi-urban settings such as Lakhimpur Kheri district. The most notable one is the clear distinction in digital competence among government and self-financed colleges' trainees. This highlights the imperative for revising the B.Ed. curriculum to include systematic digital competence modules. These modules must move beyond mere computer literacy to cover areas of digital pedagogy, online communication tools, content creation, and internet safety according to frameworks such as DigComp 2.1.

Additionally, colleges particularly self-funded institutions need to invest in the modernization of their digital infrastructure. Most do not have simple facilities such as adequately equipped computer laboratories, reliable internet connectivity, and interactive teaching aids. This needs to be addressed for ensuring level playing fields for learning across institutions. Another important area to focus on is faculty development. Teacher educators themselves should be digitally literate so that they can train the next generation of educators effectively. ICT training workshops and professional development activities conducted on a regular basis can keep faculty updated with current digital tools and pedagogy.

The research also points out the continuing digital divide existing between teacher education institutions in urban and rural areas. Spanning this gap will involve strategic intervention by the government in the form of funding, mobile ICT facilities, and access to the internet for learning. In addition, digital literacy must be acquired from school level, so that students pursuing B.Ed. courses already have basic ICT skills. Finally, digital literacy must be formally tested as part of teacher training programs in the form of practical exercises, digital portfolios, and project work. These steps will not only improve the readiness of pre-service teachers but also help develop a digitally empowered education system that caters to 21st-century learning demands.

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Article Received on August 29, 2025; Accepted on September 18, 2025