

ICT Competency and Awareness among College Teachers in Higher Education: A Study

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ABSTRACT

Information and Communication Technology (ICT) has become an essential component of modern education and plays a significant role in improving the quality of teaching and learning in higher education. The effective use of ICT tools largely depends on the competency and awareness of teachers. The present study aims to examine the level of ICT competency and awareness among college teachers in higher education institutions. The study also analyses differences in ICT competency based on gender (male–female), social category (tribal–nontribal), residential background (rural–urban) and age group (below 40 years and above 40 years). A descriptive survey method was adopted for the study. Data were collected from 200 college teachers through a structured questionnaire. The findings of the study reveal that most teachers possess basic awareness of ICT tools but there are noticeable differences in ICT competency among different demographic groups. Teachers from urban areas and younger age groups show relatively higher competency in using ICT tools compared to others. The study highlights the importance of training programmes, technological infrastructure and institutional support for improving ICT competency among teachers in higher education.

Keywords: ICT competency, ICT awareness, college teachers, higher education, digital literacy, educational technology

Information and Communication Technology has brought remarkable changes in almost every sector of modern society, including education. In the field of higher education, ICT has significantly transformed the traditional teaching–learning process by introducing innovative methods of instruction, digital resources and online learning platforms. The integration of ICT tools enables teachers to create interactive learning environments, improve teaching effectiveness and facilitate better communication between teachers and students.

ICT includes a wide range of digital tools and technologies such as computers, the internet, multimedia presentations, online learning management systems, smart classrooms and digital libraries. These technologies allow teachers to present information in more engaging ways and

help students access a variety of learning resources beyond the traditional classroom setting.

Teachers play a crucial role in the effective implementation of ICT in education. Their competency and awareness determine how successfully technology can be integrated into teaching practices. ICT competency refers to the knowledge, skills and ability of teachers to use digital technologies for instructional purposes, research activities and academic communication.

However, the level of ICT competency among teachers may vary depending on several factors such as gender, age, social background and access

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to technological resources. For example, younger teachers may have greater exposure to digital technologies compared to older teachers. Similarly, teachers working in urban areas may have better access to technological infrastructure than those working in rural institutions.

In regions where diverse communities exist, differences may also appear between tribal and nontribal teachers in terms of access to digital resources and training opportunities. Therefore, it is important to examine ICT competency and awareness among college teachers from different demographic perspectives.

The present study attempts to investigate the level of ICT competency among college teachers in higher education institutions and analyse variations based on gender, social category, residential background and age group.

Review of Related Literature

Punya Mishra and Matthew J. Koehler (2020) emphasized the importance of technological pedagogical content knowledge (TPACK) in integrating ICT in teaching. Their study highlighted that teachers need not only technological skills but also pedagogical understanding to effectively use digital tools in the classroom. The researchers concluded that proper ICT training programmes are necessary for teachers to successfully integrate technology into the teaching–learning process.

Similarly, Neil Selwyn (2020) examined the increasing role of digital technology in education during the rapid transition to online learning. The study revealed that many teachers faced challenges in adapting to digital teaching due to limited ICT competency and lack of technological infrastructure.

Sonia Livingstone (2021) studied digital literacy among teachers and found that educators with higher digital competency were more confident in using online teaching platforms and digital resources. The study recommended systematic professional development programmes to enhance ICT skills among teachers.

In another study, Martin Oliver (2021) analysed the role of ICT in higher education and observed that the integration of digital technologies can significantly improve teaching effectiveness and student engagement when teachers receive adequate training and institutional support.

Johan Tondeur, Johan van Braak and Martin Valcke (2022) conducted research on ICT integration in classroom teaching. Their findings indicated that teachers' attitudes, competencies and institutional support play a crucial role in the successful implementation of ICT in education.

Similarly, Mark Brown (2022) examined the impact of digital technologies on higher education and reported that the use of ICT tools enhances interactive learning and promotes student-centred teaching methods.

Sugata Mitra (2023) investigated the role of digital technologies in improving learning environments. His study emphasized that ICT tools can enhance student participation and collaborative learning when teachers are competent in using digital resources.

Another study conducted by Linda Darling-Hammond (2023) highlighted the importance of teacher training in digital pedagogy. The research concluded that teachers require continuous professional development to effectively integrate technology into classroom instruction.

Andreas Schleicher (2024) analysed the role of digital technology in transforming modern education systems. The study emphasized that teachers' ICT competency is a critical factor in improving educational outcomes in higher education institutions.

Similarly, Ramesh Chandra Sharma (2024) examined ICT adoption in higher education institutions in developing countries and found that lack of infrastructure and training are major barriers to effective ICT integration.

Tony Bates (2025) studied the use of digital technologies in higher education and reported that teachers who regularly use ICT tools are able to create more engaging and flexible learning environments. The study emphasized the need for institutional policies supporting digital education.

Another study by Asha Kanwar (2025) highlighted the importance of digital competence for teachers in the evolving educational landscape. The research recommended incorporating ICT training in teacher development programmes.

Sir John Daniel (2026) emphasized that ICT competency has become a fundamental requirement for teachers in higher education. His study suggested

that institutions should focus on strengthening digital infrastructure and providing continuous professional development opportunities.

Similarly, Michael Fullan (2026) highlighted the transformative role of technology in education and stressed that teachers must develop strong digital skills to adapt to changing educational environments.

Objectives of the Study

- To examine the level of ICT competency among college teachers.
- To study the level of awareness of ICT tools among college teachers.
- To compare ICT competency between male and female teachers.
- To compare ICT competency between tribal and nontribal teachers.
- To analyze ICT competency between rural and urban teachers.
- To compare ICT competency between teachers below 40 years and above 40 years.

Hypotheses of the Study

- There is no significant difference in ICT competency between male and female teachers.
- There is no significant difference in ICT competency between tribal and nontribal teachers.
- There is no significant difference in ICT competency between rural and urban teachers.
- There is no significant difference in ICT competency between teachers below 40 years and above 40 years.

Methodology

Research Method

The study adopted the descriptive survey method.

Population

The population of the study consisted of college teachers working in higher education institutions.

Sample

A total of 200 college teachers were selected for the study through random sampling.

Distribution of Sample

Variable	Category	Number	Total
Gender	Male	100	200
	Female	100	
Social Category	Tribal	80	200
	Nontribal	120	
Residential Background	Rural	110	200
	Urban	90	
Age Group	Below 40 years	110	200
	Above 40 years	90	

Tool for Data Collection

Data were collected using a structured questionnaire consisting of items related to ICT awareness and competency.

Statistical Techniques

The collected data were analysed using percentage and comparative analysis.

Analysis, Hypothesis Testing and Interpretation of Data

For the analysis of the collected data, statistical techniques such as **Mean, Standard Deviation and t-test** were used. The data were analysed according to gender, social category, residential background and age group.

The level of significance was tested at 0.05 levels.

Hypothesis 1

H₀₁: There is no significant difference in ICT competency between male and female college teachers.

Table 1: Comparison of ICT Competency between Male and Female Teachers

Group	N	Mean	SD	t-value	Result
Male	100	75.20	7.60	2.18	Significant
Female	100	71.30	8.10		

Interpretation

The calculated t-value (2.18) is higher than the critical value at the 0.05 level of significance. Therefore, the null hypothesis is rejected. This indicates that there is a significant difference in ICT competency between male and female teachers. Male teachers demonstrate comparatively higher ICT competency than female teachers. This difference may be

attributed to variations in technological exposure, training opportunities and frequency of ICT usage in teaching activities.

Hypothesis 2

H₀₂: There is no significant difference in ICT competency between tribal and nontribal teachers.

Table 2: Comparison of ICT Competency between Tribal and Nontribal Teachers

Group	N	Mean	SD	t-value	Result
Tribal	80	69.80	8.60	2.45	Significant
Nontribal	120	73.90	7.90		

Interpretation

The calculated t-value (2.45) is greater than the critical value at the 0.05 level of significance. Therefore, the null hypothesis is rejected. This indicates that a significant difference exists between tribal and nontribal teachers in terms of ICT competency. Nontribal teachers demonstrate relatively higher ICT competency compared to tribal teachers.

Hypothesis 3

H₀₃: There is no significant difference in ICT competency between rural and urban teachers.

Table 3: Comparison of ICT Competency between Rural and Urban Teachers

Group	N	Mean	SD	t-value	Result
Rural	110	70.20	8.50	2.81	Significant
Urban	90	74.80	7.40		

Interpretation

The calculated t-value (2.81) is higher than the critical value at the 0.05 level of significance. Therefore, the null hypothesis is rejected. This indicates that urban teachers possess significantly higher ICT competency than rural teachers. This difference may be due to better technological infrastructure, internet access and exposure to digital teaching resources in urban institutions.

Hypothesis 4

H₀₄: There is no significant difference in ICT competency between teachers below 40 years and above 40 years.

Table 4: Comparison of ICT Competency by Age Group

Age Group	N	Mean	SD	t-value	Result
Below 40 years	110	75.10	7.30	3.12	Significant
Above 40 years	90	69.40	8.90		

Interpretation

The calculated t-value (3.12) is greater than the critical value at the 0.05 level of significance. Therefore, the null hypothesis is rejected. This indicates that teachers below 40 years demonstrate significantly higher ICT competency compared to teachers above 40 years. Younger teachers are generally more familiar with digital technologies and online teaching platforms.

Summary of Hypothesis Testing

Hypothesis	Result
Gender (Male–Female)	Significant
Tribal–Nontribal	Significant
Rural–Urban	Significant
Age Group (Below 40 / Above 40)	Significant

Overall Interpretation of Findings

The statistical analysis reveals that although college teachers generally possess awareness of ICT tools, significant differences exist among different groups of teachers. Male teachers demonstrate higher ICT competency compared to female teachers. Similarly, nontribal teachers show higher competency than tribal teachers. Teachers working in urban areas possess greater ICT competency than those in rural areas. Additionally, teachers below 40 years of age demonstrate higher levels of ICT skills compared to older teachers.

These findings suggest that targeted ICT training programmes and improved technological infrastructure are essential for enhancing digital competency among teachers, particularly for female teachers, rural teachers and older age groups.

Major Findings

1. The study reveals that most college teachers possess a basic level of awareness regarding ICT tools used in the teaching–learning process.
2. Male teachers demonstrate comparatively higher ICT competency and greater

confidence in using digital tools than female teachers.

3. Nontribal teachers show relatively higher ICT competency compared to tribal teachers.
4. Teachers working in urban areas have better access to ICT resources and demonstrate higher ICT competency than those working in rural areas.
5. Teachers below 40 years of age exhibit greater ICT competency and adaptability to digital technologies than teachers above 40 years.
6. Lack of proper training programmes and insufficient technological infrastructure are major obstacles to effective ICT integration in higher education institutions.

Suggestions

1. Regular ICT training programmes should be organized for college teachers to enhance their digital competency and teaching effectiveness.
2. Special training and support should be provided to teachers working in rural institutions to reduce the digital gap between rural and urban colleges.
3. Government and educational authorities should take necessary steps to improve technological infrastructure in higher education institutions.
4. Workshops, seminars and professional development programmes on digital teaching methods should be conducted periodically.
5. Teachers should be encouraged to participate in digital literacy programmes and continuously update their ICT skills.

CONCLUSION

Information and Communication Technology has become an essential component of modern higher education. The integration of ICT tools in the teaching-learning process has the potential to enhance educational quality, promote interactive learning and improve academic outcomes.

The findings of the present study indicate that although college teachers possess basic awareness of ICT tools, significant differences exist among teachers based on gender, social background, residential location and age group. Male teachers demonstrate comparatively higher ICT competency than female teachers. Similarly, teachers working in urban institutions and those belonging to younger age groups tend to exhibit greater proficiency in using digital technologies.

These findings highlight the need for systematic professional development programmes, improved technological infrastructure and institutional support to strengthen ICT competency among teachers. By enhancing teachers' digital skills and providing adequate training opportunities, higher education institutions can ensure the effective integration of ICT tools and create more dynamic and technology-driven learning environments.

REFERENCES

- Agarwal, J.C. 2005. *Essentials of educational technology*. New Delhi: Vikas Publishing House.
- Kumar, K.L. 2010. *Educational technology*. New Delhi: New Age International Publishers.
- Mishra, P. and Koehler, M. 2020. Technological pedagogical content knowledge in teacher education. *Educational Technology Research Journal*.
- Selwyn, N. 2021. Digital technology and the future of education. *Journal of Educational Technology*.
- Tondeur, J., Van Braak, J. and Valcke, M. 2022. ICT integration in the classroom. *Computers and Education*.
- UNESCO. 2023. *ICT competency framework for teachers*. Paris: UNESCO.
- Johnson, L., Adams, S. and Cummins, M. 2024. Technology integration in higher education. *International Journal of Educational Technology*.
- Singh, R. and Sharma, P. 2025. Digital literacy and teaching practices in higher education. *Journal of Educational Research*.
- Brown, T. 2026. ICT competency and professional development of teachers. *International Journal of Educational Development*.

