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ICT SKILLS IN THE CONTEXT OF TEACHER EDUCATORS: AN ANALYTICAL STUDY

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Abstract: This study focused on ICT skills of Teacher Educators. This is a quantitative associative study that employs a survey method. This study collects data using a self-made questionnaire (25 items) related to ICT skills. The study sample consisted of 100 teacher educators; 50 from government institutions and 50 from private institutions of which 25 from each type of institutions were male and remaining 25 were female. The teacher educators had minimum of 3 years teaching experience and were not having any degree or certificate related to ICT. The period of Research data collection was March to April 2023. The hypothesis was tested with the help of Mean and t-Test. Data analysis reveals that there is a significant difference between government and private institutions teacher educators. There are many significant reasons behind it. According to this study, Private institutions' teacher educators have higher level of ICT skills in comparison to those of government institutions. The main cause is unavailability of resources and weak monitoring by the administration. The results suggest that male teacher educators have significantly higher ICT skills compared to female teacher educators. Societal stereotypes associating technology with masculinity could discourage women's interest and self-efficacy in technology-related domain.

Keywords: *Computer Skills, ICT Skills, Teacher Trainers, ICT Resources, Higher Education Institutions*.

I. INTRODUCTION

Teachers on all levels from an elementary school to Higher Education need to be comfortable with ICT and to empower their students to use ICT themselves and to learn from it. ICT knowledge is necessary at all educational levels for teachers and students, regardless of subjects taught and degrees obtained. However, some researchers have indicated that some teachers do not feel that they are adequately prepared to incorporate technology into their teaching **(Butter, Pérez, & Quintana, 2014; Grabe & Grabe, 1998; Wetzel, 1993).** The effective usage of ICT expands learning and knowledge on local, national, and global levels. ICT in education can be identified as a supplement to boost the worth of education in the modern knowledge era. Competency can be defined as the ability of an individual to do a job properly **(Gilbert, 1978; Mulder, 2001; Raven & Stephenson, 2001; White, 1959)**. A competency is a set of defined behaviours. It is a combination of knowledge, cognitive skills, values, and behaviours used to improve performance. ICT competence refers to knowledge, skills, and values regarding a person's behaviours or performance in ICT. Government measurements of education are usually including ICT component (**Hernández-Ramos, Martínez-Abad, Peñalvo, García, & Rodríguez-Conde, 2014).** While the importance of integrating ICT within educational systems is readily agreed to, initiatives in this realm are varied regarding method and aims **(Christensen & Knezek, 2009; Conrad & Munro, 2008; Hakverdi, Dana, & Swain, 2011; Phelps, Hase, & Ellis, 2005; Teo & Koh, 2010)**. According to the World Youth Report (2003) there are divisions based on the ICT access and learning. The first split is global. It can be experienced between developing and developed nations. The gap between developed nations and the usage of ICT in their countries cannot be overstated, especially with the existence of Internet. Many developed nations are far behind in their e activities and e earning. The second split can be noticed within the country. Population varies by income, geographic dispersion within the country, and the attained educational levels of citizens which impact access and usage of ICT. Undoubtedly, ICT affects people and countries, and unfortunately leaves many behind in the technological progress. ICT establishment and maintenance require extensive fiscal commitment **(Alshawareb & Majed, 2012).**

NEED OF THE STUDY

The need for this analytical study is to explore the current level of ICT skills among teacher educators and identify the gaps that need to be addressed in order to improve their teaching and learning practices. The study aims to provide insights into the challenges and opportunities that teacher educators face in integrating ICT into their teaching, and to propose strategies for enhancing their ICT competencies. Ultimately, the goal is to improve the quality of teacher education and prepare educators to effectively use ICT in their classrooms. The researchers conducted an analytical study on ICT skills in the context of teacher educators to address the changing educational landscape, enhance teaching effectiveness, bridge the digital divide, prepare future teachers, and keep up with emerging ICT trends in teaching learning process.

Aim: The study aims to analyze the ICT skills of teacher educators and determine if there is a significant difference based on the type of institution and gender.

Objectives

- To study the significant difference between ICT skills of teacher educators based on type of the institutions (Government Vs Private).
- To study the significant difference between ICT skills of teacher educators based on Gender.

Hypotheses

To study the objectives, researcher made null hypothesis. Choosing the null hypothesis in a hypothesis test is a standard practice in the statistical analysis. The null hypothesis represents the default position that there is no significant difference between selected variables. Researcher aim to be conservative and require strong evidence before rejecting it. This approach helps ensure that any conclusions drawn from the analysis are based on robust evidence and not merely due to random variation in the data.

Ho1: There is no significant difference between ICT skills of teacher educators based on the type of the institutions.

Ho2: There is no significant difference between ICT skills of teacher educators based on the gender.

II RESEARCH METHODOLOGY

2.1 Population and Sample

Population of this study has been defined as male and female teacher educators of Meerut city in Uttar Pradesh and Simple random sampling method was used for selecting male and female teacher educators. The study sample consisted of 100 teacher educators; 50 from government institutions and 50 from private institutions of which 25 from each type of institutions were male and remaining 25 were female.

2.2 Data and Sources of Data

For this study, primary data has been collected. Self-made questionnaire was used for collecting data.

2.3 Research tool for data collection

Researcher has developed a questionnaire consisting of 25 items to collect data on the ICT skills of teacher educators. The questionnaire aims to gather insights into the current level of ICT skills possessed by teacher educators and their readiness to integrate technology into their teaching practices. The items in the questionnaire are designed to cover various aspects of ICT skills such as basic computer literacy, digital content creation, online communication, and pedagogical use of technology. The data collected through the questionnaire will be analyzed to identify the gaps and areas for improvement in the ICT skills of teacher educators. The findings of this study can be used to design targeted professional development programs that can enhance the ICT skills of teacher educators and improve the quality of education.

2.4 Research Design

Research design that is used in this study is the static group comparison design to proceed further this study.

2.5 Methods

The study was conducted in various teacher education institutions across the state of Uttar Pradesh, India. The sample size of the study was 100 teacher educators. The survey questionnaire was designed to gather information on the basic ICT skills possessed by the teacher educators, their level of proficiency in using ICT tools, and their attitude towards ICT integration in teaching. The data collected from the survey was analyzed using descriptive statistics.

2.6 Delimitations

This study focuses on a specific group of individuals, namely teacher educators. The scope of this research is limited to teacher educators who possess a minimum of three years of teaching experience. Furthermore, the study specifically examines the use of information and communication technology (ICT) skills in teaching. It excludes teacher educators who have prior certification or a degree in the field of ICT, as the aim is to understand the impact of ICT on teaching practices among individuals without formal ICT training. Lastly, the study is geographically restricted to teacher educators working in teacher education institutions located in Uttar Pradesh, India. By narrowing down the participants and the context, this study aims to provide valuable insights into the use of ICT skills among teacher educators in a specific region and setting.

2.7 Theoretical framework

Variable of the study (ICT skill) is static in nature. The level of skills will be measured in different institutions' settings. Many studies reveal the variation of ICT skills among teachers in different educational contexts, researches shed light on the broader factors influencing teachers' ICT competency and attitudes towards technology integration in education **(Macharia, J. N., & Pelser, T. G. (2018), Mutula, S. M., & Mukasa, G. G. (2015), Chinien, C., & Singh, M. (2013).** The integration of ICT in education has become increasingly important in the modern digital age. So, it is crucial for teachers to possess the necessary ICT skills to effectively incorporate technology into their teaching practices. The UNESCO ICT Competency Framework for Teachers **(UNESCO, 2011)** provides a comprehensive set of competencies necessary for teachers to integrate ICT effectively into their instructional practices. Other frameworks, such as the European Framework for the Digital Competence of Educators **(Dig Comp Edu, Redecker et al., 2017),** also outline the key competencies needed for teachers to be digitally proficient. In this study, researchers focused on the different situations and ICT skills of teachers' as **Devic (1989)** stated that Factors such as perceived usefulness, ease of use, and external influences play a significant role in shaping teachers' adoption of ICT skills.

Data Interpretation

Table-1

- **O1** To study the significant difference between ICT skills of government and private teacher educators
- **Ho1:** There is no significant difference between ICT skills of government and private teacher educators.

ICT skills of government and private teacher educators						
Type of Institutions	N	Mean	SD	df	t-value	p value
Government	50	18.8	4.28	98	8.99	p < .001
Private	50	20.8	7.59			

An independent-samples t-test was conducted to compare ICT skills of government and private teacher educators. There was a significant difference in the scores for government teacher educators (M=18.8, SD=4.28) and private teacher educators (M=20.8, SD=7.59) conditions; t (98) = 8.99, p = <0.001. These results suggest strong evidence against the null hypothesis, indicating a significant difference between the means of government and private teacher educators' ICT skills. Based on the above analysis, it can be concluded that private teacher educators have significantly higher ICT skills compared to government teacher educators. So, the null hypothesis **Ho1** that, there is no significant difference between ICT skills of government and private teacher educators is rejected.

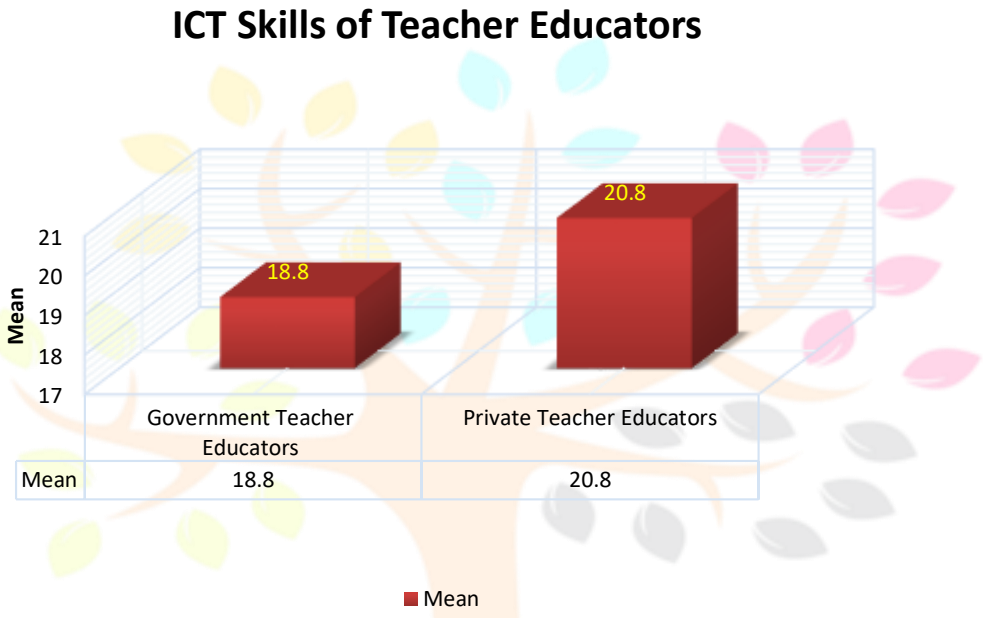
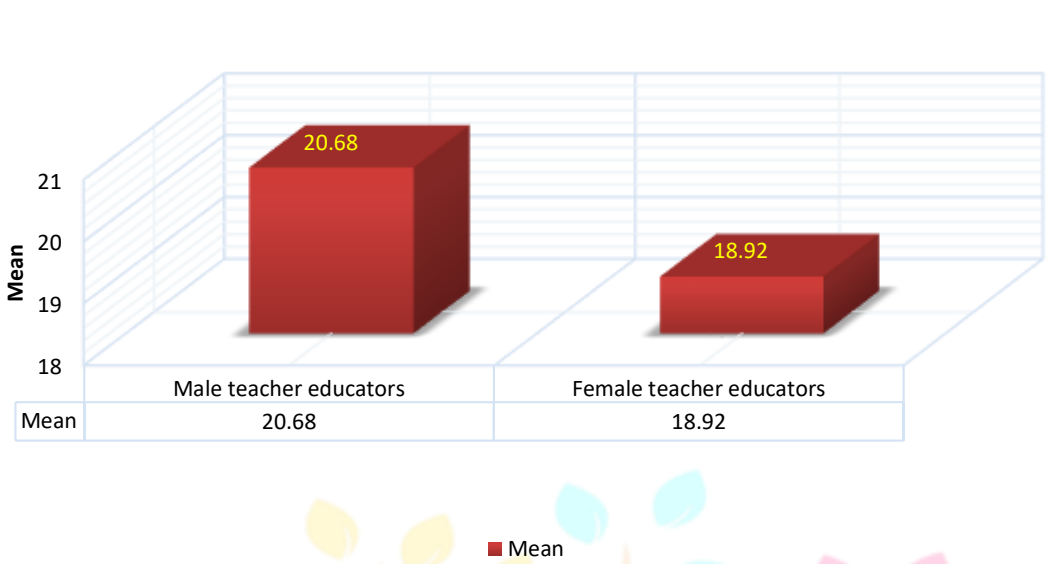


Table-2

- **O2** To study the significant difference between ICT skills of teacher educators based on Gender.
- **Ho2:** There is no significant difference between ICT skills of teacher educators based on the gender.

ICT skills of Male & Female teacher educators						
Gender	N	Mean	SD	df	t-value	p value
Male	50	20.68	4.54	98	7.36	p < .001
Female	50	18.92	7.15			

An independent-samples t-test was conducted to compare ICT skills of male and female teacher educators. There was a significant difference in the scores for male teacher educators (M=20.68, SD=4.54) and female teacher educators (M=18.92, SD=7.15) conditions; t (98) =7.36, p = <0.001. These results suggest strong evidence against the null hypothesis, indicating a significant difference between the means of male and female teacher educators' ICT skills. Based on the above analysis, it can be concluded that male teacher educators have significantly higher ICT skills compared to female teacher educators. So, the null hypothesis **Ho2** that there is no significant difference between ICT skills of teacher educators based on the gender is rejected.



III DISCUSSION

- The findings of objective one suggests that private teacher educators possess a greater level of competence in utilizing ICT tools and technologies compared to their counterparts in government institutions **(Esen & Cosgun, 2017).** This implies that private teacher educators may be more adept at incorporating technology into their teaching practices, which could potentially impact the quality of education provided to students. The results highlight the need for government teacher educators to enhance their ICT skills and explore opportunities for professional development in this area to keep pace with the changing educational landscape. Additionally, the findings may have implications for policy-making and resource allocation in educational institutions, as they underscore the importance of supporting and promoting the development of ICT skills among teacher educators. **(Ahsan et al., 2018)** found that private institutions provided more extensive and focused training on ICT skills compared to government institutions. The results suggested that private teacher educators were more adept at incorporating technology into their teaching practices.
- The findings of second objective suggest that, there is strong evidence to reject the null hypothesis (Ho2) that there is no significant difference between ICT skills of teacher educators based on gender. The results suggest that male teacher educators have significantly higher ICT skills compared to female teacher educators. Previous research has found evidence of gender difference in computer and technology-related skills. **Subrahmanyam and Greenfield (2008)** examined gender differences in computer-related abilities among teachers and found that males tended to have higher computer skills compared to females. A study by **Cheryan, Plaut, Davies, and steele (2009)** found that societal stereotypes associating technology with masculinity could discourage women's interest and self-efficacy in technology-related domain. The gender gap in STEM fields has been well-documented. Several studies have shown that women are underrepresented in technology-related professions and may face barriers and biases that contribute to differences in ICT skills. **Ceci and Williams (2010)** highlighted the role of social and cultural factors in explaining gender disparities in STEM fields.

SUGGESTIONS

- The findings suggesting that private teacher educators possess a greater level of competence in utilizing ICT tools and technologies compared to their counterparts in government institutions raise important implications and recommendations for the field of education. Government teacher educators should prioritize enhancing their ICT skills through PDPs. Government institutions need to allocate resources to support the development of ICT skills among teacher educators. This could invest in technology infrastructure, providing access to relevant software and tools, ensuring ongoing technical support and adequate funding. Private institutions, which have demonstrated higher competence in utilizing ICT tools, can share their experiences, best practice, and strategies with government teacher educators. The findings emphasize the need for policy makers to recognize the importance of ICT skills in teacher education. The government should consider the findings when designing policies related to curriculum development, teacher training programs and educational standards also should prioritize long-term planning to bridge the gap between private and government teacher educators in term of ICT skills. This could involve incorporating ICT related coursework and training programs into teacher education curricula, establishing partnership with private institutions for knowledge exchange, and providing incentives for government teacher educators to engage in continuous professional development.
- The present study also indicates a gender disparity in ICT skills among teacher educators. To address this disparity institutions should offer specialized training programs and workshops focusing on ICT skills for female teacher educators, establish mentorship programs where experienced male educators can mentor and support female educators in developing their ICT skills. They can provide guidance, encouragement, and practical advice to female educators, helping them gain confidence and competence in using ICT tools. Ensure that all teacher educators, regardless of gender, have access to the necessary resources and infrastructure for developing and practicing their ICT skills. This includes providing access to up-to-date technology, software, and internet connectivity. Promote inclusivity and equal opportunities for both male and female teacher educators in technology-related initiatives, conferences, and research projects. Conduct further research to understand the underlying factors contributing to the observed gender disparity in ICT skills among teacher educators. Regular assessment and monitoring of ICT skills can help identify areas that require improvement and track progress over

time. With this factor such as personal interest, educational opportunities, and societal influences can impact individuals' ICT skills, regardless of their gender. Furthermore, there may be other factors beyond gender that could contribute to the observed differences in ICT skills among teacher educators.

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