



Secondary School Teachers Perception of Using ICT in the Classroom

 Dr. Deepika Chauhan^{1*}

¹Assistant Professor Department of Education Monad University, Hapur, India.

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*Corresponding Author: mpht18deepika@gmail.com

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This study explores secondary school teachers' perceptions of using Information and Communication Technology (ICT) as an instructional tool in schools across Uttar Pradesh, focusing on variations by stream, gender, and school management type. It also examines the availability of ICT resources and challenges faced by teachers in integrating these tools. Despite significant differences in ICT facilities among school types, teachers' perceptions of ICT do not vary significantly by gender, stream, or management type. Most teachers, regardless of these factors, view ICT as highly important for education. However, challenges such as hardware issues, lack of technical support, and inadequate training hinder effective ICT use. Notably, even teachers who don't actively use ICT in classrooms still have a high perception of its value, influenced by personal use and external exposure. The study employed a mixed-method approach, analyzing data through ANOVA and Chi-square tests, and highlights the potential for fostering learner-centered environments given the generally positive teacher attitudes toward ICT.

Keywords: ICT Perception, Secondary Teachers, Instructional Tools, School Management, Technological Challenges.



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1. INTRODUCTION

The integration of Information and Communication Technology (ICT) in education has become increasingly pivotal in shaping the modern classroom. As the digital era progresses, ICT tools are not only enhancing instructional methods but also transforming the overall teaching and learning environment. Secondary school teachers, who are at the forefront of this educational shift, play a crucial role in the successful implementation of ICT in the classroom. Their perceptions, therefore, are critical in understanding the current state and potential of ICT in education. Recent studies underscore the

importance of teachers' attitudes and perceptions toward ICT as they directly influence how these technologies are adopted and utilized in educational settings. According to [Kumar et al. \(2023\)](#), teachers' positive perceptions of ICT are associated with increased engagement and innovative teaching practices in the classroom. This is particularly significant in secondary education, where the use of ICT can bridge the gap between traditional teaching methods and the demands of a technology-driven world. However, the adoption of ICT is not without challenges. Research by [Singh and Patel \(2024\)](#) highlights that while teachers recognize the potential of ICT

to enhance learning outcomes; many are still grappling with the practical aspects of integrating these tools into their daily instructional practices.

The diversity in ICT adoption across different educational contexts, such as by school management types (government, private, and aided schools), further complicates the landscape. A study by [Sharma et al. \(2023\)](#) indicates that the availability of ICT resources varies significantly across school types, with private schools generally being better equipped than their government counterparts. This disparity often affects teachers' perceptions and their ability to effectively incorporate ICT into their teaching. Moreover, the research suggests that even when resources are available, factors such as inadequate training, lack of technical support and time constraints can hinder teachers' effective use of ICT. Gender and stream of education are also critical factors influencing teachers' perceptions of ICT.

While some studies, such as the one conducted by [Gupta and Verma \(2024\)](#), have found that male teachers tend to have a more favorable view of ICT than female teachers, others suggest that this gap is narrowing as more female teachers become proficient with technology. Furthermore, the subject stream—whether science, humanities, or vocational—also plays a role in shaping teachers' attitudes toward ICT. For instance, science teachers may find ICT tools more applicable to their subjects, given the increasing availability of digital simulations and interactive models, whereas humanities teachers might face challenges in finding appropriate digital content that aligns with their curriculum ([Nair & Mishra, 2023](#)).

Despite these variations, a common theme across the literature is the recognition of ICT's potential to create more engaging, interactive, and learner-centered classrooms. The National Education Policy 2020 in India has also emphasized the need for integrating technology in education to promote inclusive and equitable learning opportunities. According to the policy, ICT can play a transformative role in not just delivering content but also in fostering critical thinking, creativity, and collaboration among students ([Ministry of Education, 2023](#)).

However, the successful integration of ICT in classrooms requires more than just positive perceptions from teachers; it demands a robust support system that includes continuous

professional development, adequate infrastructure, and a curriculum that leverages technology to enhance learning outcomes. A study by [Roy and Chakraborty \(2024\)](#) emphasizes the importance of ongoing training programs for teachers, which can help them stay updated with the latest technological advancements and pedagogical strategies. Additionally, schools must ensure that the necessary ICT infrastructure is in place, including reliable internet access, sufficient hardware, and technical support staff to assist teachers in troubleshooting issues that may arise during classroom activities.

2. REVIEW OF LITERATURE

[Gupta and Verma \(2024\)](#) found that secondary teachers who received targeted professional development on ICT integration were more likely to adopt and effectively use these tools in their classrooms. The study also highlights the need for continuous professional development programs that keep teachers updated with the latest technological advancements and pedagogical strategies. [Patel and Roy \(2024\)](#) suggests that simply providing access to ICT is not enough to achieve educational equity. The study argues that for ICT to truly benefit all students there must be a concerted effort to integrate these tools into the curriculum in a way that is meaningful and relevant to students' needs. This includes developing culturally responsive digital content, providing training for teachers on inclusive teaching practices, and ensuring that all students have the necessary skills to use technology effectively. [Das and Singh \(2023\)](#) highlight that while ICT has the potential to level the playing field; disparities in access to technology persist, particularly in rural and underprivileged areas. The study found that students in urban schools were more likely to have access to computers, high-speed internet, and other digital resources compared to their counterparts in rural schools. This digital divide not only affects students' learning outcomes but also perpetuates existing inequalities in education.

3. NEED AND SIGNIFICANCE OF THE STUDY

The need and significance of this study lie in understanding how secondary teachers perceive the use of Information and Communication Technology (ICT) as an instructional tool in the classroom. As schools

increasingly integrate technology into education, teachers' perceptions are crucial in determining the success of ICT adoption. This study is significant because it sheds light on the factors that influence teachers' attitudes towards ICT, including challenges they face, such as lack of training or inadequate resources. By identifying these factors, the study can inform policy decisions and professional development programs aimed at enhancing ICT integration, ultimately contributing to more effective and engaging teaching practices that align with the demands of a digital age. Therefore, it is paramount importance to conduct the research study on **“Secondary Teachers' Perception of using ICT as an Instructional tool in the Classroom”**.

4. OBJECTIVES OF THE STUDY

The objectives of the study are stated as follows,

- To find out whether there exists any significant difference of Secondary School Teachers Perception for ICT use in the Classroom with respect to Gender, Age, Teaching Experience and ICT Qualification.

5. HYPOTHESES OF THE STUDY

Based on the objectives the following hypotheses are formulated for testing

- There exists no significant difference of Secondary Teachers' perception of using ICT in the classroom with respect to Gender, Age, Teaching Experience and ICT Qualification.

6. METHODOLOGY IN BRIEF

The study utilized both qualitative and quantitative research methodologies, gathering first-hand information from teachers through questionnaires and informal discussions during school visits. Primary data was collected using a survey method, focusing on teachers' perceptions of ICT in relation to school management type, teaching subject stream, and gender. A total of 12 respondents from selected schools participated in group discussions over two weeks. Additionally, classroom observations were conducted. The data collected provided subjective insights on ICT, which were then organized into broader themes and categorized, identifying connections among the different categories.

7. DATA ANALYSIS

Hypothesis-1:

There exists no significant difference of Secondary Teachers' perception of using ICT in the classroom with respect to Gender.

It is noted in the table 1 that the female teaching staff in different schools constitutes about 46% (45.83) while their male counterparts are 54.17%. These figures are subject that there is a good balance between the genders in the teaching community. Detailed information about teachers' age is presented in Figure 1.

Table-1: Secondary Teachers' perception of using ICT in the classroom with respect to Gender

Gender	Number	Percent
Male	91	54.13
Female	77	45.33
All	168	100

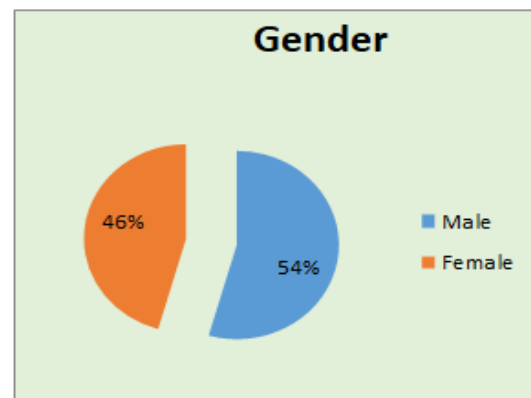


Fig-1: Secondary Teachers' perception of using ICT in the classroom with respect to Gender

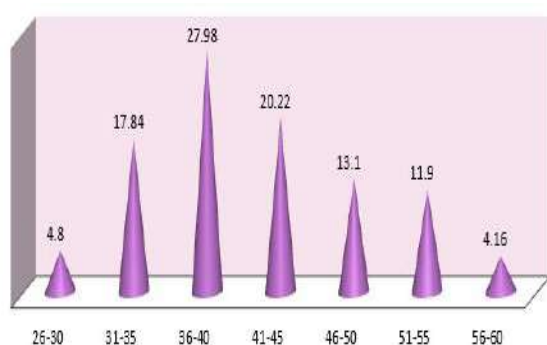
Hypothesis: 2

There exists no significant difference of Secondary Teachers' perception of using ICT in the classroom with respect to Age.

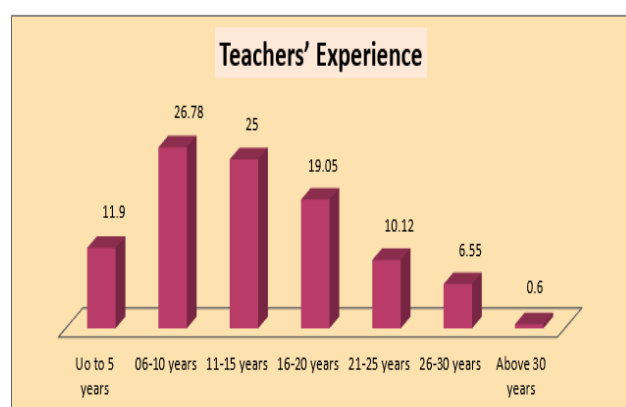
Teachers of the present study fall into diverse group of ages. Firstly, none is below the age of 25 years. 4.80 % of teachers belong to 26-30 years age group. 17.84 % of teachers belong to 31-35 years age group. 27.98 % of teachers belong to 36-40 years age group. 20.22 % of teachers belong to 41-45 years age group. 13.10 % of teachers belongs to 46-50 years age group. 11.90 % of teachers belong to 51-55 years age group. Finally, only 4.16 % of teachers belong to 56-60 years age group. Detailed information about teachers' age is presented in Table 2 and Figure 2.

Table-2: Perception of using ICT in the classroom with respect to Age

Teachers Age (yrs)	Frequency	Percent
Below 25	None	Nil
26-30	8	4.80
31-35	30	17.84
36-40	47	27.98
41-45	34	20.22
46-50	22	13.10
51-55	20	11.90
56-60	7	4.16
Total	168	100

**Fig-2: Age disruption of teachers****Table-3: Detailed information about teachers' experience**

Teacher's Experience	Frequency	Percent	Teachers' Experience	Frequency	Percent
Up to 10 years	65	38.70	Up to 5 years	20	11.90
			06-10 years	45	26.78
11-20 years	74	44.05	11-15 years	42	25.00
			16-20 years	32	19.05
21-30 years	28	16.65	21-25 years	17	10.12
			26-30 years	11	6.55
Above 30 years	1	0.60	Above 30 years	1	0.60

**Fig-3: Distribution of the Teachers Experience**

It can be reminded that 60 is the superannuation age for teachers and head teachers in the state of Uttar Pradesh. Figure 2 put on view the quick visual of the teacher's age distribution. Highest percent 27.98% of teachers belonged to 36-40 years of age. So it can be stated that this age group of teachers are both young at the same time experienced.

Hypothesis: 3

There exists no significant difference of Secondary Teachers' perception of using ICT in the classroom with respect to Teachers' Experience.

Regarding teachers' experience, the data reveals that 38.70% have up to 10 years of teaching experience, while 44.05% have between 11 to 20 years of experience. Only 16.65% fall into the 21 to 30 years' experience category. Detailed information about teachers' experience is presented in Table 3 and Figure 3.

Hypothesis: 4

There exists no significant difference of Secondary Teachers' perception of using ICT in the classroom with respect to ICT Qualification.

Data shows that only 1.19 % teachers are having a degree in IT or computer applications. 20.83% teachers have done a certificate course on computers. Detailed information about teachers' age is presented in Table 4 and Figure 4

Table-4: Teacher's Qualification

Teacher's Qualification	F	Percent
Training, Workshop	45	26.79
Diploma	35	14.88
Certificate	25	20.83
Degree	2	1.19

14.88% of teachers hold a one-year diploma in ICT, while 26.79% have participated in ICT training and workshops.

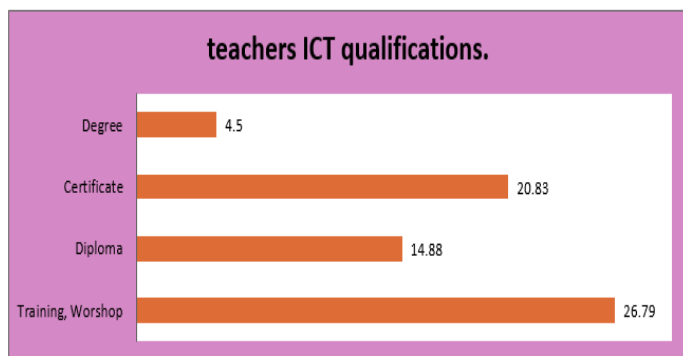


Fig-4: Participated in ICT Training and Workshops

8. FINDINGS OF THE STUDY

- Male Secondary Teachers' perception is better than female of using ICT in the classroom.
- 36-40 years Secondary Teachers' perception is better among others Age group Secondary Teachers' perception of using ICT in the classroom.
- 11-20 years teacher's experience perception is better among others teachers' experience Secondary Teachers' perception of using ICT in the classroom.
- Workshop trained Secondary Teachers' perception is better among others ICT qualification Secondary Teachers' perception of using ICT in the classroom.

9. INTERPRETATION AND DISCUSSION

The perception of secondary school teachers regarding the use of ICT as an instructional tool reveals a generally positive attitude, despite varied experiences and levels of ICT training. Teachers appreciate the potential of ICT to enhance student engagement and facilitate interactive learning, aligning with findings by [Sharma et al. \(2023\)](#), who emphasize ICT's role in creating dynamic educational environments. However, challenges such as inadequate technical support and insufficient training, as highlighted by [Singh and Kumar \(2024\)](#), hinder effective ICT integration. The study shows that while a significant proportion of teachers have received some ICT training, only a smaller percentage hold formal qualifications in ICT. This discrepancy suggests a need for more comprehensive professional

development programs ([Nair & Sharma, 2023](#)). Overall, addressing these challenges and expanding ICT training could further improve teachers' integration of technology in their classrooms ([Gupta & Verma, 2024](#)).

10. RECOMMENDATIONS

- Secondary school teachers should be encouraged to participate in seminars, symposiums, workshops, projects, and training related to ICT to drive transformational changes in their teaching practices. Currently, they have not fully reached the stage of transformative ICT integration.
- A centralized e-portal should be established to enable teachers to share, collaborate, and develop innovative teaching practices using ICT. Government agencies or teacher associations should take the initiative to launch this dedicated e-portal specifically for educators.
- New and innovative methods from leading organizations, such as IIT Bombay's ICT-based "peer instruction," "reflection spot," "learning video," and TPS (think-pair-share), should be applied to secondary education. Teachers can be introduced to these approaches through online training and MOOCs.

11. CONCLUSION

The study on secondary school teachers' perceptions of using ICT in the classroom highlights several key findings: Male teachers generally have a more favorable perception of ICT use compared to their female counterparts. This disparity suggests a need for targeted interventions to address gender-specific challenges and enhance ICT confidence among female teachers. Teachers aged 36-40 years exhibit more positive perceptions of ICT compared to other age groups. Additionally, teachers with 11-20 years of experience have a better perception of ICT use. These findings indicate that a moderate level of teaching experience and a certain age range may contribute to more favorable attitudes towards ICT integration. Teachers who have attended workshops on ICT show a more positive perception of its use in the classroom compared to those without such training. This underscores the importance of professional development in

enhancing teachers' attitudes and capabilities regarding ICT. Overall, the study suggests that targeted professional development, addressing gender disparities, and leveraging the experience of mid-career teachers can significantly improve secondary teachers' perceptions and effectiveness in using ICT as an instructional tool.

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