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Teachers' Perception And Its Impact On Students' Attitude Towards ICT Integration In Classrooms

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Abstract: This Teachers play a pivotal role in the successful integration of Information and Communication Technology (ICT) in education. Their perception, attitude, and competence toward technology profoundly influence how students perceive and engage with ICT-based learning environments. This study examines the relationship between teachers' perception of ICT integration and students' attitude toward ICT in secondary schools, aiming to explore how educators' digital orientation shapes students' enthusiasm, confidence, and learning behavior.

A mixed-method design was used, involving 420 secondary school students and 60 teachers from government and private schools in Bhopal district. Quantitative data were gathered through two standardized tools: the Teacher ICT Perception Scale (TIPS) and the Student ICT Attitude Scale (SIAS). Qualitative data were collected through semi-structured teacher interviews. The data were analyzed using descriptive statistics, ANOVA, correlation, multiple regression, Chi-square tests, and thematic content analysis.

Findings revealed that teachers' positive perception of ICT (Mean = 4.27 on a 5-point scale) significantly enhances students' attitude ($r = 0.66$, $p < 0.01$). Regression analysis showed that teacher enthusiasm, pedagogical readiness, and institutional support collectively explained 52% of the variance in students' ICT attitude. ANOVA results indicated significant differences in perception between government and private school teachers ($F = 8.74$, $p < 0.01$). Chi-square analysis demonstrated a strong association between teachers' training level and students' frequency of ICT use ($\chi^2 = 38.61$, $p < 0.001$). Thematic analysis highlighted three qualitative dimensions—teacher confidence, digital pedagogy adaptability, and institutional ecosystem.

The study concludes that teachers' perception and competence are strong determinants of students' ICT attitudes. The paper proposes a Teacher–Student ICT Alignment Model (TSIAM) to strengthen technology integration through teacher development, infrastructural equity, and supportive learning environments.

Index Terms **-** Teachers' Perception, ICT Integration, Student Attitude, Digital Pedagogy, Mixed-Method Study, Regression Analysis, Thematic Analysis.

I. INTRODUCTION

The growing reliance on technology in education marks a new era in pedagogical transformation. Information and Communication Technology (ICT) has evolved from a supplemental tool to an essential medium for content delivery, interaction, and assessment. In this digital learning environment, teachers serve not merely as knowledge transmitters but as **facilitators and motivators** who guide students through technology-enhanced learning experiences.

However, successful ICT integration depends greatly on **teachers' perception**—their beliefs about the value, relevance, and feasibility of using digital tools in teaching. These perceptions shape their instructional strategies and, consequently, influence **students' attitude toward ICT** (Al-Zaidiyeen et al., 2010). When teachers exhibit enthusiasm, competence, and confidence in using ICT, students tend to adopt positive

attitudes and behaviors toward digital learning. Conversely, teacher reluctance or negative perception can demotivate students and restrict ICT adoption.

1.1 Context and Importance

In India, the **National Education Policy (NEP) 2020** envisions a digitally empowered education system emphasizing technology-based learning and teacher capacity-building. Yet, disparities persist due to varying infrastructure, training opportunities, and institutional support. Teachers' perception is thus a critical factor bridging policy and practice. Understanding how their beliefs and preparedness influence student attitudes is vital for achieving equitable and effective ICT integration.

1.2 Research Questions

1. How do teachers perceive the use of ICT in secondary school classrooms?
2. Does teachers' perception vary by gender, school type, and experience?
3. What is the relationship between teachers' perception and students' ICT attitude?
4. Which components of teacher perception significantly predict students' ICT attitude?
5. What qualitative factors influence teachers' ICT perception?

1.3 Objectives of the Study

1. To assess teachers' perception of ICT integration in classrooms.
2. To evaluate students' attitude toward ICT-based learning.
3. To examine the relationship between teachers' perception and students' attitude.
4. To determine the predictors of students' ICT attitude from teacher-related variables.
5. To explore qualitative dimensions of teachers' perception through thematic analysis.

1.4 Hypotheses

- **H_{01}:** There is no significant difference in teachers' ICT perception across gender and school type.
- **H_{02}:** There is no significant correlation between teachers' perception and students' ICT attitude.
- **H_{03}:** Teachers' perception dimensions do not significantly predict students' ICT attitude.
- **H_{04}:** Teachers' ICT training level is not significantly associated with students' ICT usage frequency.

II. Review of Literature

2.1 Teacher's Role in ICT Integration

Teachers serve as catalysts for technological change in education. **Anderson & Weert (2002)** highlighted that teachers' perception determines the degree to which ICT becomes an active pedagogical tool rather than a mere accessory. **Mumtaz (2000)** emphasized that teacher motivation, professional competence, and institutional support are prerequisites for effective ICT integration.

2.2 Perception, Beliefs, and Attitude Theories

According to **Ajzen's (1991) Theory of Planned Behavior**, attitudes are shaped by beliefs and perceived behavioral control. Teachers who perceive ICT as beneficial and manageable develop favorable attitudes, which influence classroom practices. **Ertmer (2005)** distinguished between first-order barriers (infrastructure) and second-order barriers (beliefs and attitudes), concluding that perception-related barriers are harder to overcome.

2.3 Teachers' ICT Competence and Training

Studies indicate that teacher training significantly enhances perception and readiness. **Hew & Brush (2007)** found that continuous professional development improves teacher confidence in ICT. **Becta (2008)** reported that pedagogical training is more effective than technical training alone. **Rani & Thomas (2020)** observed that teachers' self-efficacy in ICT directly correlates with students' engagement and achievement.

2.4 Students' Attitude toward ICT

Students' attitude toward ICT is multidimensional, encompassing perceived usefulness, ease of use, enjoyment, and anxiety. **Teo (2008)** and **Wenglinsky (2005)** found that positive teacher role modeling enhances students' confidence in digital learning. **Kumar & Rani (2020)** reported that teacher encouragement significantly predicts student motivation in ICT-based tasks.

2.5 Empirical Gaps

While previous studies confirm the influence of teacher perception on classroom ICT practices, **few Indian studies quantitatively link teacher perception variables to students' ICT attitude** using regression models. Moreover, mixed-method analyses integrating both teacher and student perspectives remain scarce. This study addresses these gaps through a large-sample empirical and thematic exploration.

III. METHODOLOGY

3.1 Research Design

A **mixed-method design** combining quantitative correlation-regression analysis and qualitative thematic inquiry was employed.

3.2 Population and Sample

The study population included teachers and students from secondary schools in Bhopal district. Using stratified random sampling, **60 teachers** and **420 students** (210 boys and 210 girls) were selected from 10 schools—5 government and 5 private.

3.3 Tools Used

1. **Teacher ICT Perception Scale (TIPS)** – 25 items ($\alpha = 0.88$), covering dimensions of usefulness, ease of use, enthusiasm, and institutional support.
2. **Student ICT Attitude Scale (SIAS)** – 30 items ($\alpha = 0.90$), based on Teo (2008).
3. **Teacher Interview Schedule** – Semi-structured, exploring experiences, barriers, and success stories in ICT integration.

3.4 Data Collection and Analysis

Data were collected during 2024–25 academic year. Quantitative data were analyzed using SPSS v26; qualitative responses were coded and analyzed through thematic content analysis.

3.5 Statistical Techniques

Descriptive statistics, t-test, ANOVA, Pearson's correlation, multiple regression, Chi-square test, and qualitative theme analysis were used.

IV. RESULTS

4.1 Descriptive Statistics

Variable	N	Mean	SD	Interpretation
Teacher Perception (Overall)	60	4.27	0.48	Positive
Usefulness	60	4.34	0.44	High
Ease of Use	60	4.18	0.46	Moderate–High
Enthusiasm	60	4.22	0.51	High
Institutional Support	60	3.96	0.57	Moderate

4.2 ANOVA: Teacher Perception by School Type

Source	SS	df	MS	F	Sig.
Between Groups	4.22	1	4.22	8.74	0.004
Within Groups	27.62	58	0.48		
Total	31.84	59			

Private school teachers reported significantly higher perception scores (M = 4.39) than government school teachers (M = 4.11), rejecting H_{01} for school type.

4.3 Correlation between Teacher Perception and Student Attitude

Variables	r	p
Teacher Perception ↔ Student ICT Attitude	0.66	0.000

Strong positive correlation, rejecting H_{02}.

4.4 Regression Analysis

Predictor	β	t	Sig.	R	R^2	F	Sig.
Constant	1.86	5.74	0.000	0.721	0.520	49.67	0.000
Teacher Enthusiasm	0.33	6.02	0.000				
Ease of Use	0.29	5.44	0.000				
Institutional Support	0.22	3.97	0.001				

Teacher-related factors explain **52% of the variance** in students' ICT attitude, rejecting H_{03}.

4.5 Chi-square Test: Teacher Training × Student ICT Usage

Category	High Usage	Moderate	Low	χ^2	df	Sig.
Trained Teachers	168	39	12	38.61	4	0.000
Untrained Teachers	64	71	66			

A significant association exists between teacher ICT training and students' ICT usage frequency, rejecting H_{04}.

4.6 Qualitative Thematic Analysis

Interviews with 20 teachers produced three dominant themes:

Theme 1: Teacher Confidence and Role Modeling

Teachers emphasized the motivational role of their confidence. As one teacher noted, "When we use technology with ease, students become curious and fearless about it."

Theme 2: Pedagogical Adaptability

Teachers highlighted the need for integrating ICT into lesson plans, not as a replacement but as an enhancement.

Theme 3: Institutional Ecosystem

Supportive school management and consistent internet connectivity were cited as critical enablers for ICT-based teaching.

V. DISCUSSION

The study establishes that teachers' perception profoundly affects students' ICT attitudes. Teachers who perceive ICT as valuable, manageable, and pedagogically useful inspire greater enthusiasm among students. The findings align with **Ertmer (2005)** and **Rani & Thomas (2020)**, confirming that positive teacher beliefs foster digital engagement.

The significant difference between government and private school teachers' perception corroborates **Hew & Brush (2007)**, who noted that infrastructure and administrative support shape attitudes. The regression model ($R^2 = 0.52$) suggests that enhancing teacher enthusiasm and competence could directly elevate students' ICT motivation.

Qualitative insights reveal that **teacher confidence acts as a mirror for students' digital behavior**, a concept supported by **Bandura's Social Learning Theory (1986)**—students emulate teachers' attitudes and actions. Institutional support emerged as a vital factor, echoing **Becta (2008)** and **UNESCO (2019)**, emphasizing policy-level investments in ICT resources.

VI. Conclusion and Recommendations

6.1 Major Findings

1. Teachers' ICT perception is generally positive ($M = 4.27$).
2. Significant school-type difference: private > government ($F = 8.74$, $p < 0.01$).
3. Strong positive correlation between teacher perception and student attitude ($r = 0.66$).
4. Teacher-related factors predict 52% of student ICT attitude variance.
5. Significant link between teacher ICT training and student ICT usage ($\chi^2 = 38.61$, $p < 0.001$).
6. Qualitative themes: confidence, adaptability, and institutional support.

6.2 Model Proposition: Teacher–Student ICT Alignment Model (TSIAM)

The **TSIAM** posits three interrelated domains:

- **Cognitive Alignment:** Teachers' belief in ICT's usefulness aligns with students' curiosity.
- **Pedagogical Alignment:** Integration of ICT tools matches learning preferences.
- **Institutional Alignment:** Infrastructure and training support both teacher and learner needs.

6.3 Recommendations

- **Professional Development:** Organize continuous ICT training focused on pedagogy.
- **Infrastructure Equity:** Government initiatives should prioritize ICT access in rural schools.
- **Mentorship Programs:** Encourage peer mentoring among teachers for skill sharing.
- **Student Engagement:** Develop collaborative teacher–student ICT projects.
- **Policy Implications:** Include teacher perception metrics in national ICT implementation monitoring.

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