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Bridging The Digital Divide: A Comparative Study Of ICT Status, Awareness, And Usage In CBSE And GSHEB Secondary Schools Of Ahmedabad District

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Abstract

This study comparatively investigates the status, awareness, and usage patterns of Information and Communication Technology (ICT) in secondary schools affiliated with the Central Board of Secondary Education (CBSE) and the Gujarat Secondary and Higher Secondary Education Board (GSHEB) in Ahmedabad District, India. A descriptive survey method was employed. The sample comprised 1096 secondary school teachers selected from 100 English-medium schools (50 CBSE, 50 GSHEB) using stratified random cluster sampling. A standardized 53-item ICT Awareness Scale (α=0.89) with a five-point Likert scale was used. Data were analyzed using descriptive statistics (mean, SD, percentages) and inferential statistics (t-test/CR). Results revealed that 34.49% of teachers had high ICT awareness (score >196), while 33.49% had low awareness (score <157). Significant differences emerged: CBSE teachers (Mean=177.54) demonstrated higher ICT awareness than GSHEB teachers (Mean=173.97; CR=1.58, $p<0.05$). Male teachers (Mean=175.93) scored higher than females (Mean=175.03), though not significantly overall. However, within GSHEB schools, male teachers (Mean=175.72) showed significantly higher awareness than female teachers (Mean=168.39; CR=2.02, $p<0.05$). Rural teachers paradoxically showed higher awareness than urban teachers in several comparisons. Infrastructure deficits and lack of technical support were major barriers. This is the first large-scale comparative study contrasting ICT awareness across two major educational boards in an urban Indian district, providing actionable insights for policymakers to address infrastructural and gender-based digital divides.

Keywords: ICT Awareness, CBSE, GSHEB, Secondary Education, Digital Divide, Ahmedabad, Teacher Attitudes

1. Introduction

The 21st century is recognized as a technological era where Information and Communication Technology (ICT) has revolutionized education by removing geographical barriers, enabling interactive learning environments, and transforming traditional pedagogies (Chapter 1, p. 2). In India, the National Policy on ICT in School Education (2012) mandates technology integration; however, implementation varies significantly across educational boards due to differences in funding, curriculum flexibility, and teacher training.

In Ahmedabad District—a mixed urban-peri-urban hub—two major boards operate: the Central Board of Secondary Education (CBSE), a national board with centralized resources, and the Gujarat Secondary and Higher Secondary Education Board (GSHEB), a state board serving a larger,

linguistically diverse population. Anecdotal evidence suggests a disparity in ICT adoption, but no systematic comparative study has quantified the "status and usage" across these boards.

1.1 Problem Statement

While ICT is recognized as crucial for quality education, the actual status of infrastructure and the level of teacher awareness in CBSE versus GSHEB schools in Ahmedabad remain unmeasured. Without empirical data, equitable resource allocation and targeted training programs cannot be designed.

1.2 Research Objectives

1. To study the status of ICT (infrastructure and awareness levels) in secondary schools of CBSE and GSHEB boards in Ahmedabad district.

2. To compare the usage of ICT among teachers based on gender, school board, and geographical area (urban/rural).

3. To identify significant differences in ICT awareness between key subgroups (board-wise, gender-wise, area-wise).

1.3 Hypotheses

The study tested 21 null hypotheses (Ho1 to Ho21). Key hypotheses included:

- Ho1: No significant difference between mean ICT awareness scores of male and female teachers.

- Ho2: No significant difference between mean ICT awareness scores of CBSE and GSHEB teachers.

- Ho4: No significant difference between male and female teachers within GSHEB schools.

- Ho9: No significant difference between urban and rural teachers.

2. Literature Review

The review of literature established the global and national context. Lalitha & P. (2014) found that school board had a significant impact on ICT usage, with CBSE teachers showing greater usage than SSC (state board) teachers in Telangana, directly supporting the need for the present study. Sareen (2019) reported that private school teachers (often CBSE-affiliated) had significantly more favorable attitudes and self-efficacy than government school teachers. Birwal (2017) found no effect of gender on ICT attitudes, contrasting with Bashir & S. (2012) who reported higher ICT usage among male students. Internationally, Salehi & S. (2012) identified insufficient technical support and limited internet access as major barriers. The present study fills the gap identified by Pandey (2020)—a scarcity of reviews focusing on comparative ICT integration across Indian school boards within a single district.

3. Methodology

3.1 Research Design

A descriptive survey method was adopted. This quantitative study used a cross-sectional design.

3.2 Population and Sample

- Population: All English-medium secondary school teachers (grades 9-10) in Ahmedabad district affiliated with CBSE or GSHEB.

- Sampling Technique: Stratified random cluster sampling.

- Sample Size: 1096 teachers from 100 schools (50 CBSE, 50 GSHEB). Schools were selected from five zones (North, South, Central, East, West). The sample comprised 440 female and 656 male teachers; 489 from rural areas and 607 from urban areas.

3.3 Research Tool

A pre-standardized ICT Awareness Scale (originally developed by Trivedi, M.C., 2015) was used (Chapter 3, p. 87). The scale contained 53 items (37 positive, 16 negative) measured on a 5-point Likert scale (SD=1 to SA=5 for positive items; reverse-coded for negative). The total score ranged from 53 to 265. Based on percentile distribution (P33=157, P66=196), awareness levels were categorized as: Low (≤157), Medium (158-195), and High (≥196).

3.4 Data Collection and Analysis

Data were collected in person and via Google Forms after obtaining principal permissions. Statistical analysis included calculating means, standard deviations, and Critical Ratios (t-values) to test significance at 0.05 and 0.01 levels.

4. Results

4.1 Overall ICT Awareness Levels

As shown in Table 1, out of 1096 teachers, 34.49% (n=378) demonstrated a high level of ICT awareness, 32.02% (n=351) medium, and 33.49% (n=367) low. This indicates a near-normal distribution with a slight skew toward higher awareness (Chapter 4, p. 99).

Table 1: Level of ICT Awareness Among Secondary School Teachers (N=1096)

Level	Score Range	Frequency (N)	Percentage (%)
High	196 or more	378	34.49%
Medium	158 – 195	351	32.02%
Low	157 or less	367	33.49%
Total	**53-265**	**1096**	**100%**

4.2 Comparison by School Board

Table 2 shows that CBSE teachers (Mean=177.54, SD=171.16) scored higher than GSHEB teachers (Mean=173.97, SD=179.77). The CR value of 1.58 (df=1094) was significant at the 0.05 level, leading to rejection of Ho2. Thus, CBSE teachers have significantly higher ICT awareness than GSHEB teachers.

Table 2: ICT Awareness by School Board (CBSE vs. GSHEB)

Board	N	Mean Score	Standard Deviation (SD)	CR (t-value)	Significance
CBSE	571	177.54	171.16	1.58	$p < 0.05$ (CBSE > GSHEB)
GSHEB	525	173.97	179.77		

4.3 Comparison by Gender

- Overall (Ho1): Male teachers (Mean=175.93) scored slightly higher than females (Mean=175.03; CR=0.37, ns). Ho1 was not rejected.

- Within CBSE (Ho3): Female teachers (Mean=178.13) slightly outperformed males (Mean=176.14; CR=0.64, ns). No significant gender difference.

- Within GSHEB (Ho4): Significant difference found. Male teachers (Mean=175.72) scored significantly higher than female teachers (Mean=168.39; CR=2.02, $p<0.05$). This indicates a gender gap specific to the state board.

Table 3: Gender Differences in ICT Awareness Within GSHEB Schools

Board	Gender	N	Mean Score	SD	CR (t-value)	Significance
GSHEB	Male Teachers	278	175.72	194.55	2.02	$p < 0.05$ (Male > Female)
	Female Teachers	194	168.39	219.57		

4.4 Comparison by Geographical Area (Rural vs. Urban)

- Overall (Ho9): Rural teachers (Mean=176.96) scored higher than urban teachers (Mean=174.92; CR=0.92, ns). Not significant.

- Within CBSE (Ho11): Significant difference. Urban CBSE teachers (Mean=184.58) scored higher than rural CBSE teachers (Mean=167.02; CR=6.20, $p<0.01$). This contradicts the overall trend.

- Within GSHEB (Ho10): Significant difference. Rural GSHEB teachers (Mean=185.71) scored much higher than urban GSHEB teachers (Mean=162.45; CR=7.03, $p<0.01$).

4.5 Summary of Key Significant Findings

- Ho5 (Rejected): Female CBSE teachers (178.51) > Female GSHEB teachers (168.39); CR=3.03.

- Ho7 (Rejected): Male CBSE teachers (176.81) > Female GSHEB teachers (168.39); CR=2.69.

- Ho13 (Rejected): Rural GSHEB teachers (185.71) > Rural CBSE teachers (167.02); CR=6.30. (Note: This surprising finding suggests rural GSHEB teachers, despite infrastructure gaps, have higher awareness—possibly due to necessity or recent interventions.)

5. Discussion

The findings reveal a complex landscape of ICT awareness in Ahmedabad's secondary schools. First, the significant advantage of CBSE over GSHEB teachers (Objective 2) aligns with Lalitha & P. (2014) and can be attributed to CBSE's centralized funding, mandatory ICT curricula, and greater access to professional development (Chapter 5, p. 183). CBSE schools typically have better hardware, software, and internet connectivity.

Second, the gender gap within GSHEB schools (male > female) is concerning but not universal. The fact that no gender gap exists in CBSE schools suggests that institutional culture and targeted training can mitigate gender disparities. GSHEB may require specific interventions to boost female teachers' ICT self-efficacy.

Third, the most striking finding is the rural-urban paradox. While rural GSHEB teachers showed very high awareness (185.71), rural CBSE teachers showed low awareness (167.02). This may be explained by:

- Rural GSHEB teachers might rely heavily on ICT as a compensatory tool to overcome resource scarcity, driving higher motivation and informal learning.

- Rural CBSE schools may be under-resourced relative to urban CBSE schools, but lack the compensatory motivation seen in GSHEB, leading to lower awareness.

Alternatively, the data may reflect a sampling anomaly or a recent ICT intervention in rural GSHEB schools not yet mirrored in rural CBSE schools.

6. Conclusion and Recommendations

6.1 Conclusion

This study concludes that ICT awareness among secondary teachers in Ahmedabad is moderate but uneven. CBSE schools demonstrate superior ICT integration and teacher awareness compared to GSHEB schools. Gender equity in ICT awareness exists in CBSE but not in GSHEB. The rural-urban dynamic is paradoxical, with rural GSHEB teachers showing surprising strength. Overall, 33.49% of teachers still have low ICT awareness, representing a significant barrier to digital education goals.

6.2 Educational Implications

1. Policy (GSHEB Focus): The Gujarat government must increase ICT infrastructure funding for GSHEB schools, particularly in urban areas where awareness was lowest.

2. Gender-Sensitive Training: GSHEB should launch mentorship programs and workshops specifically for female teachers to build ICT confidence, replicating the equitable environment observed in CBSE.

3. Leverage Rural Strengths: Instead of viewing rural schools as deficits, policymakers should study the successful ICT adoption strategies of rural GSHEB teachers and scale them.

4. Curriculum: ICT awareness modules should be made mandatory in both pre-service and in-service teacher training for both boards.

6.3 Suggestions for Further Research

- Conduct qualitative case studies to understand why rural GSHEB teachers have high awareness.

- Replicate the study with a larger, cross-state sample.

- Measure actual classroom ICT usage (not just awareness) through observation.

- Study the impact of emerging technologies (AI, smartboards) on student learning outcomes.

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