



Attitude of Primary School Teachers Towards Artificial Intelligence: A Standardization Study in Ahmedabad District, Gujarat

Luste Nikitaben Prakashbhai

Researcher

Guide-Dr. Ranchhodbhai Prajapati

Faculty of Education

Swaminarayan University Kalol

Abstract

This study investigated the attitude of primary school teachers towards artificial intelligence (AI) in Ahmedabad district, Gujarat, using a 30-item Attitude Scale Towards AI covering five dimensions: Cognitive, Affective, Conative, Pedagogical Value, and Ethical-Professional Concern. A sample of 300 primary school teachers drawn from Government, Grant-in-Aid, and Private schools affiliated to the Gujarat Board across ten talukas of Ahmedabad district responded to the tool. The scale demonstrated strong internal consistency (overall Cronbach's $\alpha = 0.96$; dimension-wise α ranging from 0.81 to 0.85). The mean total attitude score was 93.33 (SD = 21.66) on a possible range of 30–150, indicating a moderately favourable attitude overall, with 22.7% of teachers classified as holding a highly favourable attitude, 33.0% moderate, and 44.3% low. Independent-samples t-tests revealed no statistically significant difference in attitude by gender ($t(298) = 0.44, p = .66$) or locality ($t = 1.64, p = .10$), and one-way ANOVA revealed no statistically significant difference by teaching experience, educational qualification, or type of school (all $p > .05$), although means were consistently higher among less-experienced and more highly qualified teachers. The findings are discussed in relation to technology-acceptance theory, and implications for teacher training and AI-integration policy in Gujarat's primary education system are outlined.

Keywords: *teacher attitude; artificial intelligence; primary education; Gujarat Board; Ahmedabad; scale standardization*

1. Introduction

Artificial intelligence is increasingly embedded within the everyday infrastructure of Indian schooling, from adaptive learning applications to AI-assisted assessment and content



generation. The National Education Policy (NEP) 2020 explicitly envisions the integration of technology, including AI, into teaching-learning processes at every stage of school education. Primary education, as the foundational stage of the schooling system, is a critical site for this integration, since the attitudes primary teachers form towards AI in these early years are likely to shape the trajectory of technology adoption across a child's subsequent schooling. Yet the primary-school teaching workforce in India is highly heterogeneous in terms of qualification, teaching experience, locality, and institutional resourcing, and there is reason to expect that attitude towards AI varies systematically across these dimensions.

Gujarat, and Ahmedabad district in particular, presents a useful context for examining this variation. Ahmedabad district encompasses a mix of urban, peri-urban, and rural talukas, and its primary schools operate under Government, Grant-in-Aid, and Private management with varying levels of digital infrastructure. Despite this, empirical evidence on how primary school teachers in this specific context perceive and evaluate AI remains limited, and existing instruments used to measure such attitudes are frequently adapted from generic technology-acceptance questionnaires not designed with the specific cognitive, affective, conative, pedagogical, and ethical concerns raised by AI in mind. This study addresses that gap by administering a purpose-built, multidimensional Attitude Scale Towards AI to a sample of primary school teachers across Ahmedabad district and examining its psychometric properties alongside demographic patterns of variation.

2. Objectives of the Study

1. To construct and standardize a multidimensional scale measuring primary school teachers' attitude towards artificial intelligence.
2. To determine the internal consistency (reliability) of the scale, overall and dimension-wise.
3. To study the overall level of attitude of primary school teachers of Ahmedabad district towards AI.
4. To compare the attitude of primary school teachers towards AI on the basis of gender, locality, teaching experience, educational qualification, and type of school.



3. Hypotheses

H01: There is no significant difference in the mean attitude score towards AI of male and female primary school teachers.

H02: There is no significant difference in the mean attitude score towards AI of urban and rural primary school teachers.

H03: There is no significant difference in the mean attitude score towards AI among primary school teachers with differing levels of teaching experience.

H04: There is no significant difference in the mean attitude score towards AI among primary school teachers with differing educational qualifications.

H05: There is no significant difference in the mean attitude score towards AI among teachers of Government, Grant-in-Aid, and Private schools.

4. Methodology

4.1 Research Design

The study followed a descriptive survey design, appropriate for the dual purpose of scale standardization and status-of-attitude assessment.

4.2 Population and Sample

The population comprised primary school teachers working in schools affiliated to the Gujarat Secondary and Higher Secondary Education Board across Ahmedabad district. A sample of 300 teachers was drawn using stratified random sampling, with strata defined by locality (urban/rural), type of school management (Government/Grant-in-Aid/Private), and taluka, to ensure representation across the ten talukas of the district. Table 1 presents the demographic profile of the sample.

Variable	Category	n	%
Gender	Male	131	43.7
	Female	169	56.3
Locality	Urban	202	67.3



Variable	Category	n	%
	Rural	98	32.7
Teaching Experience	0–5 years	71	23.7
	6–10 years	68	22.7
	11–20 years	91	30.3
	21 years & above	70	23.3
Educational Qualification	PTC	70	23.3
	D.El.Ed	83	27.7
	B.Ed	101	33.7
	M.Ed & above	46	15.3
Type of School	Government	140	46.7
	Grant-in-Aid	78	26.0
	Private	82	27.3

Table 1: Demographic Profile of the Sample (N = 300)

The sample profile is further illustrated in Figures 1 and 2, showing the gender/locality split and the distribution of respondents across talukas of the district.

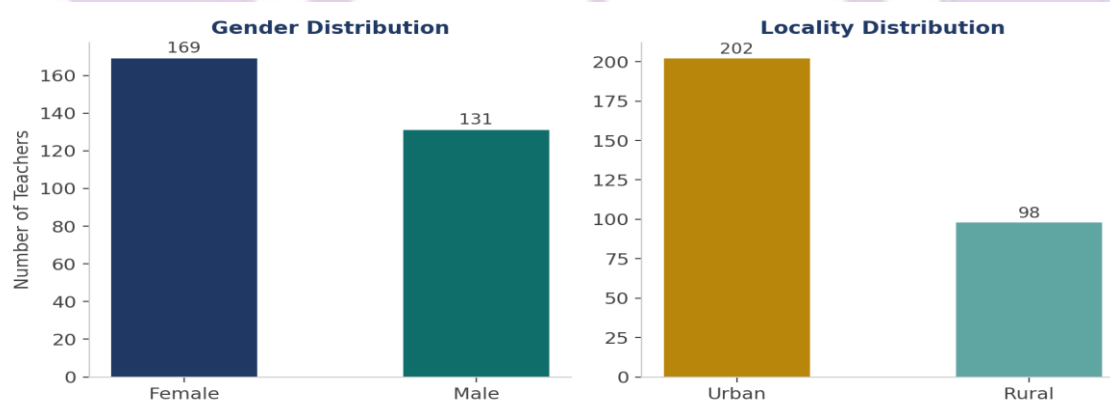


Figure 1: Gender and Locality Distribution of the Sample

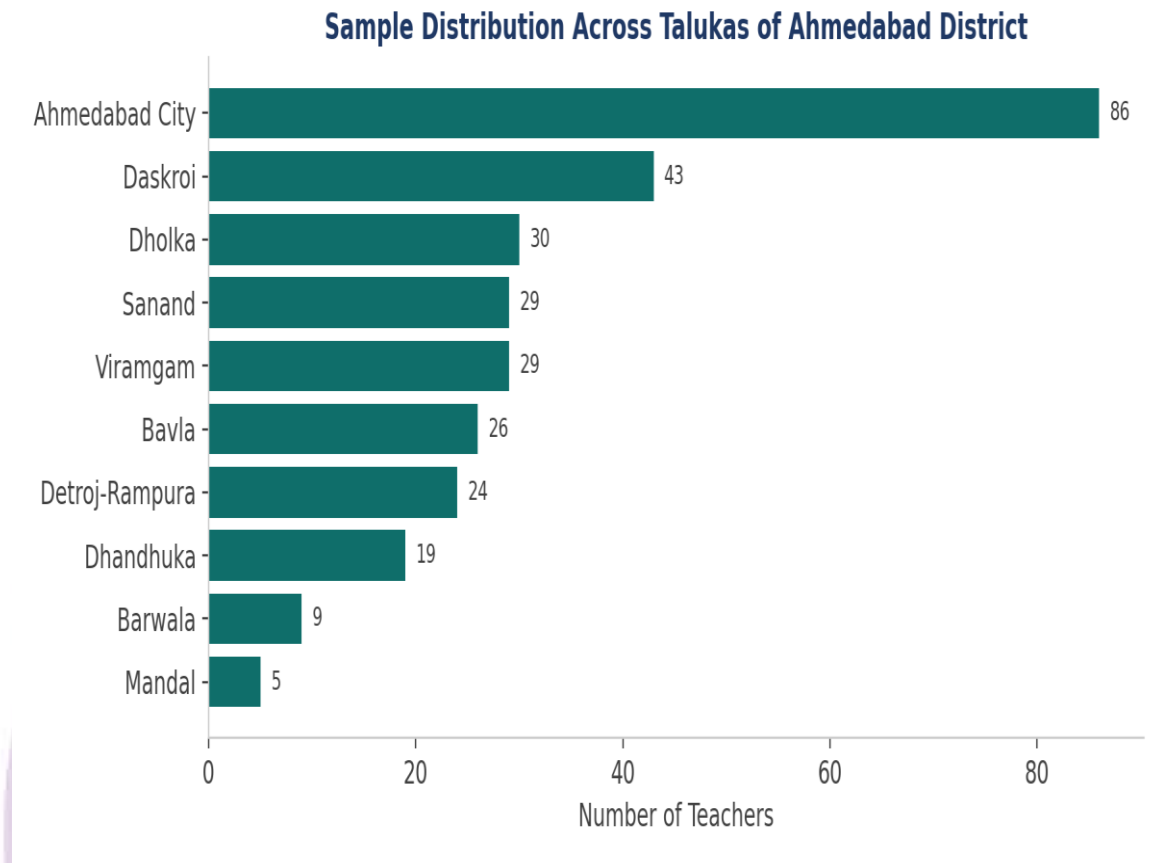


Figure 2: Sample Distribution Across Talukas of Ahmedabad District

4.3 Tool Used

Data were collected using the Attitude Scale Towards Artificial Intelligence for Teachers, a 30-item instrument developed by the researcher, comprising five dimensions of six items each: Cognitive (knowledge and beliefs about AI), Affective (emotional response to AI), Conative (behavioural predisposition and intention), Pedagogical Value (perceived instructional usefulness of AI), and Ethical-Professional Concern (concerns regarding privacy, bias, and professional role). Each item was rated on a five-point Likert-type scale (1 = Strongly Disagree to 5 = Strongly Agree), with twelve items reverse-scored. The conceptual structure underlying the scale, and the pathway from antecedent conditions through attitude to behavioural adoption, is presented in Figure 3.

Conceptual Framework: Teachers' Attitude Towards Artificial Intelligence in Education

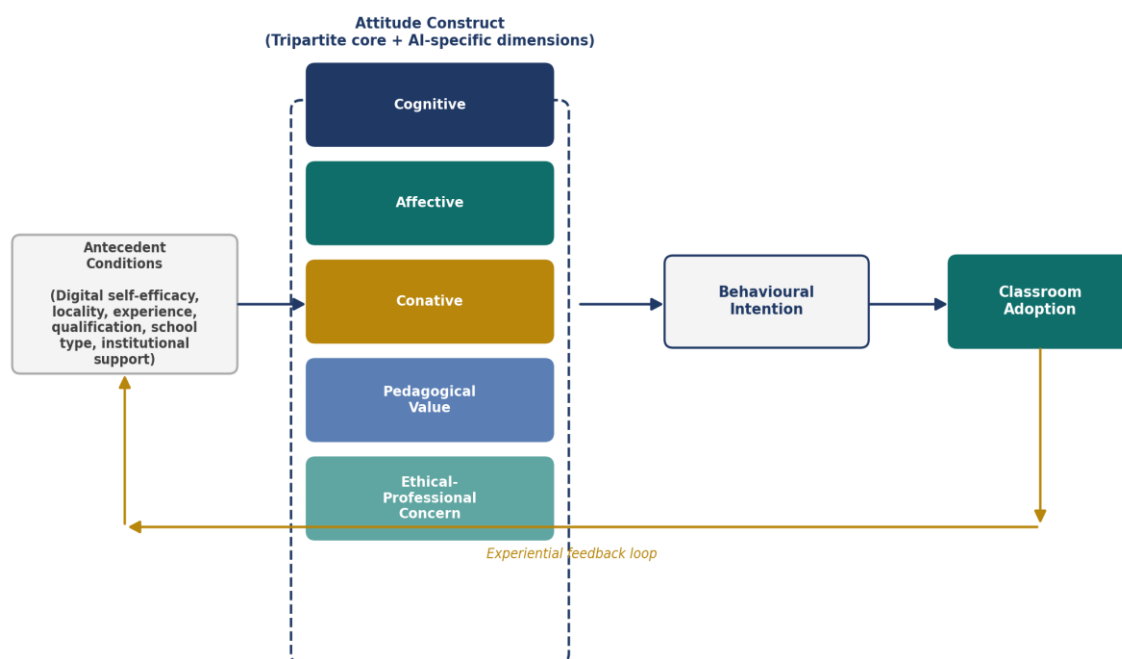


Figure 3: Conceptual Framework Underlying the Attitude Scale Towards AI

4.4 Statistical Techniques

Descriptive statistics (mean, standard deviation, frequency, percentage) were computed to describe the sample and the level of attitude. Cronbach's alpha was computed to establish the internal-consistency reliability of the scale, overall and for each dimension. Independent-samples t-tests were used to test H01 and H02, and one-way analysis of variance (ANOVA) was used to test H03, H04, and H05, with the total attitude score as the dependent variable in each case.

5. Data Analysis and Interpretation

5.1 Reliability of the Scale

Table 2 presents the internal-consistency reliability (Cronbach's alpha) of the overall scale and each of its five dimensions. All values exceed the conventionally accepted threshold of 0.70, and the overall scale demonstrates excellent reliability.



Dimension	No. of Items	Cronbach's Alpha
Cognitive	6	0.85
Affective	6	0.82
Conative	6	0.83
Pedagogical Value	6	0.81
Ethical-Professional Concern	6	0.84
Overall Scale	30	0.96

Table 2: Reliability of the Attitude Scale Towards AI (N = 300)

5.2 Descriptive Statistics and Dimension-wise Scores

Table 3 presents descriptive statistics for the total attitude score and each of the five dimension scores. Mean scores across the five dimensions were closely comparable, ranging from 18.55 (Pedagogical Value) to 18.78 (Cognitive), out of a possible maximum of 30 each, as illustrated in Figure 4.

Score	Mean	SD	Minimum	Maximum
Cognitive (/30)	18.78	4.94	6	30
Affective (/30)	18.61	4.50	7	29
Conative (/30)	18.70	4.71	6	30
Pedagogical Value (/30)	18.55	4.47	6	30
Ethical-Professional Concern (/30)	18.69	4.64	6	30
Total Attitude Score (/150)	93.33	21.66	33	146

Table 3: Descriptive Statistics for Dimension and Total Attitude Scores

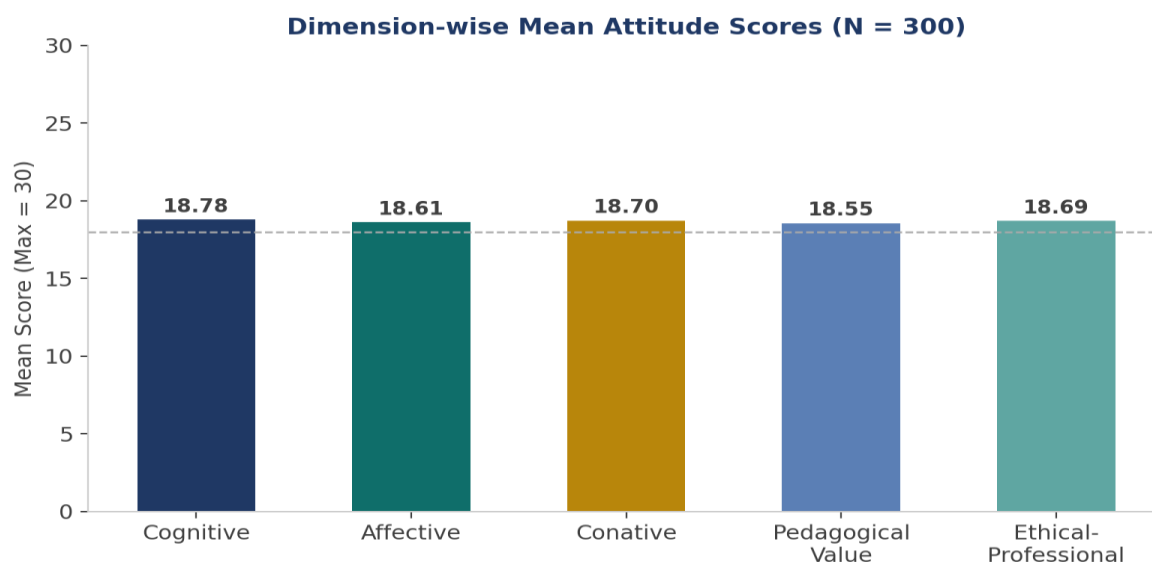


Figure 4: Dimension-wise Mean Attitude Scores

5.3 Overall Level of Attitude

Total attitude scores were classified into three levels using mean $\pm$ SD cut-offs (High ≥ 110 ; Moderate 90–109; Low < 90). Table 4 and Figure 5 present the resulting distribution.

Attitude Level	n	%
High	68	22.7
Moderate	99	33.0
Low	133	44.3

Table 4: Distribution of Overall Attitude Level Towards AI (N = 300)

Overall Attitude Level of Teachers Towards AI (N = 300)

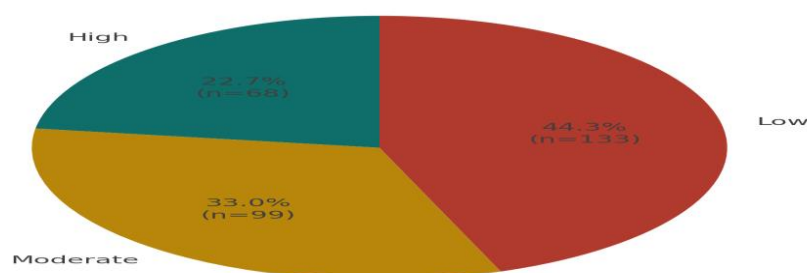




Figure 5: Overall Attitude Level of Primary School Teachers Towards AI

The largest proportion of teachers fell in the Low attitude-level band, with under a quarter demonstrating a highly favourable attitude, suggesting considerable scope for targeted AI-orientation training among Ahmedabad district's primary teaching workforce.

5.4 Testing of Hypotheses

H01 — Gender. Table 5 presents the results of the independent-samples t-test comparing male and female teachers' total attitude scores.

Group	N	Mean	SD	t	df	p	Result
Male	131	93.96	22.20	0.44	298	.66	Not Significant
Female	169	92.84	21.29				

Table 5: t-test for Attitude Score by Gender

Since $p = .66 > .05$, H01 is retained. Male and female primary school teachers in Ahmedabad district do not differ significantly in their attitude towards AI.

H02 — Locality. Table 6 presents the results of the t-test comparing urban and rural teachers.

Group	N	Mean	SD	t	df	p	Result
Urban	202	94.74	21.76	1.64	298	.10	Not Significant
Rural	98	90.42	21.27				

Table 6: t-test for Attitude Score by Locality

Since $p = .10 > .05$, H02 is retained, although urban teachers recorded a numerically higher mean score than rural teachers, consistent with generally greater digital infrastructure access in urban schools.

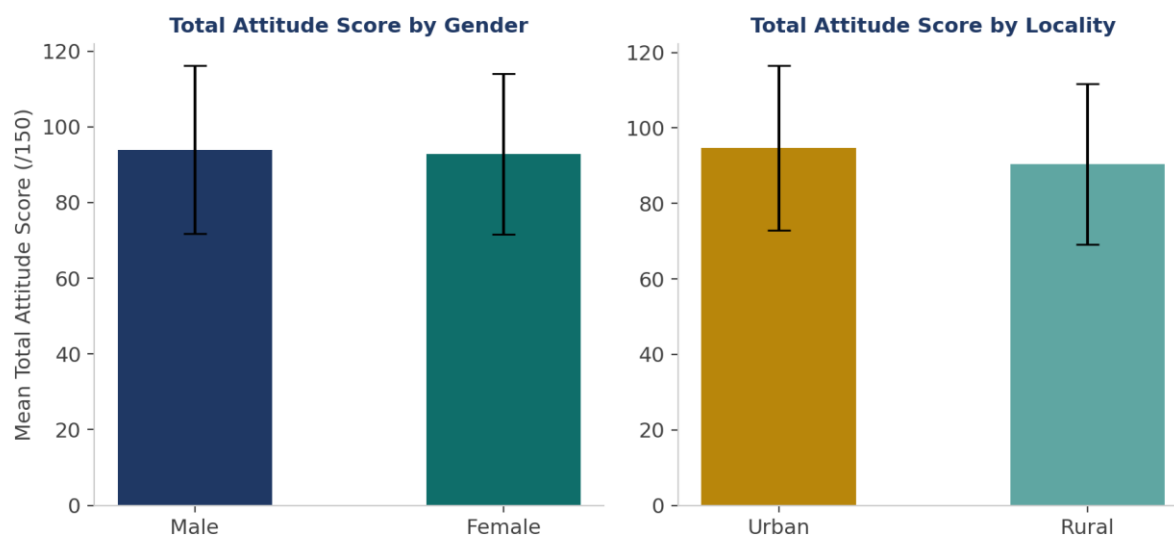


Figure 6: Mean Total Attitude Score by Gender and Locality

H03 — Teaching Experience. Table 7 presents the one-way ANOVA comparing total attitude scores across four teaching-experience groups.

Source	SS	df	MS	F	p	Result
Between Groups	3153.95	3	1051.32	2.27	.08	Not Significant
Within Groups	137126.38	296	463.26			
Total	140280.33	299				

Table 7: One-way ANOVA for Attitude Score by Teaching Experience

Mean scores were highest for teachers with 0–5 years of experience ($M = 97.82$) and lowest for those with 11–20 years ($M = 89.92$), a pattern consistent with generally greater comfort with digital tools among more recently trained teachers, although the difference did not reach statistical significance ($p = .08 > .05$); H03 is therefore retained.

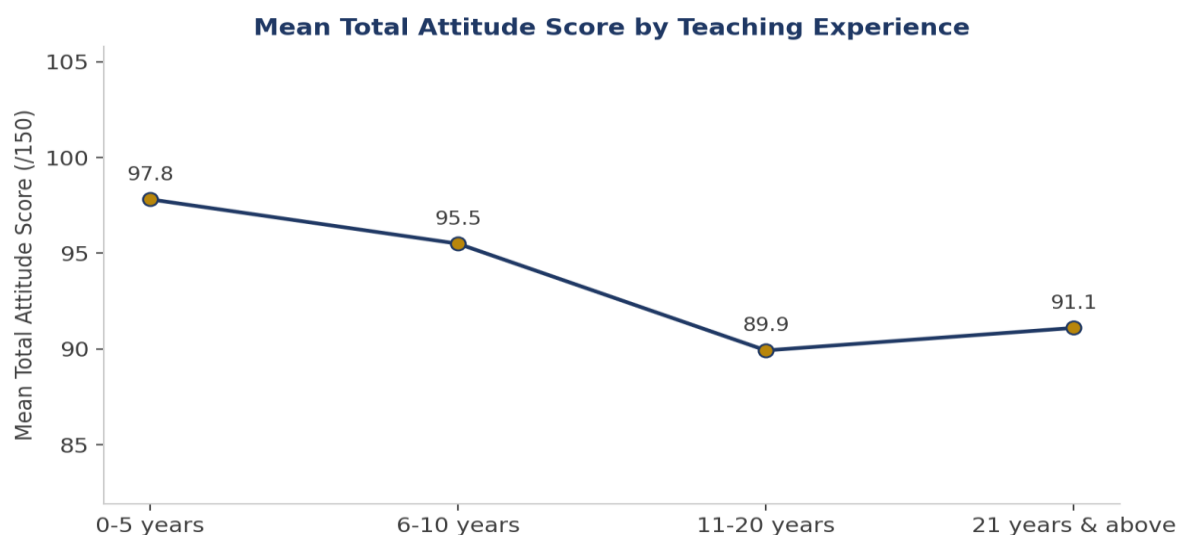


Figure 7: Mean Total Attitude Score by Teaching Experience

H04 — Educational Qualification. Table 8 presents the ANOVA comparing attitude scores across four qualification groups.

Source	SS	df	MS	F	p	Result
Between Groups	2753.54	3	917.85	1.98	.12	Not Significant
Within Groups	137526.79	296	464.62			
Total	140280.33	299				

Table 8: One-way ANOVA for Attitude Score by Educational Qualification

Mean scores were highest among M.Ed and above qualified teachers ($M = 99.76$) and lowest among PTC-qualified teachers ($M = 89.99$). Although this gradient is consistent with the expectation that higher qualification is associated with more favourable AI attitude, the difference was not statistically significant ($p = .12 > .05$); H04 is retained.

H05 — Type of School. Table 9 presents the ANOVA comparing Government, Grant-in-Aid, and Private school teachers.

Source	SS	df	MS	F	p	Result
Between Groups	1397.01	2	698.50	1.49	.23	



Source	SS	df	MS	F	p	Result
Within Groups	138883.32	297	467.62			Not Significant
Total	140280.33	299				

Table 9: One-way ANOVA for Attitude Score by Type of School

Mean scores were highest among Government school teachers ($M = 95.62$), followed by Private ($M = 91.66$) and Grant-in-Aid ($M = 90.97$) school teachers, but the difference was not statistically significant ($p = .23 > .05$); H_0 is retained.

6. Major Findings

1. The 30-item Attitude Scale Towards AI demonstrated excellent internal-consistency reliability, with an overall Cronbach's alpha of 0.96 and dimension-wise alphas ranging from 0.81 to 0.85.
2. The mean total attitude score of primary school teachers in Ahmedabad district was 93.33 ($SD = 21.66$) on a possible range of 30–150, indicating an overall moderately favourable attitude towards AI.
3. Only 22.7% of teachers exhibited a highly favourable attitude towards AI, while 44.3% fell in the low attitude-level band.
4. No statistically significant difference was found in attitude towards AI on the basis of gender, locality, teaching experience, educational qualification, or type of school, although consistent (non-significant) trends favoured urban, less-experienced, more highly qualified, and Government-school teachers.

7. Discussion

The absence of statistically significant demographic differences, despite a reasonably large sample of 300 teachers, suggests that attitude towards AI among Ahmedabad district's primary teachers may be shaped more by shared contextual factors — such as district-wide infrastructure availability, common in-service training exposure, and prevailing professional discourse about AI — than by individual demographic characteristics. This interpretation is consistent with technology-acceptance frameworks that emphasise facilitating conditions and



social influence, alongside individual belief structures, as determinants of attitude. The observed, though non-significant, gradient favouring less-experienced and more highly qualified teachers is consistent with prior educational-technology research linking recency of formal training to greater digital comfort, and merits further investigation with a larger or more experience-stratified sample.

The relatively low proportion of teachers with a highly favourable attitude, and the correspondingly high proportion in the low band, is a notable finding with direct implications for AI-integration policy. It suggests that infrastructural investment alone is unlikely to be sufficient; sustained, hands-on professional development addressing the cognitive, affective, and ethical dimensions of AI attitude identified by the scale is likely to be necessary to shift teachers from cautious ambivalence towards confident, pedagogically grounded adoption.

8. Educational Implications

The findings suggest that in-service teacher training programmes in Ahmedabad district should adopt a multidimensional approach to building favourable AI attitude, addressing not only technical AI literacy (the cognitive dimension) but also hands-on, low-stakes opportunities for experimentation (affective and conative dimensions), demonstrable classroom-relevant use cases (pedagogical value), and transparent institutional guidance on data privacy and academic integrity (ethical-professional concern). Since attitude did not differ significantly by school type, training initiatives can be designed for uniform district-wide rollout rather than being restricted to particular management categories, though special attention to rural and more experienced teacher cohorts may still be warranted given the direction, if not the significance, of the observed trends.

9. Limitations

The present analysis is based on data collected for scale standardization purposes and is confined to primary school teachers within a single district; generalization to other districts, school stages, or states should be made with caution. Self-reported Likert-scale responses are also subject to social-desirability bias. Future research should extend this scale to secondary



and higher-secondary teachers and examine its factorial structure through confirmatory factor analysis.

10. Conclusion

This study developed and standardized a 30-item, five-dimensional Attitude Scale Towards Artificial Intelligence for Teachers and applied it to 300 primary school teachers across Ahmedabad district, Gujarat. The scale demonstrated excellent reliability, and the resulting data indicated an overall moderately favourable, though not uniformly high, attitude towards AI, with no statistically significant variation by gender, locality, teaching experience, qualification, or school type. These findings point towards the need for sustained, multidimensional professional development to strengthen primary teachers' attitude towards AI across Ahmedabad district's primary education system, in support of the technology-integration goals articulated in NEP 2020.

References

- Ajzen, I. (1991). The theory of planned behaviour. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340.
- Government of India, Ministry of Education. (2020). National Education Policy 2020. Ministry of Education.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.
- Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425–478.
- Zhai, X., Chu, X., Chai, C. S., Jong, M. S. Y., Istenic, A., Spector, M., Liu, J.-B., Yuan, J., & Li, Y. (2021). A review of artificial intelligence (AI) in education from 2010 to 2020. *Complexity*, 2021, 8812542.
- Zhang, K., & Aslan, A. B. (2021). AI technologies for education: Recent research & future directions. *Computers and Education: Artificial Intelligence*, 2, 100025.