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A Comparative Analysis of Environmental Values among Rural and Urban B.Ed. Trainees

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Abstract

In the Indian context the research focus on the environmental orientation of prospective teachers is limited to awareness scores and less often differentiates the value orientations under these scores. The present study was an attempt to make comparison of the environmental values of rural and urban B.Ed. trainees on the basis of five dimensions – ecological conservation, environmental responsibility, aesthetic and emotional attachment, socio-altruistic concern and sustainable lifestyle. To examine the needs of the second year B.Ed. trainees, a descriptive survey design was employed with 320 B.Ed. trainees, selected by stratified random sampling technique from 8 colleges of education of Jiwaji University, Gwalior with equal number of trainees from locality, gender and academic stream. The data was collected on 45 items 5-point Likert scale with the instrument Cronbach alpha of .906. The independent samples t tests, a two way analysis of variance and Pearson correlation were used. There were no significant differences between rural and urban trainees in the composite score ($t(318) = -1.84$, $p = .066$); however, three of the five dimensions were different. The difference was significant with urban trainees showing higher scores on environmental responsibility and sustainable lifestyle and rural showing higher scores on aesthetic/emotional attachment ($d = 0.71$). The main effect of gender was significant ($F(1, 316) = 7.04$, $p = .008$) and there was no significant interaction. On all dimensions, science stream trainees had higher scores than arts stream trainees. Rural and urban trainees thus have the same overall level of environmental values but a different composition, having implications for the planning of environmental education in colleges of education.

Keywords: environmental values, B.Ed. trainees, rural and urban locality, teacher education, environmental education, value orientation

1. Introduction

In India, environmental degradation has become an imminent danger. For the same young adults entering teachers' preparation programmes, the issues of declining ground water levels in the Chambal belt, issues of air quality alerts in tier two cities and the visible disappearance of common grazing lands are affecting them directly. Their attitudes towards nature are more than just their own because a school teacher passes on attitudes to approximately forty children for 30 years. Thus, environmental education research has shifted its focus from learning content from what students learn to what is worth being protected by students (Fang et al., 2023).

Environmental values are relatively persistent preferences of an individual with regard to the natural world and the human responsibilities that are derived from it. They are not environmental knowledge that can be taught and learned in preparation for an exam, nor are they environmental behaviour, which is limited by income, infrastructure and household authority. Batool et al. (2024) demonstrated in their value-belief-norm model that value orientations frontload the formation of personal norms and then the behaviour, so that behaviour is typically only affected by campaigns that also encourage the personal norm.

The teacher education is a place in this chain that is unique. After one semester of sustainability courses Weichelt and associates (2020) found that preservice teachers' attitudes towards sustainable development

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changed, and Dolenc Orbanic and Kovac (2021) found that pre-service teachers with positive attitudes were not always converted into intentions for their classes. Goel et al. (2023) conducted a study with school students in Kanpur and found that the students had good awareness of climate change, but had not been exposed to much information about what could be achieved by individual action.

The factor which has given the least agreement has been locality. It is intuitive to think that the youth in rural areas, who still depend on land, water and livestock for their livelihood, will have a higher value for the environment than the youth in urban areas, who have learnt about the environment through the media and organised eco-club activities. Both patterns are found in the literature and the contradiction might be due to dimensions of the composite scores operating in different directions. Instead of the question of who puts more value on the environment, the present study poses the question on how the two groups allocate their environmental commitment to various dimensions.

2. Review of Related Literature

2.1 Conceptual Base of Environmental Values

The value-belief-norm tradition is based on the assumption that environmental concern is a product of three value orientations: egoistic (self-interest), altruistic (other people), and biospheric (ecosystem). Lou and Li (2024) complicated that reading further, by demonstrating that when environmental issues are psychologically close, there can be a positive relationship between egoistic value and pro-environmental attitude. Gifford and Nilsson (2014) categorized the personal and social factors that influence the environment into four categories: childhood experiences, place attachment, education, political orientation and social norms, and they noted that place of residence plays a role in multiple of these. In this study, by Torroba Diaz et al. (2023) with 480 Spanish university students, knowledge was found to indirectly affect behaviour via the attitudes mediating between the two, further reinforcing the idea that values should be seen not as the same thing as knowledge, but as a bridge between. This five dimension structure is designed around that logic and is based on separating conservation preference from felt responsibility, emotional attachment, concern for others and willingness to change daily consumption.

2.2 Locality as a Determinant

Based on the results of the socio-ecological model, conducted by Feng et al., (2025) on residents in China, green perception of rural residents was mainly influenced by their personal experiences of the natural environment, while urban residents' green perception was more influenced by information channels and institutional signals. The authors Bleich and Krieger (2021) discovered that socioeconomic position and education level accounted for a significant portion of environmental awareness among students, and both samples were systematically different between rural and urban samples in India, so some of the locality effects were confounded with them. According to Cernicova-Buca et al. (2023) the level of concern was high among the students in Romania and the level of campus behaviour was uneven. The lack of settlement is also reflected in Indian studies where Bhunia and Giri (2024) carried out survey of 426 undergraduate students in Medinipur district and reported an urban advantage that was small compared to the difference by academic stream; also, earlier studies in Punjab and Haryana reported small urban advantage, and other investigators reported no urban advantage.

2.3 Prospective Teachers and Environmental Orientation

Gheith (2019) conducted a study to evaluate Environmental Literacy knowledge and behavioral commitment among prospective classroom teachers in Jordan and reported a competent knowledge and weak behavioral commitment. Similarly, Garcia et al. (2024) concluded that in the future, pre-school and primary teachers in Andalusia have a greater tendency to report affective attachment to nature than to translate this attachment into learning plans. In the context of comparing teachers and student teachers, Nyberg et al. (2020) attributed the differences to the emphasis the national curriculum places on the two countries, rather

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than to individual dispositions, and El Batri et al. (2022) found that teacher preparation is a limiting factor in primary schools in Morocco.

These were two additional discoveries that influenced the current design. In Pakistan, Imran et al. (2021) reported how women's environmental voices are influenced by their access to education, which is relevant for Indian B.Ed. students, who are predominantly female. On one hand, Li et al. (2024) proved that the affective dimension of the concept of empathy is a predictor of pro-environmental attitudes even in preschool children, strengthening the argument for measuring the affective dimension of the concept separately from the cognitive dimension.

2.4 Research Gap

Three gaps emerge. Firstly, most of the studies conducted in India only report one overall score, which means that opposing trends to a dimension cancel out and the question of locality remains unresolved. Secondly, there are no studies available on the environmental values of prospective teachers in the Gwalior and Chambal region which is a combination of intensive farming, ravine degradation and rapid peri-urban growth. Third, there are very few studies reporting effects sizes so results of small effect size are equivalent to large effect sizes.

3. Method

3.1 Research Design

The descriptive survey design of the causal comparative type was used, as locality, gender and academic stream are attribute variables which cannot be manipulated. Groups were established according to their current status and compared on the dependent variable, with a 2 x 2 factorial design of locality and gender added to facilitate the analysis of variance.

3.2 Population and Sample

The respondents were the second year B.Ed. trainees of the colleges of education affiliated to Jiwaji University, Gwalior for the academic year 2025-26. Second year trainees were selected since they had finished the EE training and one school internship. Stratified random sampling was used: eight colleges were selected first, four in the municipal limits and four in the block headquarters and adjoining rural areas of a college; within each college, the trainees of each cell were drawn randomly from the attendance registers until the cells were full, with stratification done according to gender and academic stream.

The locality was categorized on the basis of the last five years of schooling rather than their current address due to the fact that many of the rural trainees move to Gwalior city during the course of their schooling. Table 1 shows that the final sample of 320 trainees was evenly divided into all three classification variables and there were 40 trainees in each of the 8 cells.

Table 1: *Distribution of the Sample by Locality, Gender and Academic Stream*

Locality	Male	Female	Arts	Science	Total
Rural	80	80	80	80	160
Urban	80	80	80	80	160
Total	**160**	**160**	**160**	**160**	**320**

3.3 Description of the Tool

The investigator prepared the Environmental Values Scale after examining a variety of environmental attitude and ecological worldview and value orientation scales. Includes 45 statements across five dimensions, rated on a five-point Likert scale (from strongly agree = 5 to strongly disagree = 1). There were 14 statements that were negatively worded and reverse scored. The range of scores is from 45 to 225

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and a higher score represents a more environmental value orientation. The structure of the instrument is provided in Table 2.

Table 2: *Structure of the Environmental Values Scale*

Code	Dimension	Items	Max. Score	Illustrative Content
D1	Ecological Conservation Values	10	50	Protection of forests, water bodies and species
D2	Environmental Responsibility Values	9	45	Personal obligation and accountability for damage
D3	Aesthetic and Emotional Values	8	40	Attachment to natural surroundings and beauty
D4	Socio-altruistic Values	9	45	Concern for community health and future generations
D5	Sustainable Lifestyle Values	9	45	Consumption restraint, waste sorting, energy use
Total	**Environmental Values (composite)**	**45**	**225**	

3.4 Validity and Reliability

The content was checked for validity by sending a pretest of 58 statements to seven experts in education and environmental science and psychology. At least six experts kept statements, bringing the number down to 45. In Hindi medium, part of the sample found it more comfortable so the items were checked by two teacher educators in Hindi medium and a bilingual version was prepared with the item in Hindi and in English language.

The instrument was piloted with 60 B.Ed trainee who were not included in the final sample and statements in which the corrected item-total correlation coefficient was above .30 were selected. The reliability coefficients on the final data set is reported in Table 3.

Table 3: *Internal Consistency Reliability of the Environmental Values Scale*

Code	Dimension	Items	Cronbach α	Interpretation
D1	Ecological Conservation Values	10	.808	Good
D2	Environmental Responsibility Values	9	.828	Good
D3	Aesthetic and Emotional Values	8	.785	Acceptable
D4	Socio-altruistic Values	9	.794	Acceptable
D5	Sustainable Lifestyle Values	9	.813	Good
Total	**Full scale**	**45**	**.906**	**Excellent**

Note. Coefficients of .70 and above were treated as acceptable for group comparison.

3.5 Procedure of Data Collection

This scale was given in their whole classes after written permission from the principals of the eight colleges involved from the second week of November till the first week of December 2025. The trainees were informed that there was no fixed score, that their responses may not be seen by anyone in the college and that the responses are being used for research purposes only. The total time required for completion was 20-25 minutes. A total of 348 forms were sent out and 331 were returned and 11 were not returned due to inconsistent or incomplete responses (effective response rate = 91.9 per cent).

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4. Results and Interpretation

4.1 Preliminary Checks

All six variables had an acceptable level of skewness and kurtosis (both within +1 to –1) and the Kolmogorov-Smirnov statistic was not significant in the composite score or for three of the five dimensions. The values of socio-altruistic and sustainable lifestyle were slightly negatively skewed as would be expected when people respond positively to socially desirable items. No parametric procedures were discarded because of group size (160) or shape statistics which were within acceptable limits. The data from the tests are shown in Table 4.

Table 4: *Test of Normality for the Dimensions and the Composite Score (N = 320)*

Variable	Skewness	Kurtosis	K-S Statistic	p
D1	-0.041	-0.279	.060	.199
D2	-0.185	-0.329	.056	.250
D3	-0.188	-0.509	.068	.097
D4	-0.343	-0.166	.076	.048
D5	-0.267	-0.535	.077	.041
Total	**-0.176**	**-0.188**	**.039**	**.702**

4.2 Level of Environmental Values in the Total Sample

The composite mean for the 320 trainees was 171.92 with a standard deviation of 15.82 and a possible maximum score of 225 or an item mean of 3.82 on a five-point scale. The scores were between 123 and 211 with a median score of 172. Aesthetic and emotional values, socio-altruistic values, and ecological conservation values had the highest item mean of 3.93, 3.90, and 3.88, respectively, dimension-wise. Sustainable lifestyle values (3.68) were the weakest dimension, followed by environmental responsibility values (3.72). The descriptive statistics are given in Table 5.

Table 5: *Descriptive Statistics for Environmental Values in the Total Sample (N = 320)*

Variable	M	SD	SEM	Item Mean	Minimum	Maximum
D1	38.78	4.76	0.27	3.88	24	50
D2	33.46	4.79	0.27	3.72	20	44
D3	31.47	4.00	0.22	3.93	21	40
D4	35.06	4.33	0.24	3.90	22	44
D5	33.15	4.61	0.26	3.68	22	43
Total	**171.92**	**15.82**	**0.88**	**3.82**	**123**	**211**

As indicated in Table 6, the trainees were then grouped into three groups according to the mean +1SD, mean –1SD of the mean of the composite scores. The distribution of localites was roughly two-thirds in the moderate range, as would be expected for a trait that is normally distributed; and the proportion of urban trainees in the high band was six percentage points greater than the proportion of rural trainees in the same band.

Table 6: *Levels of Environmental Values among Rural and Urban B.Ed. Trainees*

Level	Score Range	Rural f	Rural %	Urban f	Urban %	Total %
High	Above 187.75	26	16.2	36	22.5	19.4
Moderate	156.10 to 187.75	105	65.6	101	63.1	64.4

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Level	Score Range	Rural f	Rural %	Urban f	Urban %	Total %
Low	Below 156.10	29	18.1	23	14.4	16.2
Total		**160**	**100.0**	**160**	**100.0**	**100.0**

Note. Cut-off points were fixed at the composite mean plus or minus one standard deviation (M = 171.92, SD = 15.82).

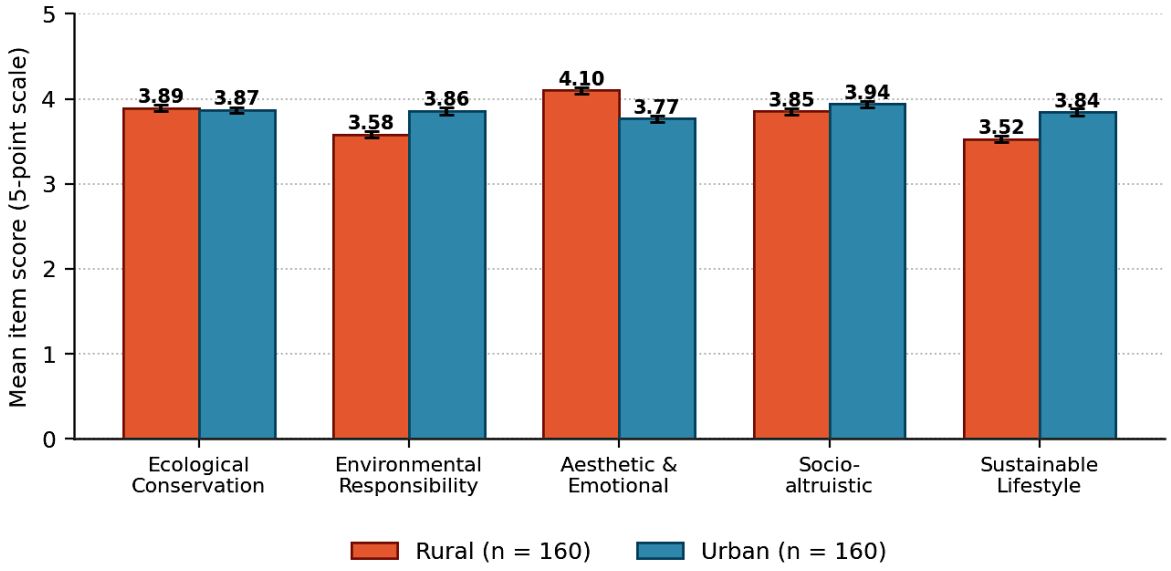

Figure 1: *Dimension-wise Item Mean Scores of Rural and Urban B.Ed. Trainees*

7.3 Comparison of Rural and Urban Trainees

The comparison is given in the form of a table, Table 7 below. Urban trainees had a composite mean of 173.55 while the rural trainees scored 170.30. This difference of 3.25 gave t(318) = -1.84, and p = .066, which is not significant at the .05 level, and d = -0.21 confirms that the gap is small. Thus the null hypothesis H01 is accepted: Rural and urban B.Ed. trainees are not significantly different on the composite score.

Table 7: *Comparison of Rural and Urban B.Ed. Trainees on Environmental Values*

Variable	Rural M (SD)	Urban M (SD)	t	df	d	Remark
D1	38.89 (4.84)	38.67 (4.68)	0.41	318	0.05	Not Significant
D2	32.21 (4.47)	34.72 (4.78)	-4.86	318	-0.54	Significant
D3	32.81 (3.73)	30.13 (3.81)	6.36	318	0.71	Significant
D4	34.68 (4.45)	35.44 (4.18)	-1.57	318	-0.18	Not Significant
D5	31.71 (4.27)	34.59 (4.49)	-5.88	318	-0.66	Significant
Total	**170.30 (15.47)**	**173.55 (16.05)**	**-1.84**	**318**	**-0.21**	**Not Significant**

The situation is different on the dimension-wise level. Three of 5 dimensions resulted in significant differences. Urban trainees scored higher on environmental responsibility values, t(318) = -4.86, p < .001, d = -0.54, and on sustainable lifestyle values, t(318) = -5.88, p < .001, d = -0.66. The largest effect in the study was found on the aesthetic and emotional values, t(318) = 6.36, p < .001, d = 0.71, with rural trainees rating them higher than urban ones. There were no significant differences in ecological conservation values and

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socio-altruistic values. It is therefore concluded that D2, D3 and D5 reject the hypothesis H02, while D1 and D4 accept the hypothesis H02.

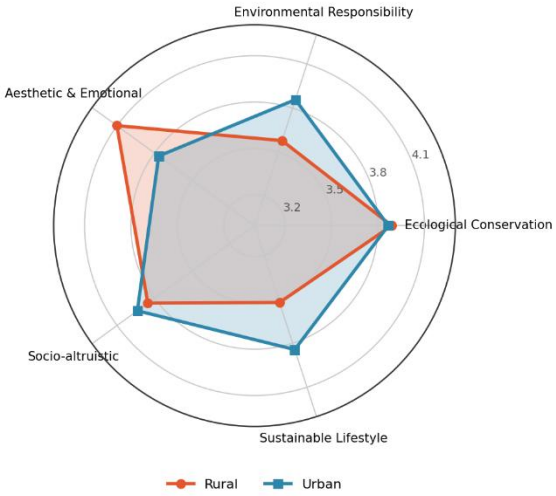

Figure 2: *Environmental Value Profile of Rural and Urban B.Ed. Trainees*

The pattern is easier to read in figure 2, than in the table. The two profiles overlap almost exactly (the non-significant difference between them is about the same surface area), but are rotated with each other: Rural axis is towards aesthetic and emotional axis and Urban axis is towards environmental responsibility and sustainable lifestyle. Equal totals from unequal components.

7.4 Effects of Locality and Gender

A 2 x 2 analysis of variance was run using the locality as one independent variable and the gender as the other independent variable with the composite score as the dependent variable. Summary and cell means are in Table 8 and 9 respectively. The main effect of locality was not significant, $F(1, 316) = 3.49$, $p = .063$, partial eta squared = .011, so H03 is retained. The main effect of gender was statistically significant, $F(1, 316) = 7.04$, $p = .008$, partial eta squared = .022, with the female trainees mean score of 174.23 compared to the mean score for the male trainees of 169.62. H04 is rejected. The interaction did not reach significance, $F(1, 316) = 3.63$, $p = .058$, but is close to the criterion and is worthy of comment, so H05 is retained.

Table 8: *Summary of Two-way ANOVA for Environmental Values by Locality and Gender*

Source of Variance	SS	df	MS	F	p	η^2
Locality (A)	845.00	1	845.00	3.49	.063	.011
Gender (B)	1702.01	1	1702.01	7.04	.008	.022
A x B	877.81	1	877.81	3.63	.058	.011
Error	76427.38	316	241.86			
Total	**79852.20**	**319**				

Note. η^2 denotes partial eta squared. Values of .01, .06 and .14 are conventionally read as small, medium and large.

Table 9: *Cell Means of the 2 x 2 Design for Composite Environmental Values*

Locality	n	Male M (SD)	Female M (SD)	Row Mean	Difference
Rural	160	169.65 (15.78)	170.95 (15.22)	170.30	1.30
Urban	160	169.59 (16.07)	177.51 (15.11)	173.55	7.92
Column Mean	**320**	**169.62**	**174.23**	**171.92**	**4.61**

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Note. n = 80 in each cell. Difference refers to the female mean minus the male mean within each row.

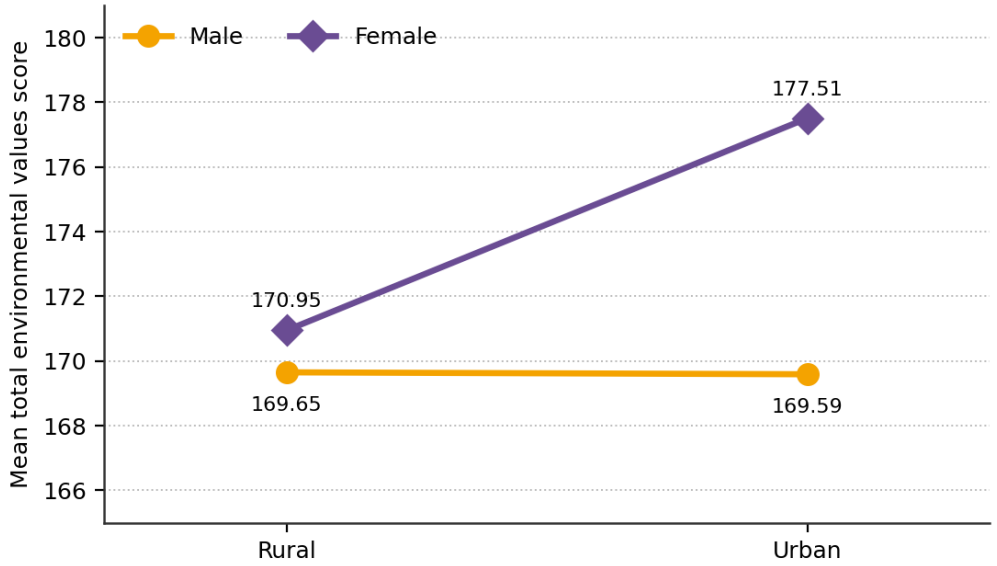

Figure 3: *Interaction between Locality and Gender on Composite Environmental Values*

The borderline interaction term is due to the leveling off of the males' training line and the rising line for females' training. The gender effect can be explained mainly by the female urban subgroup as male trainees scored almost the same in both areas (169.65 and 169.59). This reading is an observation and not a reading and should be confirmed with a larger sample size because the interaction did not meet the .05 level.

7.5 Comparison by Academic Stream

The fourth objective was related to academic stream. On each dimension and on the composite score, students in the science stream performed better than those in the arts stream and each of the differences was significant at the 0.05 level. The composite means were 176.27 and 167.58 respectively, $t(318) = -5.10$, $p < .001$, $d = -0.57$. The null hypothesis is rejected: H06. The results are reported in Table 10 and the distribution by locality and stream is shown in Figure 4.

Table 10: *Independent Samples t-test Comparing Arts and Science Stream Trainees*

Variable	Arts M (SD)	Science M (SD)	t	p	Cohen's d	Remark
D1	37.90 (4.75)	39.66 (4.61)	-3.36	< .001	-0.38	Significant
D2	32.47 (4.90)	34.46 (4.48)	-3.79	< .001	-0.42	Significant
D3	30.83 (4.10)	32.11 (3.79)	-2.90	.004	-0.32	Significant
D4	34.06 (4.28)	36.06 (4.15)	-4.26	< .001	-0.48	Significant
D5	32.33 (4.70)	33.98 (4.37)	-3.27	.001	-0.37	Significant
Total	**167.58 (15.50)**	**176.27 (14.97)**	**-5.10**	**< .001**	**-0.57**	**Significant**

Note. n = 160 in each stream group. df = 318 for every comparison.

7.6 Relationship among the Dimensions

All ten inter-dimension coefficients were positive and significant at the .01 level, ranging from .216 between aesthetic and emotional values, to .458 between ecological conservation and socio-altruistic values, and from .606 up to .757 between the composite and each single dimension value. So, the null hypothesis H07 is rejected. The magnitude of these coefficients is moderate, suggesting that there is a common core of

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the five dimensions, but there is sufficient independence between the dimensions to merit reporting them separately, as is done in the dimension-wise analysis given above, and in the empirical evidence that follows.

Table 11: *Inter-correlations among the Five Dimensions of Environmental Values (N = 320)*

Dimension	D1	D2	D3	D4	D5	Total
D1	1					.757**
D2	.349**	1				.688**
D3	.383**	.238**	1			.606**
D4	.458**	.371**	.378**	1		.742**
D5	.440**	.407**	.216**	.421**	1	.716**

Note. ** Correlation is significant at the .01 level, two-tailed.

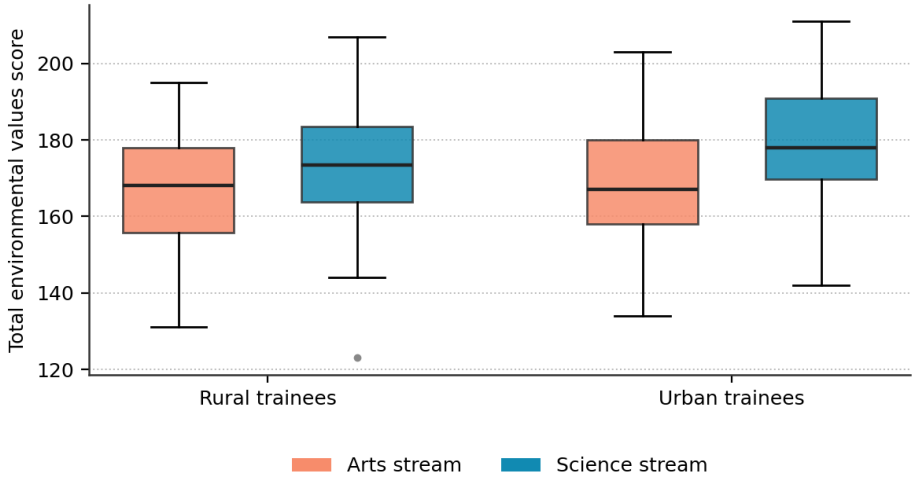

Figure 4: *Distribution of Composite Scores by Locality and Academic Stream*

7.7 Summary of Hypothesis Testing

Table 12 consolidates the decisions taken on each null hypothesis.

Table 12: *Summary of Hypothesis Testing*

H0	Statement	Test Statistic	Decision
H01	No locality difference in composite score	t = -1.84, p = .066	Retained
H02	No locality difference on any dimension	t = 0.41 to 6.36	Rejected for D2, D3, D5
H03	No main effect of locality	F = 3.49, p = .063	Retained
H04	No main effect of gender	F = 7.04, p = .008	Rejected
H05	No locality x gender interaction	F = 3.63, p = .058	Retained
H06	No difference between arts and science streams	t = -5.10, p < .001	Rejected
H07	No relationship among the five dimensions	r = .216 to .458	Rejected

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8. Discussion

The main finding is that there are differences in environment value between rural and urban B.Ed. trainees, though the strength of the environmental values is similar. The composite comparison did not show any significant difference which is in line with the findings of Bhunia and Giri (2024) that locality is a lesser discriminant than academic stream in West Bengal. If the analysis had ended there, it might have been concluded that locality is irrelevant; the dimension-wise analysis indicates that this is not the case and that the contradictions found in the previous literature are partly due to aggregation.

The highest ES was in the rural group, for aesthetic/emotional values. This aligns with Feng et al. (2025), who stated that rural environmental perception is based on one's own firsthand experience with natural environments rather than mediated information. A trainee who has been living in a close proximity to a field, canal or a ravine can develop, without any teaching, an attachment to the physical environment and this was observed also among preschool children, as reported by Li et al. (2024), indicating that this affective connection is developed through contact, not curriculum.

Urban trainees achieved a higher score on the two dimensions that were most directly related to formal exposure. Segregated garbage collection, Air Quality Reporting, eco club activity and college campaigns are more available in Gwalior city than surrounding blocks. Bleich and Krieger (2021) mapped environmental awareness among students to their socio-economic and educational position and the present pattern is fitting this account, as the urban subgroup of the Indian teacher education colleges tends to come from families with higher education of parents. Similarly, Torroba Diaz et al. (2023) found that knowledge influenced behaviour via attitude, thus rendering the attitude as the responsibility of a learned, not an inherent, orientation.

Its not-particularly-important predictor, the absence of a locality difference on ecological conservation and socio-altruistic values is informative. Both dimensions are formulated around general statements (preserving forests and protecting future generations) and agreement with such statements is very high, so the variance gets compacted. In a Romanian sample, Cernicova-Buca et al. (2023) found that the concern reported was consistently high, with no variation, while practice reported varied.

The gender effect is large and similar to Nyberg et al. (2020) and Imran et al. (2021) with a small advantage for female trainees, with the small cell means indicating that this advantage is most likely to lie within the urban female sub-group. The stream difference proved to be the most consistent finding in the study, with science trainees being ahead in all the five dimensions. Both Gheith (2019) and Garcia et al. (2024) have reported that disciplinary background is associated with environmental literacy in prospective teachers, and the present data have shown that it is also associated with values in teachers of the sciences. It is perhaps this group (Arts stream trainees) who are the least prepared to deal with the environmental content in school because they are in the majority in most B.Ed. colleges in the region.

9. Conclusion

The environmental values of the B.Ed. trainees in Gwalior region have been found to be moderate to high, 66.67% of the trainees have medium level of environmental values and item mean on 5 point scale is 3.82. While the composite score is not different between rural and urban trainees, three of the five dimensions are different between the groups but in opposite directions. The rural trainees were more likely to have an aesthetic/emotional attachment with the landscape; urban trainees more likely to have a felt responsibility; and rural and urban trainees were indistinguishable in sustainable lifestyle practice, conservation preference, or concern for others. Female trainees performed better than the male trainees and science stream trainees had a higher score than arts stream trainees in all the dimensions.

Methodological point is as important as substantive point. A composite score that would be reported without a locality difference would have been technically correct, but practically misleading. Research conducted on environmental values in teacher education programs should include reporting on dimensions separately and the effect size should be reported on the same page as the significance test, since the instructional decision

to be made will depend on the weak dimension and how weak it is, rather than the presence or absence of a difference.

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