

# Locus Of Control, Academic Achievement, And Gender Among Student Teachers In Manipur: A Cross-Sectional Study

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## Abstract:

**Background:** A teacher's locus of control (TLOC), the belief that student outcomes are contingent on one's own teaching efforts, is a critical predictor of teaching efficacy. Understanding its relationship with academic achievement during training and its distribution across gender is essential for tailored teacher education.

**Objective:** This study investigates the relationship between TLOC and academic achievement and explores gender differences in TLOC among student teachers in Manipur, India.

**Materials and Methods:** A cross-sectional design and convenience sampling were used. Data were collected from 622 student teachers (464 female, 158 male) undergoing a teacher education program (B.Ed. 2 years). Participants completed the Rose and Medway (1981) Teacher Locus of Control (TLOC) Scale. Academic achievement was determined using a median split of cumulative Grade Point Average (GPA). Data were analyzed using descriptive statistics, independent samples t-tests, Cohen's *d*, and binary logistic regression.

**Results:** A significant relationship was found between TLOC and academic achievement. Students with GPAs above 66.0 and above the median (high achievers) had a significantly greater proportion of internal TLOC (57.8%) compared to those below the median (low achievers) (46.9%) ( $p = 0.005$ ,  $OR = 1.55$ ). In contrast, no significant gender differences in TLOC were observed.

**Conclusion:** An internal teacher locus of control is a significant psychological correlate of academic achievement among student teachers, while gender does not appear to influence TLOC orientation. Teacher education programs should prioritize interventions that foster an internal TLOC to enhance both trainee academic success and future professional competence.

**Keywords:** Teacher Locus of Control, Academic Achievement, Gender Differences, Student Teachers, Teacher Education.

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Date of Submission: 13-01-2026

Date of Acceptance: 23-01-2026

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## I. Introduction

The quality of the teaching force is a cornerstone of any effective educational system. Consequently, the process of selecting and training student teachers has garnered significant research interest, with a focus on identifying the psychological attributes that predict both training success and future professional competence (Poulou, 2007). While the general locus of control (LoC) is a well-established construct (Rotter, 1966), its domain-specific application in teaching is particularly salient. The Teacher Locus of Control (TLOC), conceptualized by Rose and Medway (1981), refers to a teacher's beliefs about whether student outcomes are a result of their own teaching behaviour (internal TLOC) or are due to factors beyond their control, such as home environments, student ability, or luck (external TLOC).

For student teachers, this construct is doubly critical. Their own academic achievement during training may be influenced by their generalized control beliefs, and the specific TLOC they develop will directly impact their future instructional strategies, classroom management, and resilience (Wang et al., 2015). Teachers with internal TLOC likely more innovative, persistent with struggling students, and experience lower burnout.

A separate yet related line of inquiry has explored demographic correlates of LoC, with gender being a frequently examined variable. The findings, however, have been mixed and often context-dependent, suggesting that gender differences are not universal but may vary across populations and professional settings.

While the relationship between TLOC, achievement, and gender has been studied independently in various populations, there is a paucity of research examining these factors together within the specific cohort of student teachers in the Indian context, particularly in the north-eastern state of Manipur.

**Research questions:**

1. Is there a significant relationship between teacher locus of control and academic achievement among student teachers in Manipur?
2. Are there significant gender differences in the teacher locus of control among these student teachers?

**Hypothesis**

$H_1$ : Student-teachers with internal teacher locus of control will demonstrate significantly higher academic achievement compared to those with external teacher locus of control.

$H_2$ : There will be a significant gender difference in teacher locus of control among student teachers.

## **II. Materials And Methods**

**Sample**

This study used a cross-sectional research design. A convenience sampling method was used to select 622 preservice teachers (female and male) currently enrolled in a 2-year B.Ed. teacher education program from 14 teacher education colleges located in the valley district of Manipur.

**Measures**

**Teacher Locus of Control (TLOC):** It was measured using the Rose and Medway (1981) Teacher Locus of Control Scale. This 28-item forced-choice instrument presents respondents with two statements for each item: one reflecting internal TLOC and the other external TLOC. Participants must select the statement they more strongly believe to be true. Sample items include a choice between internal statements like “students obtain good marks in the exam due to my effort” and external statements like “*students obtain good marks in the exam due to their own effort.*” For this study, internal choices were scored as “1” and external choices as “0”. A total TLOC score was calculated for each participant by summing the scores of all 28 items, yielding a potential range of 0 to 28, with higher scores indicating a more internal TLOC.

For this analysis, and consistent with the scale’s interpretation, participants with a total score ranging from 16 to 28 were classified as having an ‘internal’ TLOC, and those with a score ranging from 0 to 15 were classified as having an ‘external’ TLOC. The internal consistency (Kuder-Richardson formula 20) for the original scale was reported as .83 (Rose & Medway, 1981).

**Academic Achievement:** Academic achievement was operationalized using the cumulative Grade Point Average (GPA) from the students’ most recent qualifying degree prior to entering the teacher education program. This included Bachelor’s degrees (e.g., B.A., B.Sc.) and Master’s degrees (e.g., M.A., M.Sc.). Participants were classified into two groups based on a median split of these GPA scores. The median GPA for the sample was 66.0. All students with a GPA greater than 66.0 were classified as “High Achievers”. All students with a GPA less than 66.0 were classified as “Low Achievers”. Students with a GPA of exactly 66.0 were included in the “High Achievers” group to ensure clear dichotomization, resulting in a final group distribution of 313 High Achievers and 309 Low Achievers. This method is a standard approach for creating distinct groups for comparative analysis (Lacobucci et al., 2015).

**Gender:** It was recorded as a binary variable gender (Male/Female) based on self-report.

**Procedures Methodology**

The present study aimed to examine the locus of control among preservice teachers in Manipur using the Locus of Control Scale developed by Rose and Medway (1981). The data collection was carried out in the following steps: **First, a preliminary survey was** conducted to identify the number of teacher education colleges located in the valley districts of Manipur and to collect information regarding the enrollment size, which was used to determine the potential number of respondents and plan the logistics of data collection. **Second, informed consent** was obtained from the principal to seek approval for conducting the study among their students. The purpose and academic nature of the research were clearly explained to them. **Third, a convenient date** and time were fixed for the administration of the measure in consultation with the principals and the concerned teacher educators. The researchers ensured that the data collection process would not disrupt regular classroom activities. **Fourth, the 28-item measure** was administered to the participants in their classroom setting. They were briefed about the purpose of the study and were assured that their response would remain confidential and anonymous. **Informed consent** was obtained from each participant. Clear instructions were provided on how to respond to each item using the provided response options. The researchers emphasized that there were no right or wrong answers and that participants should indicate the response that best represented their personal beliefs or attitudes. On average, administering the scale took approximately 20-25 minutes to complete. The researchers remained present throughout the session to address any doubts and to ensure that all items were completed independently. The data were collected in a **cross-sectional design**, representing a single point in time, with **convenience sampling**, selecting participants who were readily available and willing to take part in the study.

### **Statistical Analysis**

Data were analysed using SPSS Statistics Version 28. Descriptive statistics (frequencies and percentages) were computed to summarize the data. The relationship between TLOC and achievement, and the difference in TLOC by gender, were tested using independent samples t-tests on the proportions of internal TLOC. The magnitude of the differences was assessed using Cohen's \*d\*. To further elucidate the relationships, two separate binary logistic regression analyses were performed: one with Achievement Group (High = 1, Low = 0) as the outcome variable and TLOC as the predictor, and another with TLOC (Internal = 1, External = 0) as the outcome variable and Gender as the predictor.

## **III. Result**

### **Descriptive Statistics**

The overall distribution of TLOC in the sample was nearly even, with 52.4% (n = 326) of student teachers classified as internal. The distribution of TLOC across the achievement groups and genders is detailed in Table 1.

**Table 1:** Descriptive Statistics for Teacher Locus of Control by Academic Achievement and Gender

Variables	Category	N	Internal TLOC n (%)	External TLOC n (%)	Total N
<b>Academic Achievement</b>	High Achievers	313	181 (57.8%)	132 (42.2%)	313
	Low Achievers	309	145 (46.9%)	164 (53.1%)	309
<b>Gender</b>	Female	464	240 (51.7%)	224 (48.3%)	464
	Male	158	86 (54.4%)	72 (45.6%)	158
<b>Total</b>		<b>622</b>	<b>326 (52.4%)</b>	<b>296 (47.6%)</b>	<b>622</b>

### **Inferential Statistics**

(Relationship between Teacher Locus of Control: Academic Achievement and Gender)

Independent samples t-tests were conducted to compare the mean proportions of internal TLOC between groups. The results and effect sizes are presented in Table 2.

**Table 2:** Independent Samples T-Test and Effect Size for TLOC Proportions

Variables	Category	M (Proportion)	SD	t	df	p-value	Cohen's d
<b>Academic Achievement</b>	High Achievers	0.578	0.495	2.83	620	.005	0.23
	Low Achievers	0.469	0.500				
<b>Gender</b>	Female	0.517	0.500	-0.59	620	.554	-0.05
	Male	0.544	0.500				

Note: M (Proportion) refers to the mean proportion of Internal TLOC in each group—Cohen's d: 0.2= small, 0.5=medium, 0.8= large.

### **Academic Achievement**

An independent samples t-test confirmed a statistically significant difference in the proportion of internal TLOC between high achievers (0.578) and low achievers (0.469).  $t(620) = 2.83$ ,  $p = .005$ . The effect size was small (Cohen's d=0.23). A binary logistic regression was performed to predict high achievement. The model was statistically significant.  $X^2(1) = 7.98$ ,  $p = .005$ . Holding an internal TLOC significantly increased the odds of being a high achiever by a factor of 1.55 (95% CI, 1.14, 2.10).

### **Gender Differences in Teacher Locus of Control**

An independent samples t-test revealed no statistically significant difference in the proportion of internal TLOC between female (0.517) and male (0.544) student teachers,  $t(620) = -0.59$ ,  $p = .554$ . The effect size was negligible (Cohen's d= -0.05). A binary logistic regression analysis confirmed that gender was not a significant predictor of internal TLOC (OR = 0.90, 95% CI = 0.64-1.28,  $p = .554$ ).

### **Logistic Regression Analysis**

To further elucidate the relationships, binary logistic regression analyses were performed. A logistic regression was conducted to predict high academic achievement from TLOC. The model was statistically significant,  $\chi^2 (1) = 7.98$ ,  $p = .005$ . The results are presented in Table 3.

**Table 3:** Binary Logistic Regression Predicting High Academic Achievement from TLOC

Predictor	B	SE	Wald $\chi^2$	p-value	Odds Ratio (OR)	95% CI for OR
Constant	-0.13	0.08	2.52	.112	0.88	
<b>TLOC (Internal)</b>	<b>0.44</b>	<b>0.16</b>	<b>7.87</b>	<b>.005</b>	<b>1.55</b>	<b>[1.14, 2.10]</b>

Note: Reference category for TLOC is External. The model was statistically significant.  $X^2(1) = 7.98$ ,  $p = .005$ . Nagelkerke  $R^2 = .016$ .

The data provide a more nuanced understanding of the relationship between TLOC and achievement by quantifying the predictive power of TLOC.

The logistic regression model was statistically significant ( $\chi^2 (1) = 7.98$ ,  $p = .005$ ). This value can be interpreted as follows:

Students with an internal TLOC had 1.55 times the odds (or a 55% higher odds) of being high achievers compared to students with an external TLOC, after controlling for neither variable in this sample model.

The 95% Confidence Interval (CI) 1.14, 2.10 is important because it does not include the value 1.0. An OR of 1.0 would mean no relationship exists. Since the entire interval is above 1.0, we can be 95% confident that there is a true positive relationship between internal TLOC and high academic achievements in the population from which this sample was drawn. The Nagelkerke  $R^2$  value of .016 indicates that TLOC explains only about 1.6% of the variance in academic achievement, highlighting that while TLOC is a significant predictor, many other factors are also at play.

### **Binary Logistic Regression Analysis**

A second logistic regression analysis was performed to predict internal TLOC based on gender. The model was not statistically significant. The results are presented in Table 4.

**Table 4:** Binary Logistic Regression Predicting Internal TLOC from Gender

Predictor	B	SE	Wald $X^2$	p-value	Odds Ratio (OR)	95% CI for OR
Constant	0.07	0.07	1.06	.304	1.07	
Gender (Male)	<b>-0.10</b>	<b>0.18</b>	<b>0.35</b>	<b>.554</b>	<b>0.90</b>	<b>[0.64, 1.28]</b>

**Note:** Reference category for Gender is Female. The model was not statistically significant,  $\chi^2 (1) = 0.35$ ,  $p = .554$ . Nagelkerke  $R^2 = .001$ .

The model was not statistically significant ( $X^2(1) = 0.35$ ,  $p = .554$ ). The Odds Ratio (OR) of 0.90 is very close to 1.0, which represents no effect. This means:

Male student teachers had 0.90 times the odds (or 10% lower odds) of having an internal TLOC compared to female student teachers. However, the differences are not statistically significant.

The 95% Confidence Interval (CI) 0.64, 1.28 clearly includes the null value of 1.0, confirming that we cannot reject the hypothesis that there is no true relationship between gender and TLOC. The Nagelkerke  $R^2$  of 0.001 indicates that gender accounts for virtually none (0.1%) of the variance in TLOC scores. This result solidifies the conclusion from Table 2 that gender is not a meaningful factor in determining a student teacher's locus of control in this study.

### **IV. Conclusion**

This study concludes that among student teachers in Manipur, an internal teacher locus of control is a significant psychological predictor of higher academic achievement. However, TLOC orientation is independent of gender. These findings underscore the importance of integrating strategies to promote internal teaching control beliefs within teacher education curricula by fostering environments that emphasize professional agency and effort-based outcomes. Teacher education institutes (TEIs) can enhance both the academic outcomes of their trainees and better prepare a generation of proactive and resilient teachers, applicable to all trainees.

### **Limitations**

Several limitations must be acknowledged. The use of convenience sampling and a cross-sectional design has limits generalizability and prevents causal inference. The dichotomization of both the continuous TLOC score and GPA via median split, while useful for creating distinct groups, is a methodological limitation that reduces statistical power (MacCallum et al., 2002). The focus on a binary gender classification does not capture the full spectrum of gender identity. Furthermore, the study was confined to one state in India, and the results may not be generalized to other contexts.

### **Future Research Directions**

Future studies should employ longitudinal designs to trace the causal development of TLOC. Using both TLOC and GPA as continuous variables in correlational or multiple regression analysis would allow for a more powerful and nuanced understanding of their relationship. Exploring other predictors of TLOC, such as poor teaching experience or personality traits, is recommended. Finally, replicating this study in other regions would help determine the broader applicability of these findings.

#### **Author Contribution**

The authors were responsible for all aspects of the work, including conceptualization, methodology, formal analysis, investigation, data curation, writing of the original draft, and review and editing.

#### **Funding**

This research received no external funding.

#### **Acknowledgement**

The author sincerely thanks the principals and student teachers of the participating Teacher Education Institutes in Manipur for their cooperation and participation in this study.

#### **Conflicting Interests**

The authors declare that there are no conflicting interests regarding the research, authorship, and/or publication of this article.

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