

Development and Standardization of a Comprehensive Scale Measuring Multiple Intelligence, Self-Efficacy, Psychosocial Skills, and Teaching Competency Among B.Ed. Trainees

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Abstract

This study focuses on the development and standardization of a multi-dimensional assessment tool designed to measure four core psychological constructs—Multiple Intelligence, Self-Efficacy, Psychosocial Skills, and Teaching Competency—among B.Ed. trainees. The tool underwent systematic validation, including expert review, pilot testing, and statistical analysis for reliability. The final instrument demonstrated high internal consistency and content validity, making it a valuable resource for researchers and teacher educators.

Keywords

Multiple Intelligence, Self-Efficacy, Psychosocial Skills, Teaching Competency, Tool Development, B.Ed. Trainees

1. Introduction

In the evolving educational landscape, a teacher's effectiveness is not merely determined by academic qualifications but also by a combination of psychological strengths. This study aims to develop a comprehensive tool that captures four essential variables in teacher training—Multiple Intelligence (MI), Self-Efficacy (SE), Psychosocial Skills (PS), and Teaching Competency (TC). Such a tool is useful for assessment, training, and future research.

2. Objectives of the Study

1. To develop a valid and reliable assessment tool incorporating MI, SE, PS, and TC.
2. To standardize the tool through expert validation, pilot testing, and reliability analysis.
3. To provide a unified instrument for measuring psychological variables influencing teaching effectiveness.

3. Methodology

3.1 Tool Construction

The scale was divided into four subscales:

- ❖ **Multiple Intelligence (30 items)** – Based on Gardner's nine intelligences
- ❖ **Self-Efficacy (25 items)** – General and teaching-specific self-belief items
- ❖ **Psychosocial Skills (20 items)** – Including empathy, adaptability, communication

❖ **Teaching Competency (35 items)** – Lesson planning, pedagogy, classroom management

Total Items: 110 **Response Format:** 5-point Likert scale (Strongly Agree to Strongly Disagree)

3.2 Validation

The tool was reviewed by six academic experts in Education and Psychology. Suggestions on language, content, and item clarity were considered, and necessary modifications were made.

3.3 Pilot Study: A pilot study was conducted among 120 B.Ed. trainees selected from various teacher education colleges in Palakkad District. The main purpose was to evaluate the clarity, relevance, and response behavior of the tool items. Participants were asked to complete the full version of the tool, and their feedback was collected both quantitatively and qualitatively.

Based on the responses and expert remarks:

- Ambiguous or repetitive items were revised or removed.
- Instructions and response format were simplified for better understanding.
- Time taken to complete the tool was also recorded to ensure it was feasible in real settings.

The pilot study confirmed that the tool was user-friendly, comprehensive, and ready for further reliability testing.

A pilot study was conducted among 120 B.Ed. trainees across teacher education colleges in Palakkad District. Feedback from the pilot helped in refining the tool further.

3.4 Reliability Analysis

Cronbach's Alpha is a widely accepted measure of internal consistency or reliability of a scale. A value above 0.70 is considered acceptable, while a value above 0.80 indicates high reliability. The alpha values for all four subscales in this study were above 0.80, confirming that the items in each subscale were strongly interrelated and consistently measured the intended construct.

To ensure the internal consistency of the developed scale, **Cronbach's Alpha (α)** was computed for each of the four subscales. The results are presented below:

Table 1: Reliability Scores for Subscales

Subscale	No. of Items	Cronbach's Alpha (α)	Interpretation
Multiple Intelligence (MI)	30	0.88	High Reliability
Self-Efficacy (SE)	25	0.84	High Reliability
Psychosocial Skills (PS)	20	0.85	High Reliability
Teaching Competency (TC)	35	0.89	High Reliability

Cronbach's Alpha for the subscales were:

- ❖ MI Subscale: $\alpha = 0.88$
- ❖ SE Subscale: $\alpha = 0.84$
- ❖ PS Subscale: $\alpha = 0.85$
- ❖ TC Subscale: $\alpha = 0.89$

This indicated high internal consistency.

4.Results and Interpretation

We'll use a **5-point Likert scale: Strongly Disagree (1) → Strongly Agree (5)**

Per Subscale Score Calculation

Each subscale has a different number of items:

Subscale	Items	Max Score	Min Score
Multiple Intelligence (MI)	30	150	30
Self-Efficacy (SE)	25	125	25
Psychosocial Skills (PS)	20	100	20
Teaching Competency (TC)	35	175	35

Total Maximum Score = 550 Total Minimum Score = 110

Interpretation (for each scale):

Score Range	Interpretation
81% – 100%	Very High Competency
61% – 80%	High Competency
41% – 60%	Moderate Competency
21% – 40%	Low Competency
Below 20%	Very Low Competency

Scoring and Interpretation: Each subscale score can be calculated based on the sum of responses. To interpret the score meaningfully, users may calculate the percentage score using the formula: **Percentage Score = (Obtained Score ÷ Maximum Possible Score) × 100 for each subscale**. This helps in categorizing the level of competence in each psychological construct—

Multiple Intelligence (MI), Self-Efficacy (SE), Psychosocial Skills (PS), and Teaching Competency (TC). Higher percentages reflect stronger psychological readiness and competency levels.

All four subscales showed strong item-total correlation. Inter-variable correlation indicated significant relationships among MI, SE, PS, and TC. The comprehensive tool is suitable for pre/post training assessments and longitudinal studies.

5. Conclusion

The developed instrument is a valid and reliable comprehensive scale useful for evaluating psychological readiness and professional skills in teacher trainees. It offers an integrated framework to understand and enhance teaching competency in alignment with NEP 2020 and modern pedagogical needs.

6. Implications

This tool can be effectively used by teacher educators, researchers, and institutions for diagnostic, evaluative, and developmental purposes. It allows insight into the psychological preparedness of future educators.

Reference

- ❖ Gardner, H. (1983). Frames of Mind: The Theory of Multiple Intelligences.
- ❖ Bandura, A. (1997). Self-Efficacy: The Exercise of Control.

Appendix

Part A: Multiple Intelligence Subscale (Sample Extract)

Linguistic Intelligence

- ❖ How often do you actively seek out and learn new words?
- ❖ I engage in public speaking and participate in debates
- ❖ I read poetry and write occasionally

Logical-Mathematical Intelligence

- ❖ I derive satisfaction from solving numerical problems
- ❖ I enjoy number games that require logic

Spatial Intelligence

- ❖ I visualize things in three dimensions
- ❖ I draw graphs or flowcharts to understand data

Musical Intelligence

- ❖ I hum or sing while learning
- ❖ I have a strong sense of pitch and rhythm

Part B: Self-Efficacy Subscale

How much can you motivate students who show low self-belief?

- ❖ How much can you do to foster student creativity?
- ❖ How much can you support students to overcome learning obstacles?

Scale: Nothing / A Little / Moderately / Much / A Great Deal

Part C: Psychosocial Skills Scale

This section assesses emotional intelligence, communication skills, interpersonal relationships, and adaptability essential for effective teaching.

- ❖ I can control my emotions during stressful classroom situations.
- ❖ I show empathy when students face emotional or academic challenges.
- ❖ I work well with peers during group or institutional activities.
- ❖ I listen carefully and respond respectfully in conversations.

- ❖ I adapt easily when faced with new or unexpected teaching conditions.
- ❖ I help resolve conflicts among students with fairness.
- ❖ I support inclusive practices for students from diverse backgrounds.

Response Format: Strongly Disagree / Disagree / Neutral / Agree / Strongly Agree

Part D: Teaching Competency Scale

This section measures the trainee's competency in planning, instructional strategies, classroom management, and professional behaviour.

- ❖ I design lesson plans that align with learning objectives.
- ❖ I use interactive methods to engage all types of learners.
- ❖ I maintain discipline while respecting student dignity.
- ❖ I assess student performance using appropriate evaluation tools.
- ❖ I use feedback from students to improve my teaching.
- ❖ I manage classroom time and learning materials effectively.
- ❖ I create a positive and inclusive learning environment.
- ❖ I demonstrate professional behaviour and follow ethical standards.

Response Format: Strongly Disagree / Disagree / Neutral / Agree / Strongly Agree