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Development and Standardization of the Self-Confidence Scale (SCS) for Pre-Service Teachers: Psychometric Properties and Normative Framework

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Abstract

The present paper reports the systematic development and standardization of the Self-Confidence Scale (SCS) for Pre-Service Teachers, a psychometric instrument designed to assess self-confidence across seven theoretically grounded dimensions among B.Ed. students: Academic Self-Efficacy, Classroom Management, Teaching Skills, Interpersonal Skills, Adaptability, Self-Regulation, and Professional Development. Beginning with a pool of 70 items (10 per dimension), a rigorous item analysis procedure employing discriminant-power t-tests and item-total correlation criteria resulted in the retention of 49 items in the final scale. The SCS demonstrated exceptional reliability, with Test-Retest coefficients of 0.99 over a 21-day interval and Split-Half coefficients of 0.93 by both Spearman-Brown and Flanagan formulae. Expert-panel review confirmed face validity, while inter-component correlation analysis established construct validity. A comprehensive normative framework was developed for both total scores (range: 64–252) and component subscores, including Z-score and T-score equivalents across nine score intervals. The SCS offers teacher education researchers and practitioners a robust, validated instrument for diagnosing, monitoring, and enhancing self-confidence in aspiring educators.

Keywords: Self-Confidence, Pre-Service Teachers, Scale Development, Psychometric Properties, Teacher Education, B.Ed., Academic Self-Efficacy, Classroom Management.

1. Introduction

Self-confidence stands among the most consequential psychological constructs influencing professional performance in any domain. For educators, it holds particular salience: a teacher's belief in their own capabilities fundamentally shapes their instructional choices,

GYANBODH
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Volume: 2
Issue: 6
November-December: 2025

their classroom presence, and the quality of learning experiences they create for students. In the context of pre-service teacher education, self-confidence is not merely a desirable personal attribute—it is a foundational professional competency that determines how aspiring teachers negotiate the transition from theoretical knowledge to authentic classroom practice.

The early years of teacher preparation represent a critical developmental juncture. B.Ed. students simultaneously encounter the cognitive demands of academic coursework, the interpersonal challenges of school placements, and the existential uncertainties of professional identity formation. Within this complex ecology, self-confidence functions as a psychological resource that enables pre-service teachers to persevere through difficulty, take pedagogical risks, seek feedback, and progressively refine their practice. Conversely, deficits in self-confidence can manifest as avoidance of student-centered strategies, over-reliance on prescriptive lesson structures, difficulty in classroom management, and heightened vulnerability to professional attrition.

Despite the well-established theoretical and empirical importance of self-confidence in teacher development, the measurement landscape in Indian teacher education remains underdeveloped. Existing tools are largely adapted from Western contexts without adequate standardization for the specific linguistic, cultural, and institutional realities of B.Ed. programmes in India. The present study addresses this lacuna by documenting the development and standardization of the Self-Confidence Scale (SCS) for Pre-Service Teachers—a purpose-built, psychometrically validated instrument covering seven distinct dimensions of professional self-confidence.

2. Theoretical Background

2.1 Conceptualizing Self-Confidence

Self-confidence is broadly understood as an attitude toward one's own skills and abilities, encompassing the acceptance of oneself, trust in one's judgments and actions, and a sense of personal agency over one's life outcomes (University of South Florida, n.d.). At its most elemental, self-confidence reflects the belief that one is capable of performing the actions required to achieve a desired goal. Bénabou and Tirole (2002) formalized this intuition within a behavioral economics framework, demonstrating that

GYANBODH
An International Multidisciplinary Peer Reviewed Journal
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Volume: 2
Issue: 6
November-December: 2025

self-confidence functions as a cognitive motivational resource that individuals strategically cultivate and deploy when facing challenging tasks.

Psychologically, self-confidence is related to but distinct from adjacent constructs such as self-esteem, self-efficacy, and locus of control. While self-esteem refers to global evaluative feelings about the self, and self-efficacy denotes domain-specific beliefs about competence for particular tasks (Bandura, 1977), self-confidence occupies an intermediate space—it is more domain-specific than generalized self-esteem but broader than narrow task efficacy beliefs. This conceptual breadth makes it particularly appropriate as a framework for understanding teacher professional development, where competence must be exercised across multiple, interconnected professional domains simultaneously.

2.2 Self-Confidence in Teacher Education

The nexus between self-confidence and teaching effectiveness has been extensively documented in the literature. Research consistently demonstrates that confident teachers are more likely to employ student-centered instructional strategies, engage in reflective practice, maintain higher expectations for diverse learners, and sustain professional motivation over time. Mentorship from experienced teachers, peer collaborative learning communities, and structured practical experiences such as student teaching and internship placements have been identified as the three principal environmental catalysts for confidence development among pre-service teachers.

However, the relationship between self-confidence and academic performance is not straightforwardly linear. Bhat and Bhat (2017) found that the scholastic achievement of B.Ed. students was independent of self-confidence, personality, and their interaction, suggesting that while self-confidence may not directly determine examination performance, its influence manifests more prominently in applied teaching competencies—precisely the competencies that longitudinal studies indicate are most predictive of early career effectiveness and retention.

In the sports psychology literature, Kuloor (2024) documented the critical role of self-confidence in differentiating successful from unsuccessful athletes—an analogy with notable relevance for teaching, where performance under conditions of real-time

GYANBODH
An International Multidisciplinary Peer Reviewed Journal
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Volume: 2
Issue: 6
November-December: 2025

complexity, uncertainty, and public scrutiny similarly demands a stable confidence foundation. These cross-domain insights reinforce the importance of developing valid and reliable measurement tools specifically calibrated to the teaching professional context.

2.3 Dimensions of the Self-Confidence Scale

The SCS is grounded in a multidimensional conceptualization of self-confidence as it manifests in pre-service teaching contexts. Seven theoretically distinct and empirically separable dimensions were identified through a review of the teacher education and educational psychology literature:

- Academic Self-Efficacy: Confidence in one's ability to understand, apply, and communicate subject matter knowledge within educational settings.
- Classroom Management: Belief in one's capacity to establish and maintain a productive, orderly, and inclusive learning environment.
- Teaching Skills: Confidence in the planning, delivery, and evaluation of instructional activities across diverse pedagogical contexts.
- Interpersonal Skills: Trust in one's ability to build positive, respectful, and effective relationships with students, colleagues, and community stakeholders.
- Adaptability: Confidence in one's capacity to adjust instructional approaches in response to changing classroom dynamics, student needs, and educational contexts.
- Self-Regulation: Belief in one's ability to manage emotional responses, maintain professional composure, and engage in reflective self-improvement.
- Professional Development: Confidence in one's commitment and capacity to pursue ongoing learning, growth, and career advancement as an educator.

3. Objectives of the Study

The present study was conducted with the following specific objectives:

- To construct a comprehensive item pool representing all seven dimensions of self-confidence relevant to pre-service teachers in Indian B.Ed. programmes.
- To conduct systematic item analysis to identify items with optimal discriminant power and internal consistency.

GYANBODH
An International Multidisciplinary Peer Reviewed Journal
ISSN:3048-9792
Volume: 2
Issue: 6
November-December: 2025

- To establish the reliability of the finalized SCS through multiple estimation methods.
- To determine the face and construct validity of the SCS through expert evaluation and inter-component correlation analysis.
- To develop component-wise and total-score normative standards, including Z-score and T-score equivalents, enabling meaningful interpretation of individual profiles.

4. Methodology

4.1 Scale Construction

Item development proceeded through a systematic, theory-driven process. A comprehensive review of the self-confidence, self-efficacy, and teacher professional competence literatures was conducted to generate a conceptual map of the seven target dimensions. An initial pool of 70 items was constructed—10 items per dimension—using a combination of original item writing and adaptation from established scales in the broader psychological and educational measurement literature. Items were worded to reflect realistic pre-service teaching scenarios and self-perceptions, written at a reading level appropriate for B.Ed. students. Both positively keyed (confidence-affirming) and negatively keyed (confidence-undermining) items were included to control for acquiescence bias. A five-point Likert response format (Strongly Agree to Strongly Disagree) was employed throughout.

Draft items were reviewed by a panel of content experts specializing in educational psychology, teacher education, and psychometric measurement. Expert feedback was used to refine item wording, eliminate redundancy, ensure dimensional alignment, and confirm cultural appropriateness for the Indian B.Ed. context prior to pilot testing.

4.2 Sampling and Pilot Administration

The preliminary 70-item scale was administered to a sample of B.Ed. students drawn from accredited teacher education institutions. Participants were assured of complete confidentiality and voluntarily completed the self-administered scale in group settings. Administration time averaged 35 to 40 minutes. Completed protocols were screened for missing data and careless response patterns prior to item analysis.

GYANBODH
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ISSN:3048-9792
Volume: 2
Issue: 6
November-December: 2025

4.3 Item Analysis Procedure

Following the method recommended by Ebel (1966) and consistent with established psychometric practice (Anastasi, 1968), item analysis was conducted using extreme groups formed from the top 27% and bottom 27% of total scorers. For each item, an independent-samples t-test was computed to assess discriminant power between the high and low groups; items reaching significance at the 0.01 level were considered for retention. Concurrently, Pearson product-moment correlation coefficients between each item score and total scale score were computed; items yielding $r \geq 0.50$ were retained. Items failing to satisfy both criteria simultaneously were eliminated from the final scale.

5. Results

5.1 Item Analysis and Final Scale Composition

Of the 70 initial items, 49 (70%) satisfied both retention criteria and were included in the final Self-Confidence Scale (SCS). The dual-criterion approach ensured that retained items demonstrated both group-differentiation capacity and strong convergence with the overall construct. Across the seven dimensions, all 49 retained items exhibited significant t-values at the 0.01 level and item-total correlations ≥ 0.50, reflecting robust discriminant and convergent validity at the item level.

Of the 49 retained items, 23 are positively keyed (Statements 1, 3, 4, 8, 9, 11, 13, 16, 18, 22, 27, 29, 30, 31, 33, 34, 37, 38, 40, 42, 43, 46, 48) and 26 are negatively keyed (Statements 2, 5, 6, 7, 10, 12, 14, 15, 17, 19, 20, 21, 23, 24, 25, 26, 28, 32, 35, 36, 39, 41, 44, 45, 47, 49). The slightly higher proportion of negatively keyed items reflects a deliberate decision to challenge acquiescent response tendencies, particularly important given self-report measurement in professional training contexts where social desirability pressures may be elevated.

5.2 Scoring Scheme

The SCS employs a five-point Likert response scale. Positively keyed items are scored 5 (Strongly Agree), 4 (Agree), 3 (Neutral), 2 (Disagree), and 1 (Strongly Disagree). Negatively keyed items receive reverse scores: 1 (Strongly Agree) through 5 (Strongly Disagree). Total scores thus range from a minimum of 49 to a theoretical

GYANBODH
An International Multidisciplinary Peer Reviewed Journal
ISSN:3048-9792
Volume: 2
Issue: 6
November-December: 2025

maximum of 245, with the normative sample yielding an effective observed range of 64 to 252. Component subscale scores range from 7 to 42 based on the class intervals used in normative data collection.

5.3 Reliability

Three estimates of reliability were computed for the finalized 49-item SCS (Table 1). All coefficients substantially exceeded the conventional 0.80 threshold for research instruments:

Table 1: Reliability Coefficients of the Self-Confidence Scale (SCS)

Method	Formula / Period	Coefficient (r)
Test-Retest	21 Days	0.99
Split-Half	Spearman-Brown Formula	0.93
Split-Half	Flanagan Formula	0.93

Note. All coefficients indicate excellent to exceptional reliability.

The Test-Retest reliability coefficient of 0.99 over a 21-day interval is among the highest reported in the teacher education psychometric literature, indicating near-perfect temporal stability of the SCS. This finding is particularly notable given the 21-day gap, which is sufficient to minimize direct memory effects while short enough to preclude substantial genuine change in the underlying construct among pre-service teachers still in programme. The Split-Half estimates of 0.93—identical across Spearman-Brown and Flanagan formulae—confirm strong internal consistency, indicating that the scale's halves measure the same underlying construct with minimal error variance.

5.4 Validity

5.4.1 Face Validity. Expert opinions were systematically collected from specialists in educational psychology, psychometric measurement, and teacher education. All 49 items received positive appraisals regarding content representativeness, linguistic clarity, dimensional alignment, and appropriateness for B.Ed. respondents. Minor wording refinements were incorporated based on expert recommendations, but no items required removal at this stage. The unanimous positive expert consensus establishes satisfactory face validity for the SCS.

GYANBODH
An International Multidisciplinary Peer Reviewed Journal
ISSN:3048-9792
Volume: 2
Issue: 6
November-December: 2025

5.4.2 Construct Validity (Factorial Validity). Construct validity was examined through computation of a correlation matrix among the seven component subscales (Table 2). The pattern of intercorrelations provides strong evidence for the multidimensional yet coherent structure of self-confidence as measured by the SCS.

Table 2: Correlation Matrix of SCS Component Subscales

Component	ASE	CM	TS	IS	AD	SR	PD
Academic Self-Efficacy	1.00	-	-	-	-	-	-
Classroom Management	0.82	1.00	-	-	-	-	-
Teaching Skills	0.76	0.89	1.00	-	-	-	-
Interpersonal Skills	0.75	0.87	0.89	1.00	-	-	-
Adaptability	0.72	0.83	0.84	0.87	1.00	-	-
Self-Regulation	0.67	0.81	0.84	0.89	0.89	1.00	-
Professional Development	0.69	0.80	0.85	0.85	0.84	0.89	1.00

Note. ASE = Academic Self-Efficacy; CM = Classroom Management; TS = Teaching Skills; IS = Interpersonal Skills; AD = Adaptability; SR = Self-Regulation; PD = Professional Development.

All seven subscales demonstrate positive, moderate-to-high intercorrelations (range: r = 0.67 to 0.89), consistent with the theoretical proposition that the seven dimensions, while analytically distinct, collectively reflect a broader self-confidence construct. The highest correlations are observed among Classroom Management, Teaching Skills, Interpersonal Skills, Adaptability, Self-Regulation, and Professional Development (r = 0.80–0.89), reflecting their shared grounding in interpersonal and performative aspects of teaching. Academic Self-

GYANBODH
An International Multidisciplinary Peer Reviewed Journal
ISSN:3048-9792
Volume: 2
Issue: 6
November-December: 2025

Efficacy shows somewhat lower correlations with other subscales (r = 0.67–0.82), suggesting it captures a relatively more cognitively oriented dimension of self-confidence, less directly dependent on classroom relational dynamics.

The absence of perfect multicollinearity among subscales (no r = 1.00 off-diagonal) confirms that each dimension retains unique explanatory variance, thereby justifying the multidimensional measurement approach. The pattern of differentiation supports the seven-component factorial structure of the SCS and is consistent with the construct validity expectations derived from the theoretical literature.

5.5 Normative Framework

Normative data were developed for both total SCS scores and individual component subscale scores. Table 3 presents the total score normative framework across nine score intervals, with associated mean Z-scores, mean T-scores, and indicative performance levels:

Table 3: Total Score Norms for the Self-Confidence Scale (SCS)

Score Range	Frequency	Mean Z-Score	Mean T-Score	Performance Level
64–84	21	-1.57	34.29	Low
85–105	21	-1.15	38.46	Low
106–126	21	-0.74	42.64	Low–Middle
127–147	21	-0.32	46.81	Middle
148–168	21	0.10	51.19	Middle
169–189	21	0.52	55.16	Middle–High
190–210	21	0.93	59.34	High
211–231	21	1.35	63.52	High
232–252	21	1.77	67.89	High

Note. Performance levels assigned based on T-score distributions: $T < 45$ = Low; $45 \leq T < 55$ = Middle; $T \geq 55$ = High.

GYANBODH
An International Multidisciplinary Peer Reviewed Journal
ISSN:3048-9792
Volume: 2
Issue: 6
November-December: 2025

Table 4 presents component-level normative data, providing mean Z-score and T-score equivalents for each of the seven subscales across six class intervals. These component-level norms enable diagnostic profiling of individual pre-service teachers, identifying specific dimensions of self-confidence that may require targeted developmental intervention.

Table 4: Component-Level Z-Score and T-Score Norms for SCS Subscales (Mean Z / Mean T)

Score Range	Freq.	ASE (Z/T)	CM (Z/T)	TS (Z/T)	IS (Z/T)	AD (Z/T)	SR (Z/T)	PD (Z/T)
7–12	6	-1.66 / 33.41	-1.78 / 32.20	-1.78 / 32.23	-1.80 / 31.97	-1.81 / 31.93	-1.83 / 31.70	-1.77 / 32.30
13–18	10	-1.05 / 39.47	-1.17 / 38.29	-1.12 / 38.81	-1.17 / 38.33	-1.16 / 38.37	-1.29 / 37.08	-1.51 / 34.94
19–24	10	-0.33 / 46.73	-0.44 / 45.61	-0.33 / 46.72	-0.40 / 45.97	-0.52 / 44.80	-0.49 / 45.13	-0.20 / 48.05
25–30	10	0.32 / 53.18	0.34 / 53.43	0.32 / 53.18	0.32 / 53.18	0.45 / 54.52	0.59 / 55.87	0.54 / 55.37
31–36	15	1.02 / 60.24	1.14 / 61.36	1.13 / 61.26	1.02 / 60.24	1.53 / 65.32	1.39 / 63.92	1.25 / 62.51
37–42	10	1.79 / 67.95	1.80 / 67.97	1.79 / 67.95	1.66 / 66.60	1.73 / 67.31	1.61 / 66.10	1.76 / 67.60

Note. ASE = Academic Self-Efficacy; CM = Classroom Management; TS = Teaching Skills; IS = Interpersonal Skills; AD = Adaptability; SR = Self-Regulation; PD = Professional Development.

6. Discussion

The SCS for Pre-Service Teachers emerges from this development and standardization process as a psychometrically robust, theoretically grounded, and practically applicable measurement instrument. Several findings merit sustained interpretive attention.

GYANBODH
An International Multidisciplinary Peer Reviewed Journal
ISSN:3048-9792
Volume: 2
Issue: 6
November-December: 2025

The item retention rate of 70% (49 of 70 items) is consistent with well-conducted item analyses in educational psychology and reflects the selectivity necessary to ensure that each retained item contributes meaningfully to both discriminant power and construct representation. Rejected items predominantly failed on the item-total correlation criterion, suggesting they tapped peripheral or idiosyncratic aspects of self-confidence not well captured by the overall construct as operationalized in the SCS. The balance of positively and negatively keyed items in the final scale (23 positive, 26 negative) represents a methodologically sound approach to controlling acquiescent response bias in self-report measurement.

The exceptional reliability coefficients—Test-Retest r = 0.99 and Split-Half r = 0.93—place the SCS at the upper tier of psychometric quality for instruments used in teacher education research. The near-perfect temporal stability is particularly noteworthy, as it indicates that the scale measures a relatively stable dispositional characteristic rather than a fluctuating emotional state. This stability is theoretically congruent with the conceptualization of self-confidence as a trait-like construct that, while responsive to developmental experiences, does not fluctuate dramatically over short intervals in the absence of major environmental change.

The construct validity evidence from the correlation matrix reveals a theoretically coherent pattern. The relatively lower correlations involving Academic Self-Efficacy (r = 0.67–0.82) compared to the higher intercorrelations among the remaining six components (r = 0.80–0.89) suggest a meaningful structural distinction between cognitively oriented confidence (academic domain) and performance-oriented confidence (classroom, interpersonal, and regulatory domains). This distinction aligns with Bandura's (1977) formulation of domain-specific efficacy beliefs and suggests that teacher educators may benefit from attending to Academic Self-Efficacy as a somewhat distinct developmental target, particularly for students whose subject matter knowledge remains in development.

The dual normative framework—total scores and component subscale scores—substantially enhances the instrument's practical utility. Total scores provide a convenient global index for programmatic evaluation and group-level comparison. Component subscale scores, with their associated normative data, enable individualized diagnostic profiling: a pre-service teacher may demonstrate high overall self-confidence while exhibiting relative deficits

GYANBODH
An International Multidisciplinary Peer Reviewed Journal
ISSN:3048-9792
Volume: 2
Issue: 6
November-December: 2025

in Adaptability or Self-Regulation—precisely the dimensions most predictive of sustained effectiveness in complex, dynamic classroom environments.

7. Implications

7.1 For Teacher Education Practice

Teacher education programme coordinators and faculty can deploy the SCS at multiple strategic junctures: at programme entry to establish baseline confidence profiles and identify students who may benefit from early mentoring support; at mid-programme to monitor developmental progress and align practical experiences with identified confidence development needs; and at programme exit to evaluate overall readiness for independent classroom practice and inform transition-to-teaching support.

The seven-dimension structure of the SCS also provides a conceptual scaffold for curriculum design. Programmes seeking to systematically address self-confidence development can map curriculum components, field experiences, and reflective practice activities onto specific SCS dimensions, enabling targeted confidence-building interventions grounded in the same theoretical framework as the measurement instrument.

7.2 For Research

The SCS opens diverse research pathways in teacher education. Correlational studies examining relationships between SCS subscale profiles and practicum performance evaluations, mentor ratings, or post-graduation teaching effectiveness could clarify the predictive validity of domain-specific self-confidence dimensions. Experimental and quasi-experimental designs testing the confidence-building effects of specific programme innovations—structured peer observation, video-stimulated reflection, simulation-based practice, or modified mentoring protocols—can use the SCS as a standardized outcome metric, enabling rigorous cross-study comparison.

Longitudinal tracking of SCS scores across the B.Ed. programme and into early in-service teaching would provide valuable evidence on the developmental trajectory of pre-service teacher self-confidence, identifying critical periods of growth or vulnerability and the programme factors associated with positive developmental outcomes. Cross-institutional comparative research using a standardized instrument

GYANBODH
An International Multidisciplinary Peer Reviewed Journal
ISSN:3048-9792
Volume: 2
Issue: 6
November-December: 2025

such as the SCS can also inform systemic policy decisions about teacher preparation programme design.

7.3 Limitations and Future Directions

Several limitations of the present study should be acknowledged. The standardization sample was drawn from a specific institutional and geographical context, which may limit the generalizability of norms to B.Ed. programmes in other regions of India or in international teacher education settings. Future research should undertake large-scale cross-regional normative studies to expand the normative base. Confirmatory Factor Analysis (CFA) using structural equation modelling should be employed to rigorously test the seven-factor model and assess fit indices against established standards. Examination of measurement invariance across gender, subject specialization, and institutional type would strengthen evidence for the SCS's equitable applicability across diverse populations of pre-service teachers.

8. Conclusion

The Self-Confidence Scale (SCS) for Pre-Service Teachers represents a significant contribution to the psychometric toolkit available to teacher education researchers and practitioners in India. Developed through rigorous item analysis, validated through multiple reliability and validity procedures, and anchored by a comprehensive normative framework, the 49-item SCS offers a valid, reliable, and contextually appropriate instrument for measuring and monitoring self-confidence across seven distinct professional dimensions among B.Ed. students.

As the demands placed upon teachers continue to evolve in response to technological transformation, curricular reform, and increasing classroom diversity, the psychological resources that sustain effective teaching become ever more critical. Self-confidence—the belief that one possesses the capabilities required to meet these demands—stands at the center of professional resilience and effectiveness. By providing a means to measure, track, and deliberately develop this fundamental resource, the SCS empowers teacher education programmes to more systematically, equitably, and successfully prepare the confident educators that students and educational systems urgently need.

GYANBODH
An International Multidisciplinary Peer Reviewed Journal
ISSN:3048-9792
Volume: 2
Issue: 6
November-December: 2025

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