

## Pedagogical, Professional, and Resource Concerns: Understanding Pre-service Teachers' Preparedness for Inclusive Education Implementation

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### ABSTRACT

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The focus of this study was to explore the underlying factor structure of pre-service teachers' concerns related to their implementation of inclusive education. In the Pakistani context, limited research exists on pre-service teachers' concerns regarding preparedness for inclusive education implementation, while education around the world is gaining increasing prominence in inclusive education. A quantitative approach to data collection was adopted from the pre-service teachers (N=635) from five Pakistani universities using a thirty-item questionnaire. The dimensionality of teachers' concerns was examined using exploratory factor analysis (EFA) with Oblimin rotation. Bartlett's test ( $p < .001$ ) and the Kaiser-Meyer-Olkin measure (.938) indicated sampling adequacy. The EFA revealed a three-factor structure explaining 52.77% of the total variance: Pedagogical Preparedness concerns (10 items, variance=18.76%), Professional Efficacy concerns (10 items, variance=17.72%), and Resource and Support Concerns (10 items, variance=16.31%). There was strong internal consistency among all factors (Cronbach's  $\alpha$  .898 to .903). Intercorrelations among factors were extremely low (.009-.072), indicating distinct dimensions. The results suggest that pre-service teachers' concerns with inclusive education occur along the dimensions of pedagogic skills, competency to deliver inclusive education, pre-service teachers' professional development needs, and the provision of institutional support. The results of this study give good insights into teacher education programs in Pakistan in terms of targeted interventions in these three areas. The empirically validated factor structure of the survey provides a framework for the study of concerns among pre-service teachers with respect to the implementation of inclusive education. The relationship of these factors with actual teaching performance and student outcomes in inclusive settings is important for future research.

## **Introduction**

Providing quality education for all students, regardless of their diverse learning needs, within the regular classroom, inclusive education has become a global educational priority (UNESCO, 2020). The momentum of inclusive education policies in Pakistan has grown since its accession to the international frameworks of the Salamanca Statement and the UN Convention for the Rights of Persons with Disabilities (Pasha, 2012). While there is strong and consistent consensus on the use of inclusive practices, teachers' preparation and attitudes towards inclusive practices are key prerequisites to the successful implementation of these practices (Sharma & Nuttal, 2016; Sharma & Sokal, 2016).

Pre-service teacher preparation clearly has a role in developing educators who can adequately manage inclusive classrooms. Current research shows that teachers' initial concerns and perceived preparedness have a powerful impact on their subsequent use of inclusive practices (Forlin et al., 2021). Understanding the concerns of pre-service teachers in Pakistan becomes more important in developing adequate programs of teacher education as a whole since, like elsewhere, inclusive education has not been fully developed in Pakistan.

While the research on inclusive education has grown worldwide, limited research has been done on pre-service teachers' concerns in Pakistan. Although existing literature has pointed out general challenges in inclusive education in Pakistan (Muhammad et al., 2024; Rashid et al., 2024; Safdar et al., 2024), no research has investigated specific dimensions of pre-service teachers' concerns regarding inclusive teaching. In particular, this gap is important for Pakistan, which has a unique educational context involving diverse socio-cultural factors and different resources available in different institutions.

A research gap was identified in the present study to examine the underlying factor structure of pre-service teachers' concerns about implementing inclusive education in Pakistani universities. Specifically, this research seeks to answer two key questions:

What are the underlying factors affecting pre-service teachers' concerns about inclusive education in Pakistani universities?

This study is grounded in two theoretical frameworks: Fuller's Teacher Concerns Theory (Fuller, 1969) and Bandura's Self-Efficacy Theory (Bandura, 1997). Bandura's framework helps in explaining how teachers' beliefs about their ability influence their practices, as well as Fuller's theory, as teachers' concerns evolve through different stages. Moreover, these theories offer a strong basis for considering the multi-dimensional nature of pre-service teachers' concerns about inclusive education.

This study is significant because it potentially contributes to theory and practice. Theoretically, it extends the understanding of teacher concerns within a certain context of inclusive education in Pakistan. The identified factor structure is supportive of the development of more fine-grained theoretical models of teacher preparedness for inclusive education in developing nations.

Practically speaking, knowing what dimensions are present in pre-service teachers' concerns can contribute to the design and improvement of teacher education programs. The knowledge can be useful to teacher educators and policymakers in designing interventions that are more specifically directed to address the areas of concern in teacher preparation and to get teacher educators better prepared for inclusive classrooms.

This research deals with an urgent requirement in Pakistan's education sphere as the implementation of inclusive education gains momentum but faces difficulties (Safdar et al., 2024;

Saif et al., 2024; Waqar et al., 2024). The identification of crucial pre-service teacher concerns throughout this investigation can lead to improved teacher preparation strategies that satisfy both national educational mandates and international inclusive education benchmarks.

This paper provides an overview of the research literature followed by a description of the methodology, the results of the factor analysis, and a discussion about the implications for teacher education and future research. Results from this study provide researcher-recommended foundations for building evidence-based preparation of pre-service teachers for inclusive education in both Pakistan and comparable settings.

## **Literature Review**

In these last several years, there has been a growing emphasis on inclusive education internationally, which has generated significant research interest in learning about teachers' preparedness and concerns about using inclusive practices. This review then provides the theoretical frameworks and empirical findings related to pre-service teachers' concerns about inclusive education, with special reference to the Pakistani context.

### **Theoretical Framework**

This study is anchored in two complementary theoretical perspectives: Fuller's Teacher Concerns Theory and Bandura's Self-Efficacy Theory. Fuller's (1969) developmental model suggests that teachers' concerns evolve through distinct stages. In particular, the transition observed is from self-concerns about their adequacy as teachers to task concerns about instructional duties and, ultimately, to impact concerns about student learning. A framework like this has proven valuable in helping to understand how pre-service teachers construct their professional identity and competence (Conway & Clark, 2003).

The theory that teachers' beliefs about their capability in relation to their teaching practice is provided by Bandura's (1997) Self-Efficacy Theory. Teacher self-efficacy has been rated high in predicting willingness to implement inclusive practices and managing diverse learners, especially in the context of inclusive education (Sharma & Sokal, 2016). These theoretical frameworks, when taken together, can inform an exploration of pre-service teachers' concerns about inclusive education.

### **Pre-service Teachers' Concerns about Inclusive Education**

Research in the area of inclusive education has identified and pinpointed several key areas of concern to pre-service teachers. Consistently, the results have flagged pedagogical preparedness issues, including concerns about differentiated instruction, classroom management, and assessment approaches (Forlin et al., 2021).

The second dimension focuses on the support and resource needs of the teacher. For instance, Sharma and Nuttal (2016) also claim that studies have consistently indicated that teachers' attitudes towards including students with special needs are highly dependent on teachers' accessibility to appropriate teaching materials besides assistive technology and well-trained support staff. In addition, inclusive practice can only be successfully implemented with funding and the availability of professional development opportunities and support (Jordan et al., 2019).

The literature also included a third major dimension: professional efficacy concerns. Issues of interest include the ability to maintain self-confidence, develop professional competence, and effectively engage with stakeholders (Wilson et al., 2020). These concerns could have a substantial

effect on teachers' readiness to practice inclusively and in inclusive conditions (Cooper et al., 2018).

### **Factor Analysis Studies in Teacher Education**

Studies of inclusive education have started to shed light on the structure of teachers' concerns regarding inclusive education through previous factor analytic studies (Lozano et al., 2022). Sharma and Desai's (2003) study identified a four-factor solution to teacher concerns, and Miesera et al. (2019) uncovered a three-factor solution. Most previous factor analytic studies have been conducted mainly in Western contexts, though pointing to the need for context-specific research in other cultural settings.

### **Pakistani Context of Teacher Preparation**

Challenges pertaining to inclusive education in the Pakistani education system are quite unique. Teachers face challenges such as limited resources, large class sizes, and multiple socio-cultural contexts (Muhammad et al., 2024; Muhammad & Bokhari, 2024; Saif et al., 2024). Pakistan has also committed important policies to inclusive education. However, research shows these commitments fail to translate into practice in teacher preparation programs (Rizvi & Elliot, 2005).

While there is a dearth of inclusive education research in the Pakistani context, the majority of the studies undertaken have focused on broad attitudes toward inclusion (Pasha, 2012) or the challenges encountered during implementation (Shaukat, 2023; Thakur & Abbas, 2017; Younas et al., 2024). Nevertheless, research regarding the particular features of pre-service teachers' concerns regarding inclusive education, specifically through factor analyses, is limited (Parveen et al., 2022).

### **Research Gap and Study Rationale**

Several important gaps were revealed by the literature review. Although many studies have been conducted that have studied teacher concerns regarding inclusion, very few have focused on the Pakistani context. Further, the vast majority of existing factor analytic studies have been done in developed countries, which may restrict applicability to developing contexts such as Pakistan. This research study is needed to integrate theories of teacher concerns and self-efficacy with respect to enhancing pre-service teachers' preparedness for inclusive education.

This gap raises the need for context-specific research to inform teacher preparation programs in Pakistan. Knowing the factor structure of pre-service teachers' concerns would allow us to develop targeted and efficacious responses to teacher preparation. Therefore, the research fills a local and international gap by assessing pre-service teachers' inclusive education concerns in Pakistan's higher education system while conducting extensive analysis.

### **Methods**

A quantitative approach using Exploratory Factor Analysis (EFA) examined the fundamental dimensions that influence pre-service teachers' inclusive concerns in this research study. EFA demonstrates powerful analytic capabilities that reveal hidden constructs while minimizing data dimensions (Hair et al., 2019; Tabachnick & Fidell, 2019). This method was used as the major analytical method.

The study examines the sample made up of 635 pre-service teachers enrolled in education programs at three major Pakistani universities. All diverse levels of semesters were represented through stratified random sampling. The sample size exceeded the recommended minimum of 300

participants for factor analysis (Tabachnick & Fidell, 2019) and achieved a participant-to-item ratio of 12.8, which is above the recommended 10:1 ratio.

The research instrument was a 30-item questionnaire developed based on existing literature and validated through a rigorous process:

- Initial item pool generation based on theoretical frameworks and previous studies.
- Content validation by a panel of five special education/inclusive education experts in inclusive education.
- Pilot testing with 50 pre-service teachers.
- Refinement based on pilot test feedback and preliminary analysis.

The final questionnaire comprised three hypothesized domains: Pedagogical Preparedness Concerns (10 items), Resource and Support Concerns (10 items), and Professional Efficacy Concerns (10 items). All the items were rated on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).

Data collection was done in the Fall 2024 semester. Questionnaires were administered under standardized classroom conditions after having obtained institutional approval and informed consent. This was completed on 700 distributed questionnaires, of which 635 complete responses were received, giving a response rate of 91%.

## **Data Analysis**

Data analysis followed a systematic approach using SPSS version 27: Preliminary Analysis, Missing data analysis, Assessment of normality and outliers, Kaiser-Meyer-Olkin (KMO) measure, Bartlett's test of sphericity, Factor Analysis, Principal Axis Factoring extraction, Oblimin rotation (allowing for factor correlation), Kaiser criterion (eigenvalues > 1) for factor retention, Scree plot examination, Pattern matrix analysis, Factor loading cut-off at .40, Reliability Analysis, Cronbach's alpha for internal consistency, Item-total correlations and Inter-factor correlations.

Thus, best practices in exploratory factor analysis (Finch, 2013; Pett et al., 2003; Watkins, 2021) for educational research were followed. The retention of factors was decided upon by multiple criteria such as eigenvalues, scree plot analysis, and theoretically interpretable factor structure.

## **Results**

### **Preliminary Analysis**

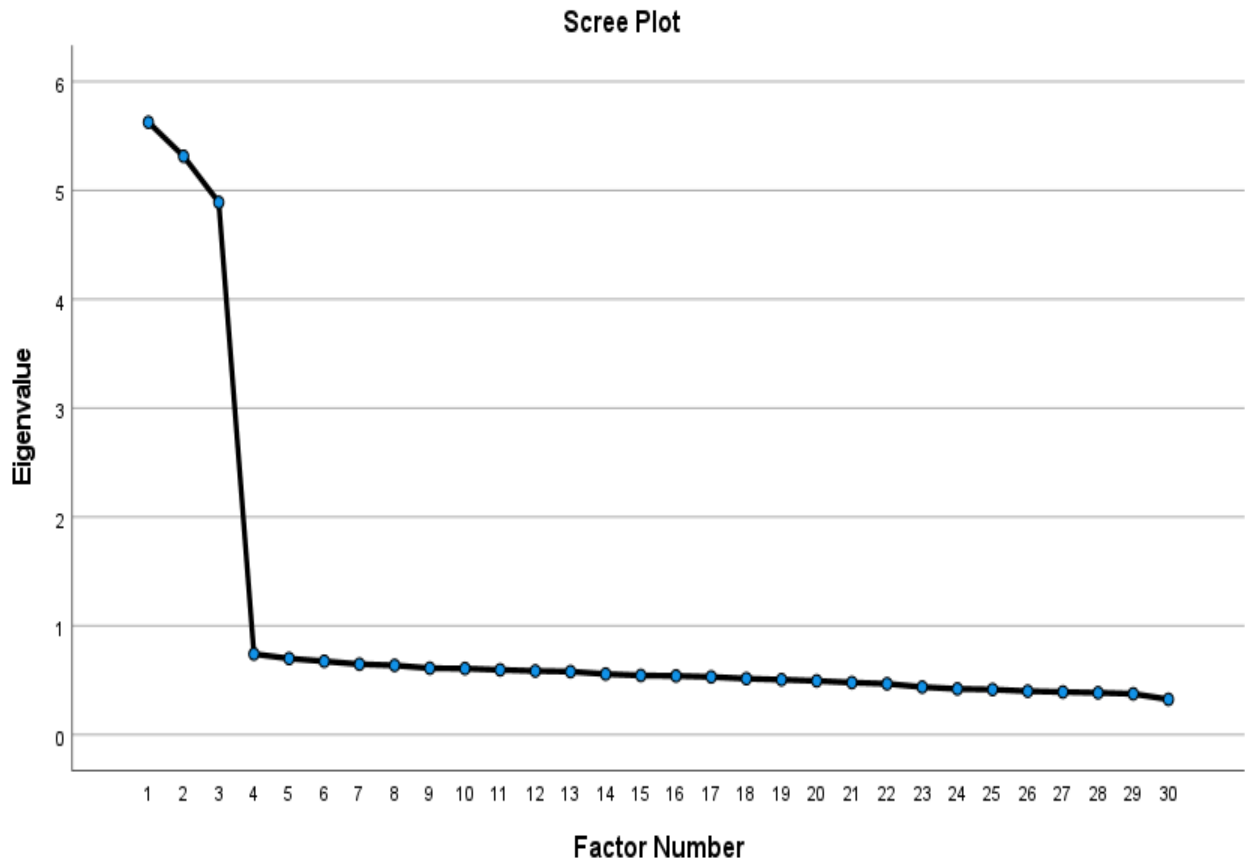
The suitability of the data for factor analysis was further confirmed during initial data screening. Bartlett's test of sphericity was significant ( $\chi^2 = 8104.867$ ,  $df = 435$ ,  $p < .001$ ), and Kaiser-Meyer-Olkin measure was .938, which surpassed the recommended cut-off point of .60 for factor analysis, thus having adequate correlations among variables for factor analysis.

**Table 1: KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.938
Bartlett's Test of Sphericity	Approx. Chi-Square	8104.867
	Df	435
	Sig.	.000

### **Factor Analysis Results**

Researchers tried different numbers of factors, different extraction techniques, and orthogonal and oblique rotations; however, the final result is a solution obtained from some number of factors, extracted with some combination of extractions and rotations, leading to a solution that provided the greatest scientific utility, consistency, and meaning (Tabachnick et al., 2013). A clear three-factor structure was revealed by exploratory factor analysis using Principal Axis Factoring with Oblimin rotation. In this analysis, there are three components with eigenvalues larger than 1.0, explaining 52.777% of the total variance. The elbow on the scree plot (Figure 1) after the third component corroborated in the three-factor solution.



**Figure 1: Scree Plot for the Teachers' Preparedness for Inclusive Education Implementation Instrument**

The three factors and their respective variance contributions were:

Factor 1: Pedagogical Preparedness Concerns (18.757% of variance)

Factor 2: Professional Efficacy Concerns (17.715% of variance)

Factor 3: Resource and Support Concerns (16.305% of variance)

**Table 2: Eigenvalues, Total Variances Explained for a Three-Factor Structure**

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
Factor 1: Pedagogical Preparedness Concerns	5.627	18.757	18.757	5.102	17.006	17.006	4.757
Factor 2: Professional Efficacy Concerns	5.315	17.715	36.472	4.799	15.995	33.001	4.836
Factor 3: Resource and Support Concerns	4.892	16.305	52.777	4.363	14.543	47.543	4.726

Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

### Factor Structure

The matrix of pattern loading shows forthright loading patterns for all items (Table 1). The factor loadings for Factor 1 ranged from .678 to .760, for Factor 2 from .708 to .762, and for Factor 3 from .708 to .741. The items loaded above a .40 threshold and did not then have significant cross-loadings (secondary loadings within .20 of the primary loading).

**Table 3: Pattern Matrix with Factor Loadings**

	Factor		
	1	2	3
PP1 Understanding diverse learning needs	-.702	-	-
PP2 Adapting teaching methods	-.675	-	-
PP3 Assessment strategies	-.692	-	-
PP4 Classroom management skills	-.634	-	-
PP5 Differentiated instruction	-.678	-	-
PP6 IEP development	-.704	-	-
PP7 Behavioral management	-.674	-	-
PP8 Learning style accommodation	-.730	-	-
PP9 Progress monitoring	-.684	-	-

PP10 Teaching strategies	-.686	-	-
RS1 Availability of assistive technology	-	-	.699
RS2 Support staff assistance	-	-	.697
RS3 Professional development	-	-	.668
RS4 Teaching materials	-	-	.676
RS5 Administrative support	-	-	.683
RS6 Specialist consultation	-	-	.673
RS7 Time allocation	-	-	.668
RS8 Resource room availability	-	-	.691
RS9 Parental collaboration	-	-	.675
RS10 Community resources	-	-	.708
PE1 Self-confidence	-	.732	-
PE2 Professional competence	-	.715	-
PE3 Stakeholder communication	-	.684	-
PE4 Legal knowledge	-	.669	-
PE5 Cultural sensitivity	-	.696	-
PE6 Crisis management	-	.665	-
PE7 Team collaboration	-	.725	-
PE8 Documentation skills	-	.695	-
PE9 Research implementation	-	.684	-
PE10 Professional growth	-	.677	-

### Reliability Analysis

Internal consistency reliability was strong for all three factors. Cronbach's alpha coefficients were:

**Table 4: Factor Reliability**

Factors	$\alpha$
Pedagogical Preparedness Concerns	.899
Professional Efficacy Concerns	.898
Resource and Support Concerns	.903

### Inter-factor Correlations

The component correlation matrix revealed minimal correlations between factors (Table 3), suggesting distinct dimensions:

**Table 5: Factor Correlation Matrix**

Factor	1	2	3
Pedagogical Preparedness Concerns	1.00	-	-
Professional Efficacy Concerns	.020	1.00	-
Resource and Support Concerns	.072	.009	1.00

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization.



## **Discussion**

A three-factor structure that underlies pre-service teachers' concerns regarding inclusive education in Pakistani universities was revealed from exploratory factor analysis with important implications for understanding the dimensions of teacher preparedness for inclusive education.

### **Factor Structure Interpretation**

In contrast, the emergence of three distinct factors—Pedagogical Preparedness, Professional Efficacy, and Resource and Support concerns—aligns but extends previous theoretical frameworks. Strong loading patterns (.678 to .762) combined with minimal cross-loadings indicate these are robust and well-defined constructs. The three dimensions explain 52.777% of the total variance and demonstrate statistical and theoretical coherence of the factor structure.

The largest contributor to the variance explained is the Pedagogical Preparedness factor (18.757%), indicating the dominance of instructional concerns among pre-service teachers. Corresponding here is Fuller's (1969) developmental theory of teacher concerns, particularly his notion of task-related anxieties. The high loadings on items related to learning style accommodation (-.730) and IEP development (-.704) indicate that these are especially important issues in the Pakistani context.

The Component of Resource and Support (16.305% variance) shows the contextual hurdles to implementing inclusive education in Pakistan. A dimension distinct from teacher concerns regarding students, disease, and workload is indicated by the high loadings on these items (ranging from .708 for community resources to .697 for support staff assistance).

The third factor regarding professional self-efficacy concerns (17.715% variance) has extended Bandura's self-efficacy framework into the specific domain of inclusive education. Psychological and interpersonal aspects of teacher preparedness are served by strong loadings on self-confidence (.732) and team collaboration (.725) items.

### **Theoretical Implications**

In these findings, they contribute to theory development. Consequently, they show how Fuller's developmental concerns and Bandura's self-efficacy constructs pertain particularly to the field of inclusive education preparation. Second, factors are clearly differentiated, suggesting that these concerns may come about independently rather than in the sequence specified by previous models. Last, the growth of resources as a separate factor signifies the presence of contextual factors in determining teacher preparation.

## **Implications and Recommendations**

### **For Teacher Education Programs**

A multifaceted approach to teacher preparation is suggested by the three-factor structure of this study. Targeted intervention programs that deal with pedagogical skills, professional efficacy, and resource management should be integrated into programs. Specific emphasis should be placed on developing skills in learning style accommodation and IEP development, both of which are indicated as primary concerns.

### **For Policymakers**

Finally, findings stress the importance of the existence of sufficient support structures that promote the application of inclusive education. The availability of resources, support staff assistance, and

community resource networks should be featured in policy initiatives. Policies should also mandate training opportunities for all three dimensions of teacher concerns.

### **For Future Research**

Future studies should:

1. Use confirmatory factor analysis to validate this factor structure
2. Look at how these concerns develop over the course of teacher preparation and career beginning stages.
3. Explore how they are related to actual teaching performance.
4. Interventions can be developed and evaluated in regard to particular dimensions of concern.

### **Limitations**

This study certainly offers useful insights into pre-service teachers' concerns about inclusive education. However, there are a number of limitations. The generalizability of findings was limited to four universities in Pakistan. Furthermore, the data collection is conducted cross-sectionally, which prohibits the investigation of how any of these concerns might change over time. Response bias is also possible using self-reported data.

### **Conclusion**

We identified three distinct dimensions of pre-service teachers' concerns related to inclusive education in Pakistani universities and offered a framework to help develop focused interventions in teacher preparation programs and policy initiatives.

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