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Identifying Core Pedagogical Barriers in Special Education: A Psychometric Approach

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Abstract

Special education teachers frequently confront multifaceted challenges that extend far beyond curriculum delivery, particularly in developing countries such as Pakistan. These challenges are exacerbated by systemic inadequacies, insufficient institutional support, and the enduring stigma surrounding disabilities. Despite the severity of these issues, there remains a noticeable lack of standardized tools to systematically assess the pedagogical barriers encountered by special education professionals. The present study addresses this gap by developing and validating the Pedagogical Barriers Scale (PBS), a comprehensive instrument designed specifically for Pakistani special education teachers. A structured four-phase research design which comprised planning, item generation, quantitative evaluation, and validation was employed. The results of the study declared a refined 60-item scale. The PBS captures six core dimensions of pedagogical obstacles: administrative inefficiencies, teacher competency limitations, cognitive demands, communication barriers, emotional strain, and contextual challenges within the educational environment. Data were collected from a sample of 377 special education teachers representing a diverse range of institutional settings. Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were conducted to validate the scale's structural integrity and psychometric soundness. The results demonstrated strong reliability, construct validity, and internal consistency across all six dimensions. The PBS offers an empirically grounded framework for identifying instructional and systemic challenges in special education, thereby facilitating targeted professional development, policy reform, and institutional improvements. This tool not only contributes to the academic discourse on inclusive education but also offers practical utility for administrators, policymakers, and training institutions seeking to strengthen support for special education teachers in Pakistan.

Keywords: Pedagogical Barriers, Scale Development, Special Education, Factor Analysis, Teacher Challenges, Pakistan

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1. Introduction

In recent decades, the landscape of education has witnessed significant transformations driven by policy reforms, technological advancements, and evolving pedagogical theories (Wang et al., 2024; Rahimi & Oh, 2024). Amid these shifts, special education remains an area that demands targeted attention (Gunnars, 2024), particularly in developing nations where systemic challenges are more pronounced (Jane Osareme et al., 2024). Special education teachers, in particular, are expected to navigate a unique set of complexities (Edwards-Fapohunda & Adediji, 2024), including the instructional needs of students with diverse disabilities, lack of specialised training, insufficient classroom resources, and broader societal misconceptions about disability (Johnson & Semmelroth, 2014; Ayub, 2022).

In Pakistan, the challenges faced by special education professionals are compounded by deeply rooted structural issues (Ullah et al., 2025). These include underfunded institutions, poorly coordinated administrative policies, and minimal community awareness about inclusive education (Muhammad et al., 2024). Furthermore, special educators often face emotional burnout due to lack of professional support and recognition (Nasir & Shaheen, 2021). Despite the critical role that these teachers play in promoting inclusive education, there remains a shortage of research-driven tools to systematically assess the barriers they encounter (Bello, 2025).

Existing assessment tools developed in Western contexts often fail to capture the nuanced challenges faced by educators in Pakistan (Hussain & Akhter, 2025), where cultural, administrative, and socio-economic dynamics differ significantly. As a result, teachers and policymakers lack the data necessary to initiate informed reforms or targeted interventions (Mudinillah et al., 2024).

This study aims to address this gap by developing and validating a context-specific instrument—the Pedagogical Barriers Scale (PBS)—designed to measure the key challenges encountered by special education teachers in Pakistan. This research not only contributes to the academic discourse on inclusive education but also provides actionable insights for educational reform and professional development at the national level.

2. Material and Methods

A well-defined methodology serves as the foundation of any empirical research, ensuring the reliability, replicability, and validity of findings. In the present study, a quantitative, cross-sectional research design was employed to develop and validate the Pedagogical Barriers Scale (PBS) for special education teachers in Pakistan. The process followed a structured four-step procedure (Burton & Mazerolle, 2011): (1) planning, (2) item development, (3) quantitative evaluation, and (4) validation.

During the planning phase, a comprehensive literature review was conducted, supported by expert consultations with educationists, psychologists, and policy analysts to identify core dimensions of pedagogical barriers. This groundwork led to the generation of an initial item pool comprising over 80 statements, which were then evaluated for face and content validity by a panel of subject matter experts.

In the third phase, the draft scale was pilot tested with a small group of 45 special education teachers to identify issues related to clarity, relevance, and item redundancy. Based on feedback, the scale was refined and reduced to 60 items. A larger sample (n=377) of special education teachers from diverse regions and institutional types across Pakistan was subsequently surveyed.

Vol. 3 No. 9 (2025)

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To assess the psychometric properties of the scale, both Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were performed. Internal consistency was measured using Cronbach's alpha, while construct validity was examined through model fit indices. This rigorous methodological approach ensured the scale's reliability and its suitability for use in both academic and practical contexts.

2.1. Study Design

A four-phase psychometric technique was used.

Phase 1: Planning

Planning included defining the construct, conducting expert consultations, and reviewing literature. Interviews with educators and stakeholders informed the conceptual framework.

Phase 2: Construction

A pool of 120 items was generated across six domains. Expert review refined the pool to 75 items, and ultimately 60 items were retained.

Table 1. ***Projected Item Pool for the Pedagogical Barrier Scale (PBS)***

Domain	Item Pool	Final Scale
Administrative	15	10
Competency	13	10
Cognitive	12	10
Communicative	10	10
Emotional	12	10
Contextual	13	10
Total	**75**	**60**

Phase 3: Quantitative Evaluation

Cognitive interviews with domain experts led to the rewording of 15 items.

Table 2. Item ***Changes Resulting from Cognitive Interviews***

Original Items	Changed Items
How frequently does your school administration support you in teaching students with diverse learning needs?	How often you receive support by your school administration while teaching students with diverse learning needs.
How often do you lack updated assessment tools to evaluate students with diverse learning needs?	How often you experience limited access to up-to-date assessment tools for evaluating students with diverse learning needs.
How frequently does the school provide training in inclusive teaching practices for diverse learners?	How often school administration provides training programs on inclusive teaching practices for students with diverse learning needs.
How often does your school help you with legal and procedural aspects of special education?	How often school administration assists you in navigating legal and procedural requirements for special education.
How often do you get administrative support to manage behavioural challenges and apply behaviour intervention plans (BIPs)?	How often you are supported administratively in addressing behavioural challenges and implementing behaviour intervention plans (BIPs).
How frequently do you assess your teaching and pursue self-improvement?	How often you reflect on your teaching practices and seek opportunities for self-improvement.

Vol. 3 No. 9 (2025)

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How often do you use Universal Design for Learning (UDL) principles while planning your lessons?	How often you consult Universal Design for Learning (UDL) principles in lesson planning?

Phase 4: Validation

EFA and CFA were used to determine dimensionality and validate the scale.

3. Results

Descriptive Statistics

Table 3. ***Descriptive Statistics of the Scales Used in the Pilot Study***

Subscale	α	M	SD	Skew	Kurtosis
AB	.80	14.90	2.43	-.72	.25
ComB	.86	13.67	2.89	.33	.98
CogB	.82	7.68	1.86	-.82	.10
CommB	.81	60.51	8.76	-.74	.97
EB	.74	18.00	1.94	-1.32	1.70
ConB	.59	19.90	2.98	.89	1.87

Table 4. ***Reliability (Cronbach's Alpha) for PBS***

Subscale	Cronbach's Alpha	N Items
PBS	0.94	48
AB	0.81	8
ComB	0.78	8
CogB	0.81	8
CommB	0.88	8
EB	0.78	8
ConB	0.89	8

Vol. 3 No. 9 (2025)

Journal of Social Signs Review

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Figure 1. *Scree Plot of PBS Components*

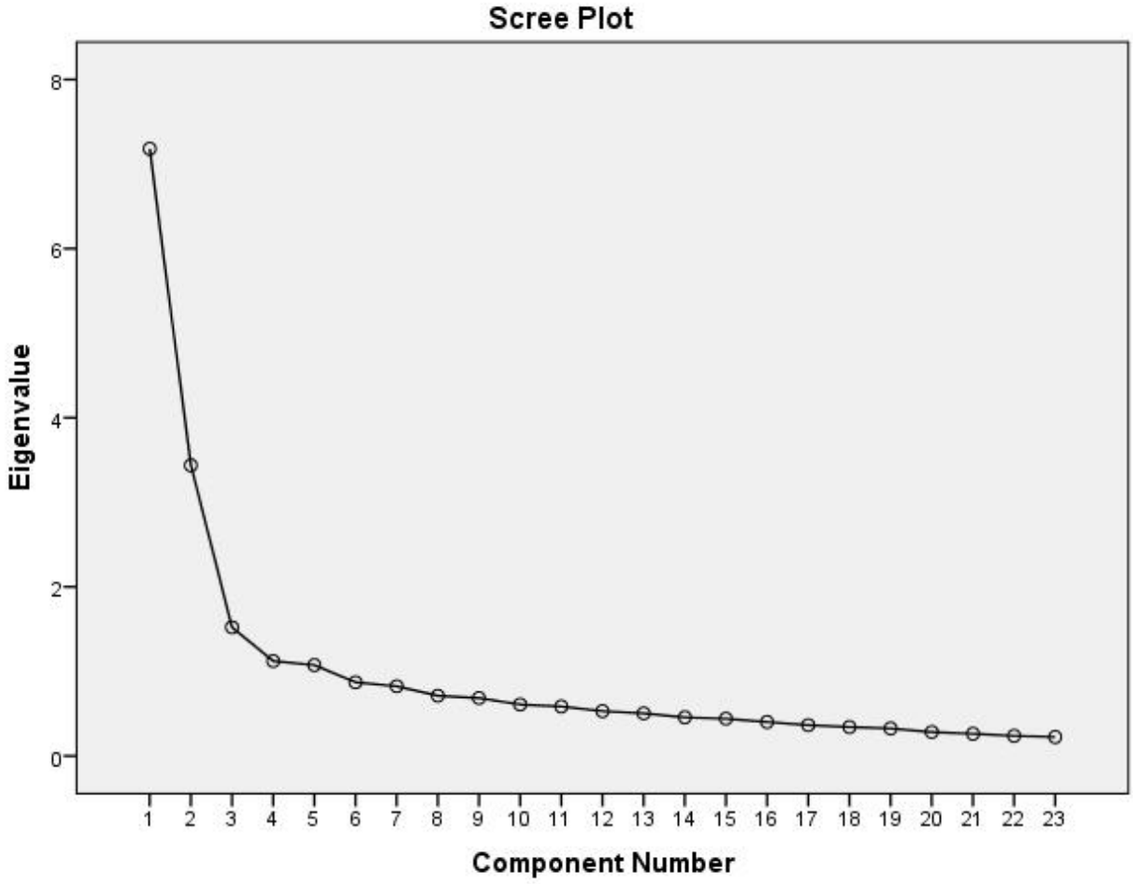

Table 5. *KMO and Bartlett's Test of Sphericity*

	KMO	Bartlett's Test of Sphericity		
Constructs		**Approx. Chi-Square**	**Df**	**Sig.**
PBS	0.819	6961.891	820	0.000

Table 6. *Component Analysis from EFA*

	Component					
Pedagogical Barrier Items	**1**	**2**	**3**	**4**	**5**	**6**
AB1	0.829		0.443			
AB2	0.817		0.543			
AB3	0.867					
AB4	0.817					
AB5	0.829					
AB6	0.817					
AB7	0.867	0.345				

Vol. 3 No. 9 (2025)

Journal of Social Signs Review

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Print ISSN 3006-466X

AB8						
ComB1		0.706				
ComB2		0.677				
ComB3		0.735				
ComB4						
ComB5						
ComB6		0.597				
ComB7				0.744		
ComB8		0.699				
CogB1					0.788	
CogB2					0.674	
CogB3			0.733			
CogB4			0.677			
CogB5	0.456					
CogB6	0.489					
CogB7	0.487					
CogB8			0.543			
CommB1			0.645			
CommB2			0.790			
CommB3			0.812			
CommB4						
CommB5	0.437					
CommB6	0.572					
CommB7				0.892		
CommB8				0.678		
EB1				0.573		
EB2		0.743				
EB3	0.564					
EB4					0.817	
EB5					0.867	
EB6					0.817	
EB7		0.278				
EB8					0.829	
ConB1						
ConB2						0.867
ConB3						0.817
ConB4						0.829
ConB5						0.817
ConB6						0.790
ConB7						0.812
ConB8						0.790
Eigenvalues	3.754	4.356	4.023	3.981	4.923	
Percentage of variance explained (%)	41.717	9.076	7.305	5.239	9.876	
Cumulative percentage of	56.98	47.23	39.77	32.98		

Vol. 3 No. 9 (2025)

Journal of Social Signs Review

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Print ISSN 3006-466X

variance explained (%)	59.56

Confirmatory Factor Analysis (CFA)

Table 7. ***Fit Indices for the Pedagogical Barriers Scale (PBS)***

Model	χ^2	df	χ^2/df	RMSEA	CFI	TLI	SRMR
Six-Factor Model	512.24	217	2.36	0.049	0.94	0.92	0.041

Note. χ^2 = chi-square; df = degrees of freedom; RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker-Lewis index; SRMR = standardized root mean square residual.

Table 8. ***Correlations with External Measures for Convergent Validity***

Variable	AB	ComB	CogB	CommB	EB	ConB
PBS	.97***	.98**	.92***	.89**	.87**	.80**

4. Discussion

The findings of this study offer critical insights into the barriers faced by special education teachers in Pakistan. The validated Pedagogical Barriers Scale (PBS) reveals six core dimensions—administrative, competency, cognitive, communicative, emotional, and contextual—that significantly influence teaching effectiveness and teacher well-being. These dimensions align with international literature (Moore, 1994; Asim et al., 2010; Hayward et al., 2021; Glazkova et al., 2022) while also highlighting context-specific nuances unique to the Pakistani educational landscape.

The high reliability and validity indices suggest that the PBS is a robust instrument for measuring pedagogical challenges in special education. The administrative and contextual barriers were among the most frequently reported challenges, pointing toward systemic inefficiencies and a lack of infrastructure (DaRosa et al., 2011; McLure & Aldridge, 2022). Emotional strain, often overlooked in policy discussions, emerged as a significant barrier, reinforcing the need for institutional mechanisms to support teacher mental health (O'Farrell et al., 2023).

This research not only fills a critical gap in the literature but also offers practical implications for policymakers, training institutions, and school administrators. By systematically identifying the nature and extent of the challenges faced by special education teachers, the PBS can inform the development of targeted training programs, improve teacher retention, and guide resource allocation.

Moreover, the study underscores the importance of context-specific research instruments in educational policy and practice. While international scales provide a foundational understanding, localized tools (Kajermoet al., 2010) such as the PBS ensure greater relevance and applicability. Future research should explore the scale's utility across different provinces and educational systems and consider longitudinal studies to track changes in pedagogical barriers over time.

5. Conclusion

The PBS serves as an empirically grounded and culturally sensitive instrument. It can inform educational policy, guide teacher training, and enhance institutional responsiveness to pedagogical challenges.

Declaration of Competing Interests

The author of this article declares that she has no financial, professional or personal conflicts of interest that could have had an inappropriate influence on this work.

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Authorship Contribution Statement

Name and Surname author 01: conceptualized the study, collected and analyzed the data, and wrote the manuscript, Writing – review & editing.

Name and Surname author 02: supervised the research process, provided methodological guidance, and contributed to manuscript revision and approval., Writing – review & editing.

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