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## Teacher Agency under Structural Constraints in Rural Multigrade Schools: Evidence from Balochistan, Pakistan

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### Abstract

Single-teacher multigrade schools in rural Balochistan, Pakistan operate under chronic structural constraints, yet how teachers sustain learning and what justice-relevant work their practice performs remains underexplored. This convergent mixed-methods study combined a survey of 100 teachers with five semi-structured interviews, interpreted through Fraser's redistribution-recognition-representation framework and an ecological conception of teacher agency. Barriers were evident across domains, while adaptive practices were frequently reported. Regression results indicated that adaptive practice was most robustly associated with infrastructure/environmental adversity and administrative burden. Interview evidence shows these adaptations as compensatory justice work: they redistribute learning opportunities, recognise learners' linguistic repertoires, and create informal channels of participation where formal support is weak. Teacher adaptation, however, is not a substitute for systemic reform. Policy priorities include minimum infrastructure standards, protection of teaching time, multigrade-specific preparation, and participatory governance that supports teacher well-being and locally responsive practice.

**Keywords:** *rural education; multigrade schools; teacher agency; social justice; Balochistan; Pakistan*

### Introduction

Multigrade schooling, in which one teacher teaches learners from multiple grade levels in the same classroom, remains common in rural and hard-to-reach settings. It can be pedagogically productive when deliberately designed and resourced, but in many contexts, it is a pragmatic response to teacher shortages, geographic isolation, and low enrolment. Teachers are therefore expected to differentiate curricula, organise learning, and assess across grades with limited preparation and weak institutional support (Ali et al., 2025; Arif et al., 2026; Raggl, 2025; Recla & Potane, 2023; Taole et al., 2024). In rural Pakistan, such constraints destabilise instructional continuity and narrow what teaching and learning can realistically become (Coşkun, 2023). In Balochistan, single-teacher multigrade schools are common in remote areas, not as a pedagogical choice but because of chronic underfunding, poor infrastructure, and geographic marginalization (Ibourk & El Aynaoui, 2026; Yilmaz & Culha, 2025).

These vulnerabilities are intensified by shortages of trained teachers, outdated professional development, gender gaps, and severe deficits in basic facilities (Nawab & Baig, 2011; Pirzada et al., 2024; Salvo-Garrido et al., 2025). Climate disruption further weakens the system; flooding in 2022 damaged many schools and pushed teachers into first-responder roles sustained through makeshift arrangements and community improvisation (Arif et al., 2025). Poverty-linked absenteeism, child labour, migration, and gendered attendance also continue to shape educational continuity in South Asian settings (UNICEF, 2024).

Educational research in Pakistan has often focused on enrolment, dropout, and test scores, with less attention to teachers' lived practices. What is missing is how multigrade teachers interpret constraints, allocate attention across grades, and sustain daily classroom continuity (Fatima et al., 2024; Nawab & Baig, 2011). This gap also reflects knowledge-production hierarchies that privilege administrative framings over practitioner expertise (Literal & Sabud, 2025). This study therefore treats multigrade schooling under constraint as both a pedagogical and social justice problem. Fraser's redistribution-recognition-representation framework conceptualises constraint as multidimensional injustice (Fraser, 2009), complemented by distributive, recognitional, and procedural justice lenses (Gewirtz & Cribb, 2002; Rawls, 1971). Educational innovation is judged not by novelty alone, but by its contribution to equity, inclusion, and participation (Hong & Lee, 2023; Yoon et al., 2023). The analysis also centres teacher agency, understood ecologically as situated professional judgement enacted through adaptation and resilience in fragile educational settings (Duan et al., 2023; Priestley et al., 2015).

These challenges are not unique to Pakistan, but in Balochistan they are intensified by entrenched spatial, material, and political inequalities. International research shows that small rural schools with limited resources place heavy demands on teachers, including isolation, multiple roles, and emotional labour (Karlberg-Granlund, 2023). Although such schools are often valued locally, they remain marginal in policy agendas (Cutamora, 2026; Fargas-Malet & Bagley, 2022). Multigrade teaching is therefore both an organisational necessity and a pedagogical challenge, raising persistent questions about equity and inclusion (Day & Navani, 2025; Raggl, 2025). Recent scholarship views teachers as agents who mediate structural disadvantage, while also showing that such efforts remain limited without systemic support (Cuervo, 2012, 2020, 2025).

Two questions guide the study: (1) How do structural constraints in rural multigrade schools map onto redistribution-recognition-representation as dimensions of social injustice? and (2) How do teachers enact agency through adaptation, professional judgement, and resilience to address these dimensions in everyday practice? Using a convergent mixed-methods design, the study links survey patterns with teacher narratives to offer a justice-oriented account of constraint and agency in under-provisioned rural systems (Creswell & Clark, 2017; Hsieh & Shannon, 2005).

## **Theoretical Background and Conceptual Framework**

### ***Social Justice as a Lens for Understanding 'Innovation' in Marginalised Schooling Contexts***

This study adopts a plural model of social justice integrating Fraser's (2009) redistribution-recognition-representation framework, Cuervo (2012) and Keddie (2020), Gewirtz & Cribb (2002) distributive-cultural-procedural typology, and Rawls's (1971) principle of just distribution. Educational innovation in structurally disadvantaged schools is therefore judged not by novelty alone, but by whether it broadens opportunities to learn, belong, and participate. Fraser's principle

of parity of participation underpins all three dimensions: redistribution concerns material resources and opportunity, recognition concerns dignity and difference, and representation concerns voice and participation in decision-making (Gewirtz & Cribb, 2002; Keddie, 2020; Spring, 2008).

Social justice functions here as an analytic scaffold linking structural conditions, teachers' judgement under constraint, and justice-relevant outcomes: opportunity to learn, informational access, culturally sustaining instruction, and meaningful participation. Cuervo (2020) argues that rural teachers produce social justice through everyday relational and pedagogical decisions. Multigrade teaching may be deliberately designed or may function as a default response to staffing constraints (Nawab & Baig, 2011; Parfitt et al., 2025), but in under-resourced rural settings it typically requires teachers to plan across curricula with limited specialised preparation (Ares-Ferreirós et al., 2025; Day & Navani, 2025; Taole et al., 2024). Curriculum misalignment further intensifies this work (Little, 2001; Mampane & Carrim, 2025).

### ***Distributive Justice: Resources, Opportunity-to-learn, and Informational Equity***

Distributive injustice is evident when learners' opportunities are constrained by unequal access to qualified teachers, safe learning environments, materials, learning time, and institutional support. Rawls's (1971) principle anchors this dimension, while Fraser's (2009) redistribution concept links material scarcity to restricted parity of participation. Equity therefore depends on resources, leadership, collaboration, and access to information (Ainscow, 2020; Ainscow & Sandill, 2010; Muijs et al., 2010), especially where disadvantage is spatially concentrated (Azorín et al., 2020; Bongala et al., 2020; Medequillo & Gallardo, 2024). Professional learning support is also distributional because its absence places disproportionate costs on teachers in disadvantaged settings (McEwen et al., 2025). In this study, redistribution is examined through infrastructure, materials, instructional time, and poverty-linked absenteeism, operationalised through indices for infrastructure/environmental adversity, socioeconomic barriers, and multigrade pedagogical complexity. Such redistributive deficits are recurrent in multigrade schooling globally (Ares-Ferreirós et al., 2025).

### ***Cultural/Recognitional Justice: Language, Dignity, and Belonging***

Cultural or recognitional justice concerns whether schools misrecognise learners' languages and identities by treating difference as deficit rather than as a resource for pedagogy and belonging (Fraser, 2009). Recognition is especially salient in linguistically minoritised communities, where dignity and learning depend on scaffolding access to the language of schooling (Ertugruloglu et al., 2023). Gewirtz & Cribb (2002) frame this as a question of whether systems affirm identities and languages; Rayas et al. (2025) similarly show how curricula can make deficit framing structural. Recognition is also produced through teachers' interpretive labour in negotiating language, family engagement, and institutional expectations (Gordon & Yeakey, 1978, Park & Choi, 2021; Park, 2012). Cuervo (2012) extends this argument to rural settings, stressing that recognitional education must affirm place-based identities and community knowledge. Here, recognition is examined as recognition-in-action through home-language scaffolding and locally meaningful materials.

### ***Procedural/organisational Justice: Participation, Collaboration, and School-community Governance***

Procedural or organisational justice concerns whether educational decision-making is transparent, participatory, and responsive to those most affected. Participation is constitutive when

administrative demands displace pedagogy and constrain professional judgement (Gewirtz & Cribb, 2002; Hong & Lee, 2023; Yoon et al., 2023). Whether inclusion becomes embedded practice depends on organisational culture, leadership, collaboration, and policy arrangements that support school-community engagement (Ainscow, 2020; Ainscow & Sandill, 2010; Auerbach, 2009; Epstein, 2002; Keddie, 2020; Yeol, 2020). In this study, representation is linked to workload distribution, clerical support, isolation versus collegial infrastructure, and engagement with families and communities. Empirically, it is captured through administrative burden and non-teaching duties, together with qualitative evidence on constrained voice and informal participation channels. Redistribution, recognition, and representation are treated as interacting conditions, each reinforcing the others (Fraser, 2009; Gewirtz & Cribb, 2002; Mampane & Carrim, 2025; Spring, 2008).

### ***Teacher Agency and Resilience as Mechanisms of Justice Enactment Under Constraint***

The plural justice framework clarifies what is at stake; ecological teacher agency theory clarifies how justice-relevant practice is enacted under constraint. Teachers' actions emerge through professional repertoires, future orientations, and practical judgement within material and institutional conditions (Molla & Nolan, 2020; Priestley et al., 2015). This lens is pertinent in rural multigrade settings, where time, materials, collegial infrastructures, and policy demands shape what teachers can realistically do (Fargas-Malet & Bagley, 2022; Karlberg-Granlund, 2019). Resilience scholarship treats sustained professional judgement under adversity as relational and resource-dependent (Duan et al., 2023). Maintaining care under scarcity entails emotional labour, especially where teachers work in isolation and multigrade teaching is a staffing response rather than a supported pedagogy (Cuervo, 2025; Day & Navani, 2025). Under such conditions, uneven time allocation can generate distributive inequality, deficit framings can narrow recognition, and exclusion from deliberation can weaken procedural justice. Agency is therefore both justice-enabling and structurally constrained (Mulkeen & Higgins, 2009; Parfitt et al., 2025).

Accordingly, the plural justice framework, drawing on Gewirtz & Cribb (2002), Fraser (2009), Cuervo (2020, 2025), and Keddie (2020), structures interpretation of both constraints and teacher responses. Table 1 summarises the theory-informed mapping used to align the empirical survey domains, qualitative anchors, and Fraser's 3R dimensions during mixed-methods integration.

**Table 1. Analytical framework and Operationalisation (3R and Teacher Agency)**

<b>Empirical domain (Survey + qualitative coding)</b>	<b>Primary 3R dimension</b>	<b>Operational indicators (quantitative + qualitative anchors)</b>
Infrastructure and environmental adversities	Redistribution	Survey: classroom condition, missing facilities, climate disruption. Qual: closures, unsafe space, makeshift teaching.
Socioeconomic barriers to access and continuity	Redistribution	Survey: irregular attendance, dropout-return. Qual: seasonal absence, safety-related dropout.
Pedagogical complexity in multigrade teaching	Redistribution	Survey: grades taught, class size, multigrade training, confidence. Qual: rotation/grouping, peer support
Administrative burden	Representation	Survey: non-teaching duties, teaching time lost. Qual: de-professionalisation, constrained voice.
Emotional strain and professional isolation	Recognition	Survey: emotional exhaustion. Qual: emotional labour, workload strain, limited collegial support.
Adaptive strategies (teacher agency/practice)	Cross-cutting (3R)	Survey: grouping, home language/culture, teacher-made materials. Qual: improvisation, outreach.

## Research Methodology

### **Research Design and Analytical Orientation**

This study used a convergent mixed methods design to examine structural constraints shaping multigrade teaching in marginalised rural contexts and the adaptive strategies teachers enact in response. Quantitative and qualitative strands ran in parallel and were integrated at interpretation (Creswell & Clark, 2017). The survey profiled domains and tested associations, while interviews examined how teachers interpreted constraint and enacted situated action.

The analysis proceeded through two linked lenses. Fraser's (2009) redistribution-recognition-representation (3R) framework guided interpretation of constraints and teacher responses as justice-relevant mechanisms in rural multigrade schooling, while ecological teacher agency explained adaptation as professionally situated action emerging from experience, purposes, and practical-evaluative judgement under material, institutional, and sociocultural conditions (Priestley et al., 2015).

To connect these layers, a theory-informed mapping matrix aligned the empirical survey domains with the 3R dimensions (Table 1). Its construction was informed by Guetterman et al.'s (2015) joint display logic: the matrix linked theory to the survey domains, provided a common structure for cross-strand comparison, and made the integration process transparent. It was not imposed as a predetermined qualitative coding scheme; rather, it served as a scaffolding device that kept both strands oriented toward the same justice-relevant questions while preserving inductive qualitative analysis.

### ***Research Setting***

The study was conducted in remote government primary schools in rural Balochistan, Pakistan, where single-teacher multigrade organisation is common. The three districts, Jaffarabad, Usta Muhammad, and Jhal Magsi, are predominantly rural regions lie in the eastern side, semi-arid areas with dispersed settlements, limited infrastructure, and exposure to floods, droughts, and extreme heat. Local livelihoods depend mainly on smallholder farming, livestock rearing, daily wage labour, and seasonal migration and clustered around water sources, reflecting the province's low population density, geographic isolation, and limited access to infrastructure and services. Communities are shaped by tribal and kinship relations, landholding hierarchies, tenant farming, landless labour, and patriarchal norms that influence access to schooling and public participation (Ahmed, 2023; Khan et al., 2026).

### ***Quantitative Sample (Survey)***

The survey included 100 government primary teachers working in multigrade settings. With support from District Education Officers, eligible multigrade schools were compiled into district lists, stratified by remoteness ( $\leq 5$  km vs.  $> 5$  km), and randomly sampled within strata. An a priori power analysis indicated that  $n = 100$  was adequate to detect medium effects with 80% power at  $\alpha = .05$  (Cohen, 2013). Teachers were eligible if currently employed by the government, had more than 1 year of local experience, had multigrade teaching experience, and participated voluntarily.

### ***Qualitative Sample (Interview)***

While the survey sample ( $n = 100$ ) supported inferential analysis, the interview sample followed a different logic. Five participants provided sufficient information power for examining how teachers interpret structural constraints and enact situated judgement in everyday multigrade practice (Malterud et al., 2016). Given the specificity of participant selection, all shared the same role, school type, and province, and the focused research questions, a small purposive sample was analytically defensible. Participants were selected based on having five or more years' rural Balochistan experience, current placement in single-teacher schools, willingness for extended interviews, and gender/geographic diversity (three male, two female). Excerpts are reported as P1–P5.

The difference between the quantitative ( $n = 100$ ) and qualitative ( $n = 5$ ) samples reflects their distinct purposes in a convergent mixed-methods design (Creswell & Clark, 2017). The survey estimated prevalence and intensity, whereas the qualitative strand prioritised analytical depth. The interview sample is not representative of all rural Balochistan teachers; it is used as an explanatory complement to survey results, with joint displays supporting cross-strand comparison (Guetterman et al., 2015).

### ***Survey Data***

The survey measured the prevalence and intensity of constraints and the reported frequency of adaptive practices. Items were organised into six domains: infrastructure/environmental adversity, pedagogical complexity, administrative burden, socioeconomic barriers to continuity, emotional strain, and adaptive strategies. Responses were primarily captured on 5-point scales and aggregated into domain indices for analysis.

### ***Interview Data***

Semi-structured interviews (n = 5) complemented the survey by eliciting concrete episodes of constraint, adaptation, and professional judgement in multigrade practice. The interview guide addressed resource and infrastructure conditions, attendance and continuity dynamics, language and curriculum mediation, administrative duties, and the emotional and relational work required to sustain learning.

The five participants comprised three male (P1, P3, P5) and two female (P2, P4) teachers from Jaffarabad, Usta Muhammad, and Jhal Magsi. All were sole teachers in their schools and had 15–20 years of rural multigrade experience. To reduce identifiability, ethnicity is reported only broadly; participants worked in linguistically and socially diverse communities where local languages were used at home and Urdu was the main language of schooling. All five schools were highly remote, accessible mainly by unpaved tracks, and operated as single-room structures with limited or no electricity, water, toilets, or permanent teaching materials.

### ***Transcription, Translation, and Verification***

Interviews were transcribed in the original languages and translated into English by trained assistants. The research team verified transcripts against audio and checked translations for meaning equivalence, including selective back-translation and clarification of local terms.

### ***Operationalising Social Justice Framework for Empirical Analysis***

Fraser's (2009) redistribution-recognition-representation dimensions were used to link empirical survey domains to justice-relevant mechanisms during integration. The theory-informed matrix supported traceability across theory, quantitative domain indices, qualitative anchors, and mixed-methods interpretation without functioning as a predetermined qualitative coding scheme.

### ***Mapping Empirical Domains to Justice Dimensions***

Survey items were organised into empirical domains reflecting key constraints and adaptive practices. During integration, these domains were aligned with Fraser's 3R framework through a theory-informed mapping matrix. Domain indices were computed by rescaling relevant items to a common 1–5 metric and averaging within domains, with reverse coding where necessary so that higher scores indicated stronger adversity or more frequent adaptation. The socioeconomic barriers index is a limited proxy based on attendance-continuity disruption because the survey dataset did not include separate poverty, child labour, parental education, or gendered attendance items.

### ***Quantitative Analysis***

Survey data were analysed using SPSS (version 28). Descriptive statistics summarised barriers and adaptive strategies, bivariate correlations examined associations among domain constructs, and OLS regression predicted adaptive strategies from the five barrier domains. Diagnostics assessed missingness, influential cases, multicollinearity, and residual distribution; low missingness was handled through listwise deletion after MCAR assessment.

### ***Qualitative Analysis***

Qualitative data were analysed using Braun & Clarke's (2021) six-phase thematic analysis, with NVivo 12 supporting coding management. Analysis involved an inductive reading of teachers'

accounts of constraint, judgement, and adaptation, followed by a theory-attentive reading through ecological teacher agency (Priestley et al., 2015). During integration, themes were related to redistribution, recognition, and representation to support cross-strand synthesis without replacing inductive analysis. The theory-informed mapping matrix was developed during integration to align empirical survey domains with Fraser's (2009) 3R framework. The domains were first organised from the instrument structure and multigrade literature, including recent work on multigrade complexity and rural classroom management (Kwenin, 2026; Qangule & Letuma, 2025; Vigo-Arrazola & Moreno-Pinillos, 2025). Consistent with directed content analysis (Hsieh & Shannon, 2005), the matrix supported theory-guided interpretation and cross-strand comparison but did not replace the initial inductive reading of qualitative data (Braun & Clarke, 2021).

### ***Mixed-methods Integration***

Integration was undertaken at the interpretation stage through joint displays comparing survey and interview evidence to identify convergence, divergence, and complementarity. These displays were then used to align integrated interpretations transparently with the redistribution-recognition-representation framework.

### ***Rigor, Trustworthiness, and Quality Assurance***

Rigour and trustworthiness were supported through an audit trail, peer debriefing, follow-up checks with selected participants, and reflexive memos. Mixed-methods quality was strengthened through joint displays and systematic cross-strand comparison (Guetterman et al., 2015).

### ***Ethical Considerations and Researcher Positionality***

Ethical approval was obtained from Sebelas Maret University (No. 2941/UN27.02/PK.03.08/2025) and the Balochistan Department of Education (No. PPIU/8.70/(A&F)/2025-1077-78). Participants provided written informed consent in their preferred languages. Identifying details were removed, data were stored securely, and small appreciation tokens acknowledged participants' time without undue inducement. The team considered positionality by drawing on professional experience in Pakistani education while remaining social and political outsiders to Balochistan, and addressed interpretive bias through team review, peer debriefing, and careful representation.

## **Findings**

This section brings together survey ( $n = 100$ ) and interview (P1–P5) evidence, organised around redistribution, recognition, and representation; adaptive strategies are read as cross-cutting enactments of agency.

### ***Domain Profile of Constraints and Adaptation***

Table 2 summarises the descriptive profile of the five barrier domains and the adaptive strategies index. The domain means show that pedagogical complexity was the most consistently reported constraint ( $M = 3.87$ ,  $SD = 0.53$ ), followed by the socioeconomic barriers proxy ( $M = 3.79$ ,  $SD = 0.81$ ) and emotional strain ( $M = 3.39$ ,  $SD = 1.37$ ). Infrastructure/environmental adversity ( $M = 2.63$ ,  $SD = 1.13$ ) and administrative burden ( $M = 2.24$ ,  $SD = 1.29$ ) showed lower average scores, but the item-level indicators demonstrate that these constraints were still educationally consequential: 43% of teachers lacked two or more essential facilities, 62% reported repeated climate-related disruption, and 41% reported losing 11–40% of teaching time to non-teaching duties. Adaptive strategies were reported at a moderate level ( $M = 2.91$ ,  $SD = 1.20$ ), with frequent use of home-language or cultural

elements and locally produced materials. Thus, Table 2 should be read as a descriptive domain profile that establishes the prevalence and intensity of constraints before the regression and interview evidence are used to explain how these constraints relate to teacher adaptation.

**Table 2. Descriptive Statistics for Domain Indices and Selected Item-level Indicators (n = 100)**

Domain index (1-5)	Mean (SD)	Selected item-level indicators
<b>Infrastructure and environmental adversities</b>	2.63 (1.13)	32% rated classrooms poor/very poor; 43% lacked $\geq 2$ essential facilities; 62% reported repeated climate-related disruption.
<b>Pedagogical complexity</b>	3.87 (0.53)	100% taught $\geq 4$ grades; 67% had more than 40 students; 86% reported no multigrade-specific training.
<b>Administrative burden</b>	2.24 (1.29)	68% reported at least some non-teaching duties; 41% lost 11–40% of teaching time.
<b>Socioeconomic barriers</b>	3.79 (0.81)	Attendance-continuity disruption was captured through repeated lessons linked to irregular attendance/dropout-return cycles.
<b>Emotional strain</b>	3.39 (1.37)	61% reported moderate or extreme emotional exhaustion; 31% reported extreme exhaustion.
<b>Adaptive strategies</b>	2.91 (1.20)	61% often/always used home language or cultural elements; 87% created local materials at least occasionally.

\* Note: Higher scores indicate stronger adversity or more frequent adaptive strategies. Percentages reflect response categories available in the survey dataset. The socioeconomic barriers index is treated as a proxy because separate survey items on poverty, child labour, parental education, and gendered attendance were not available in the quantitative dataset.

Ordinary least squares (OLS) regression a method estimating each predictor's independent contribution to the outcome was used to examine which barrier domains predicted adaptive strategy use, with results presented in Table 3. Infrastructure and environmental adversity ( $B = 0.432$ ,  $\beta = .407$ ,  $p < .001$ ) and administrative burden ( $B = 0.426$ ,  $\beta = .458$ ,  $p < .001$ ) were the strongest positive predictors, indicating that greater structural and workload pressures were associated with higher adaptive strategy use. Emotional strain was a significant negative predictor ( $B = -0.210$ ,  $\beta = -.239$ ,  $p = .044$ ), suggesting that exhaustion undermined adaptive capacity. Pedagogical complexity and socioeconomic barriers did not reach statistical significance ( $p = .262$  and  $p = .207$ , respectively), indicating no independent predictive effect once other domains were controlled. These findings suggest that while structural pressures may prompt adaptive responses, emotional exhaustion constrains teachers' ability to sustain them.

**Table 3. OLS Regression Predicting Adaptive Strategies From Barrier Domain Indices (N = 100)**

Predictor	B	SE	$\beta$	t	P
<b>Infrastructure/environmental adversity</b>	0.432	0.119	.407	3.64	< .001
<b>Pedagogical complexity</b>	0.257	0.227	.114	1.13	.262
<b>Administrative burden</b>	0.426	0.095	.458	4.48	< .001
<b>Socioeconomic barriers/proxy</b>	0.166	0.130	.111	1.27	.207
<b>Emotional strain</b>	-0.210	0.103	-.239	-2.05	.044

Note. Model fit:  $R^2 = .383$ , adjusted  $R^2 = .350$ ,  $F(5, 94) = 11.68$ ,  $p < .001$ . Domain indices were computed by rescaling relevant items to a common 1–5 metric and averaging items within each domain. The socioeconomic barriers index is a proxy based on attendance-continuity disruption, as the available survey dataset did not include separate items on poverty, parental education, or gendered attendance.

### **Redistribution Related Constraint: Infrastructure and Environmental Adversity**

Infrastructure/environmental adversity showed a moderate domain mean ( $M = 2.63$ ,  $SD = 1.13$ ), but item-level indicators revealed recurring material and environmental constraints. Approximately one third of respondents rated classroom conditions as poor or very poor (32%), 43% lacked at least two essential facilities, and 62% reported repeated climate-related disruption. These patterns indicate that material deprivation and environmental disruption were not isolated problems, but recurring conditions shaping instructional continuity, aligning with accounts of infrastructural fragility and climatic stress in rural schooling contexts (Meneses-Delgado & Rodríguez-Casanova, 2024; Pirzada et al., 2024).

Interview accounts from four participants show how material scarcity narrows instructional possibility. P1 described a single mud-walled room where rain, heat, and the absence of electricity or water directly limited teaching; P5 recalled floodwater covering half the classroom while lessons continued in the only dry corner. Such accounts frame redistribution as an opportunity-to-learn problem: absent minimum standards reduce learning time and continuity.

### **Redistribution Related Constraint: Pedagogical Complexity in Single-teacher Multigrade Classrooms**

Pedagogical complexity showed the highest quantitative domain mean ( $M = 3.87$ ,  $SD = 0.53$ ). All respondents taught at least four grade levels, 67% reported class sizes above 40 students, and 86% had no multigrade-specific training. These patterns indicate a high level of pedagogical complexity and reflect a structural burden rather than isolated classroom difficulty. However, this domain did not independently predict adaptive strategies in the multivariate model, suggesting that pedagogical complexity shaped the teaching context without operating as a statistically significant independent predictor once other domains were controlled (Ali et al., 2025; Nawab & Baig, 2011; Recla & Potane, 2023).

Across four interviews, multigrade teaching was described as simultaneous differentiation without adequate scaffolding. One teacher stated, “Teaching five grade levels simultaneously is like running five schools inside one room” (P2), while another described spending six weeks re-teaching material after a closure. Teachers also described rotating groups and using older learners to support younger ones (P2), a compensatory redistribution of attention where formal staffing is absent.

### ***Redistribution Related Constraint: Socioeconomic Barriers to Attendance and Learning Continuity***

The socioeconomic barriers proxy recorded a high domain mean ( $M = 3.79$ ,  $SD = 0.81$ ), indicating salient attendance-continuity disruption. Because the quantitative dataset lacked separate items on poverty, child labour, parental education, or gendered attendance, this domain is interpreted as a limited proxy rather than a comprehensive socioeconomic index. It captures repeated lessons linked to irregular attendance and dropout-return cycles (Sasmal & Guillen, 2015; UNICEF, 2024).

Interview accounts from three participants show how poverty, seasonal work, migration, and household responsibilities disrupted schooling and required outreach. As one teacher noted, "*food is more important than education*" for many families (P5), while another explained that schooling follows grazing and agricultural calendars (P1). Socioeconomic hardship therefore remains a crucial contextual condition, although it did not independently predict adaptive strategies in the multivariate model.

### ***Representation Related Constraints: Administrative Burden and Constrained Professional Voice***

Administrative burden showed a lower overall domain mean than other barriers ( $M = 2.24$ ,  $SD = 1.29$ ), indicating uneven distribution across respondents. However, item-level indicators still show that administrative demands were consequential: 68% reported at least some non-teaching duties, and 41% reported losing 11–40% of teaching time to such tasks. In the regression model, administrative burden was the strongest positive predictor of adaptive strategies, suggesting that teachers often developed compensatory routines when bureaucratic demands encroached on teaching time. This should not be read as evidence that administrative burden is productive; rather, it indicates that teachers are forced to adapt when institutional arrangements displace pedagogical work.

Interview accounts from four of the five participants cast representation as a governance problem in which compliance logics marginalise professional judgement. P1 described supervision as focused on registers and reports rather than classroom realities, while P5 recalled being told to "*Write an application*" after showing a supervisor rain-damaged textbook. These accounts echo analyses showing that administrative overload positions teachers as implementers of directives rather than pedagogical professionals, constraining voice and access to resources (Lewis & Naidoo, 2004).

### ***Recognition Related Constraints: Emotional Strain, Professional Isolation, and Status***

Emotional strain showed a moderate-to-high domain mean ( $M = 3.39$ ,  $SD = 1.37$ ). At item level, 61% reported moderate or extreme emotional exhaustion, and 31% reported extreme exhaustion. Emotional strain was negatively associated with adaptive strategies in the conventional OLS model, but this should be interpreted cautiously because the association was not retained under robust standard errors. Qualitative accounts therefore help interpret how emotional labour shaped teachers' adaptive capacity.

Interview narratives across four participants portray emotional strain as cumulative and relational. P1 described teaching as "*a full emotional responsibility*" while P5 reported spending personal income on copies, repairs, and medicines. Yet motivation persisted through student progress: P1 linked one girl's literacy progress to wider family and community change, and P2 described feeling

*emotionally torn*" while still searching each day for ways to keep all learners moving forward. These accounts align with work on the emotional practice of teaching and with resilience scholarship emphasising that sustained commitment is relational and resource-dependent (Hargreaves et al., 2001; Hascher & Waber, 2021).

### ***Adaptive Strategies as Cross-cutting Enactments of Agency***

Adaptive strategies showed a moderate domain mean ( $M = 2.91$ ,  $SD = 1.20$ ), but item-level responses indicate that several practices were widely used. Sixty-one percent of respondents often or always used learners' home language or cultural elements in instruction, and 87% reported creating local materials at least occasionally. In the regression model, barrier domains collectively explained a substantial proportion of variance in adaptation,  $R^2 = .383$ , adjusted  $R^2 = .350$ ,  $p < .001$ . However, this association was driven primarily by infrastructure/environmental adversity and administrative burden. Pedagogical complexity and the socioeconomic barriers proxy were positive but non-significant predictors, while emotional strain showed a negative association that should be interpreted cautiously.

Interview accounts show these strategies as day-to-day responses to redistribution, recognition, and representation constraints. Teachers described improvising materials when textbooks or stationery were unavailable, *"We use sand, broken tiles, cardboard, and charcoal as teaching tools"* (P1), and using bilingual mediation to keep instruction intelligible: *"I explain in Balochi first ... Then I translate to Urdu"* (P3). P1 noted that inspectors criticised this practice even though it was the basis of comprehension. These adaptations therefore expand access while treating learners' linguistic repertoires as instructional resources.

Teachers also described peer tutoring, structured rotation, and family outreach as mechanisms for managing differentiation and stabilising participation. One teacher organised activity groups while older learners supported younger ones (P2), a routine that reallocates instructional capacity within the classroom ecology (Chung, 2023; Molla & Nolan, 2020). Others described home visits, mother-focused literacy support, and practical numeracy instruction as ways of strengthening attendance and demonstrating schooling's value to families (P1; P4; P5). These strategies also serve as representation work by building participation channels where formal institutional responsiveness is weak.

### ***Integrated Interpretation Across Strands***

Across domains, constraint and adaptation are connected, but not all constraints operate in the same way. Regression results show that adaptive strategies were most robustly associated with infrastructure/environmental adversity and administrative burden. Qualitative evidence shows how socioeconomic hardship, pedagogical complexity, emotional strain, and linguistic mediation shaped the everyday conditions in which adaptation became necessary. Through the redistribution-recognition-representation framework, teacher agency appears as compensatory professional action under structural under-provision.

Across all five interviews, teachers described improvising resources, mediating language, and extending their work into homes and communities not as optional innovations but as necessities imposed by system absence. Adaptation is therefore best understood as routine work that keeps educational possibility open under structural injustice, not as individual heroism.

## Discussion

The findings position multigrade teaching in rural Balochistan as a social justice problem rather than a narrow matter of classroom management. Read through the 3R framework, the barriers cluster in redistribution (unsafe learning spaces, limited resources, lack of multigrade training, poverty-linked disruption), recognition (limited linguistic inclusion and insufficient professional acknowledgement), and representation (bureaucratic compliance that displaces teaching and constrains voice). Within these conditions, teachers' adaptive strategies appear as situated agency that sustains learning under chronic under-provision, consistent with ecological accounts of professional judgement under constraint (Ali et al., 2025; Chung, 2023). Yet such adaptation cannot resolve the injustices that make it necessary; it is evidence of structural under-provision, not its solution (Cuervo, 2020; Fraser, 2009).

### ***Redistribution and the Limits of Compensatory Pedagogy***

This study found that redistribution-related constraints were visible across both quantitative indicators and interview accounts. Approximately one third of respondents rated classroom conditions as poor or very poor, 43% lacked at least two essential facilities, and 62% reported repeated climate-related disruption. Through Fraser's (2009) redistribution lens, these conditions point to a denial of parity of participation in learning and extend prior accounts of infrastructural fragility in rural Pakistan and Balochistan (Arif et al., 2025; Nawab & Baig, 2011; Pirzada et al., 2024). The regression model accounted for a substantial proportion of variation in adaptive strategies,  $R^2 = .383$ , but the predictor pattern clarifies an important limit: adaptive practice was most robustly associated with infrastructure/environmental adversity and administrative burden, not with all barrier domains equally. Multigrade provision therefore requires policy recognition as a supported pedagogical model rather than an administrative default (Aliaga-Rojas & Del Pino, 2024; Coşkun, 2023).

This reinforces long-standing arguments that multigrade teaching demands specialised preparation and curriculum organisation, not individual ingenuity alone (Ares-Ferreirós et al., 2025; Kwenin, 2026). Policy discussions likewise emphasise multigrade-specific teacher education, appropriate materials, and feasible assessment routines (Mampane & Carrim, 2025; Taole et al., 2024). Where these are absent, teachers must improvise across grades, often trading depth and continuity for coverage and manageability. Practical resources that embed differentiation and rotation routines can ease this burden and make multigrade work more sustainable (Recla & Potane, 2023; Redford et al., 2025).

### ***Recognition, Emotional Labour, and Linguistic Justice***

From the standpoint of recognition, the study highlights culturally sustaining practice and the emotional labour required to keep schooling viable under chronic scarcity (Ali et al., 2021, 2025). Home-language mediation and locally meaningful materials counter deficit framings and support learners' dignity, yet their durability depends on teachers' well-being. Professional isolation and exhaustion thus operate as justice-relevant limits on agency, strengthening the case for relational supports and well-being protections in demanding settings (Hascher & Waber, 2021).

Language is central to this recognition work. Teachers' bilingual bridging practices point to a culturally responsive literacy pedagogy that treats local language as a learning resource rather than an obstacle. Linguistic inclusion can strengthen participation and engagement in marginalised

communities (Ertugruloglu et al., 2023; Tatto, 2021). Cuervo (2025) further suggests that misrecognition of teachers' professional expertise can erode the motivational conditions that sustain justice-oriented practice over time, a dynamic that recognition reform must address through supervisory culture as much as formal language policy (Keddie, 2020). When supervisors criticise local-language scaffolding, misrecognition is produced for learners' identities and for teachers' professional judgement. A social justice approach therefore calls for language policy and supervision that legitimise bilingual and translanguaging strategies necessary for literacy in multilingual rural contexts. The negative coefficient for emotional strain suggests that exhaustion may constrain adaptive practice, although this finding should be interpreted cautiously because it was less stable under robust standard errors. This reinforces the argument that teacher well-being is not peripheral to justice-oriented practice but part of the conditions that make such practice sustainable.

### ***Representation, Governance, and the Protection of Teaching Time***

Representation findings show that administrative burden was uneven but consequential. Although the administrative burden domain mean was lower than some other domains ( $M = 2.24$ ,  $SD = 1.29$ ), 68% of respondents reported at least some non-teaching duties and 41% reported losing 11–40% of teaching time. Through Fraser's (2009) lens, these conditions signal a parity-of-participation problem because administrative routines shape whether teachers can protect teaching time and exercise professional voice. Administrative burden was also the strongest positive predictor of adaptive strategies. This shows that teachers are forced to develop compensatory routines when institutional arrangements displace pedagogical work. This interpretation is consistent with governance critiques showing how administrative and accountability demands can de-professionalise teaching in Pakistan (Ali et al., 2024; Lewis & Naidoo, 2004; Raggl, 2025). This corroborates McEwen and colleagues' (2025) argument that social-justice-oriented environments require organisational conditions that protect educators' pedagogical capacity. Participatory governance is therefore not an optional add-on but a condition of locally responsive practice. From an ecological perspective, agency is enabled or constrained by context rather than being a fixed individual trait (Chung, 2023).

### ***Policy Considerations for Practice and Reform***

These considerations point to linked reforms across redistribution, recognition, and representation. Redistribution requires minimum infrastructure, climate-resilient facilities, reliable materials, and multigrade-appropriate staffing and support. Recognition requires legitimising bilingual scaffolding, shifting supervision from paperwork to pedagogy, and supporting teacher well-being and peer networks. Representation requires reducing non-teaching duties, providing clerical assistance where feasible, and creating participatory governance that brings classroom realities into planning. Teachers' adaptive strategies should inform policy design, not substitute for formal provision.

These policy considerations should be read considering the revised regression results: material adversity and administrative burden were the most robust predictors of adaptation, while other domains were important contextual and interpretive conditions. Reform should therefore prioritise minimum infrastructure, protection of teaching time, and reduction of non-teaching duties, while also supporting language-responsive pedagogy, teacher well-being, and community engagement.

### **Limitations and Directions for Future Research**

This study is limited by self-report survey measures, a province-specific sample, and a qualitative strand designed for depth rather than representativeness. It also lacks systematic classroom observation and direct learner outcomes. Future research could combine longitudinal observation, learner assessment, and administrative records to examine how justice-oriented reforms shape teacher well-being and literacy trajectories over time.

### **Conclusion**

Multigrade teaching in rural Balochistan is shaped by interlocking constraints in redistribution, recognition, and representation. Teachers respond with high levels of adaptive practice, but this is compensatory work under systemic under-provision, not a substitute for reform. Improvement depends on basic facilities, protected teaching time, multigrade-specific preparation and materials, recognition of bilingual mediation and local knowledge, and governance arrangements that make teachers' classroom realities visible in planning. A social justice approach therefore requires reducing the conditions that make compensatory pedagogy necessary while institutionalising teachers' locally grounded expertise in system design.

The statistical findings indicate that adaptive practice was most robustly associated with infrastructure/environmental adversity and administrative burden. Other domains, including socioeconomic hardship, pedagogical complexity, and emotional strain, remain important contextual conditions illuminated through qualitative evidence and descriptive patterns. The findings therefore do not suggest that teachers can overcome structural injustice through adaptation alone. Rather, they show that adaptive practice emerges within specific forms of under-provision and signals the need for systemic reform.

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