Teacher Resilience in the Aftermath of the 2022 Balochistan Floods: Coping Strategies and Educational Continuity in Primary Schools

Muhammad Arif
Faculty of Education, Southwest University, Chongqing, China

Aneta Ismail
College of Nationalities and History, Southwest University, Chongqing, China

Yao Jia Li
Faculty of Education, Southwest University, Chongqing, China

This study analyzes teacher resilience in light of the 2022 floods in Balochistan, Pakistan, as teachers were displaced. It explores the challenges primary school teachers faced during this climate-induced displacement, how they coped, and the role of community and institutional support in continuing education. Using semi-structured interviews and focus groups (n=15), the study reveals how teachers adapted to teaching methodologies, negotiated emotional and psychological challenges, and utilized community resources to overcome the devastation brought about by floods. The findings show that teachers employed several adaptive strategies: remote teaching, collaborating with colleagues, and enacting personal resilience mechanisms such as emotional regulation and social support networks. The study revealed stark differences in how urban teachers experienced the floods compared to that of rural teachers, including hurdles imposed on teachers in rural areas due to a lack of resources, infrastructure, or both. The results are critical in guiding future educational policies and teacher development programs in disaster-prone areas in Pakistan, informing the operational needs of educators during post-disaster recovery, and urging a long-term approach to enhance the resilience of educational systems.

Keywords: Teacher resilience, Balochistan floods, climate-induced displacement, coping strategies, educational continuity, adaptive teaching.

Introduction

The catastrophic 2022 floods in Pakistan's Balochistan province serve as a reminder of how climate disasters target the world's most vulnerable, exposing the fragility of marginalized regions and the dire consequences of global inaction (Rashid & Qixiang, 2025). The floods, exacerbated by torrential monsoon rains, struck 32 out of 34 districts in the province, forcing thousands of students and educators to evacuate (Alied et al., 2023). The 2022 floods displaced over 20,000 people, ripped up more than 1,000 km of roads, and devastated the province's schools, damaging 2,850 institutions and destroying 1,076 (Government of Balochistan, 2023).

The 2022 floods turned schools into temporary shelters, disrupting education, a cornerstone of community resilience, and complicating the continuity of teaching and learning (Manzoor et al., 2023). 577 schools were used as shelters, and 977 classrooms were destroyed. The floods displaced 658,871 students (including 251,840 girls), denying them access to their schools for weeks and exacerbating pre-existing inequities among rural, female, and otherwise vulnerable learners. The education sector of Balochistan suffered PKR 12,439.2 million (USD 43.8 million) in losses, underscoring the huge economic and social costs of the disaster (Government of Balochistan, 2023).

Teachers' resilience proved significant in ensuring the continuity of education for students. The first responders to educational disruptions were primary school teachers, who experienced unprecedented challenges in delivering instruction while responding immediately to the displacements, losses, and uncertainties resulting from the disaster (Noviana et al., 2023). Teachers operate in unique environments, and teachers are held responsible for adapting to these rapidly changing and unsafe environments to ensure that there will be learning during and after a disaster (Ioana, 2024).

The 2022 floods in Balochistan highlighted the education sector's vulnerability to disasters and demonstrated the necessity of teacher resilience in post-disaster situations. To inform future disaster preparedness and educational recovery plans, it is important to understand how teachers coped with the challenges the floods pose and what strategies they used to adapt to the new reality. This research examines the resilience mechanisms that primary school teachers in Balochistan employed after the floods, and the socio-cultural, institutional, and personal factors that shaped those adaptive responses.

Research Problem Statement

The floods wiped out multiple schools in Balochistan, Pakistan. Schools went underwater and others were demolished (Aman et al., 2025). Students relocated to emergency shelters, lacking proper educational facilities and resources (Government of Balochistan, 2023). In the aftermath, teachers held lessons in cramped, improvised tents or community halls and without timely support from education authorities or aid agencies, schooling was disrupted (Ismail et al., 2024; Krisna et al., 2023). Education staff and students experienced psychological trauma, while teachers suffered personal setbacks through home destruction and enduring displacement (Jaffar et al., 2023).

The floods spotlighted teacher resilience; which is defined as teachers sustaining their work through uncertain times when facing individual and workplace challenges (Yuksel & Akbel, 2023). There is limited research on how teachers in Pakistan, particularly in disaster-prone and under-resourced regions like Balochistan, demonstrate resilience in the aftermath of climate-induced displacement. Educational practices of teachers during and after disasters need examination to develop better policies for disaster preparedness, teacher training programs, and education recovery strategies.

Research Questions

This study explores the intersection between teacher resilience, climate-induced displacement, and education in the context of the Balochistan floods.

1. How do primary school teachers experience and exhibit resilience in post-disaster settings, particularly in light of their personal experiences with displacement?

2. What strategies do primary school teachers use to maintain educational continuity in the aftermath of floods?

3. What role do local communities and governmental or non-governmental support systems play in supporting teacher resilience in disaster-affected areas?

These questions provide insight into how teachers maintain their professional commitment to education under crisis conditions and the factors that influence their ability to be resilient in the face of climate-induced displacement.

Relevance

This work contributes to the growing literature on teacher resilience and disaster recovery in education through its focus on climate change and displacement (Borazon & Chuang, 2023; Clarà et al., 2025; Fu & Zhang, 2024; Raghunathan et al., 2022; Rashid & Qixiang, 2025). This study offers insights into how teachers in Balochistan strategically navigate psychosocial and pedagogical challenges during the post-disaster recovery process, highlighting their adaptive capacity in maintaining educational continuity amid displacement and disruption. This study adds to the literature on climate-induced displacement and challenges in displaced communities' access to quality education, calling for policy interventions that support educators during and after a disaster.

This study focuses on one disaster in one vulnerable region. Its goal is to use the localized understanding of teacher responses to post-crisis realities to address broader dynamics of emergency pedagogy. Results can guide the development of disaster resilience programs for teachers, curriculum adaptations, and strategies for future disaster preparedness. This research offers evidence-based recommendations for supporting teachers in regions most impacted by climate displacement and disasters, which can be used to inform educational policy. Beyond its regional focus, the study's findings have relevance for international frameworks on educational resilience.

Literature Review

This study draws on resilience theory and ecological systems theory to analyze teacher responses during the Balochistan floods. While resilience theory provides a foundation for understanding teachers' emotional and professional adaptation to crisis, ecological systems theory helps situate these responses within a broader network of interacting systems, ranging from personal support networks to institutional structures and national policies. These frameworks offer a more holistic understanding of teacher resilience by

capturing the individual-level coping strategies and the systemic influences that shape educational continuity during climate-induced displacement.

Resilience Theory in Education

Resilience theory examines individual and institutional responses to disruptive events like natural disasters. According to Masten (2001), resilience means maintaining functionality while adapting to challenges and recovering after adverse situations. In a review of resilience in health education, McAllister and McKinnon (2009) emphasize the importance of teaching resilience to teachers as a personal capacity and a skill shaped through professional practice. Mustak (2022)emphasizes that teachers often act as critical agents of education continuity, relying on personal coping strategies and informal community support when institutional aid is limited.

Ahmed and colleagues (2022) document how floods have severely impacted children's education and highlight the critical role teachers play in restoring stability and instruction in Pakistan. Their findings suggest that teachers are central to education delivery and students' emotional recovery in the wake of displacement. Kothiyal and Halder's (2024) study on cyclone-prone Odisha demonstrates how educators operate with limited resources, relying on community networks and improvisation to sustain learning. These studies underscore the dual dimensions of teacher resilience—emotional and professional—and offer valuable insight into the experience of teachers in disaster-affected regions like Balochistan.

Through a resilience theory framework in educational settings (Gu & Day, 2007; McAllister & McKinnon, 2009), we observe methods teachers use to handle professional difficulties and personal hardships to sustain educational activities and preserve their sense of control. The ability of teachers to foster student resilience and sustain education following disasters depends on their emotional health, combined with adaptability in their profession and institutional resources available.

Ecological Systems Theory and Education

Bronfenbrenner's ecological systems theory (1979) offers a framework that demonstrates multiple influencing layers that act together to affect people, including educational professionals, in their social surroundings. Multiple interconnected systems impact individuals who consist of immediate environments such as family and classroom (microsystem), the interactions between different microsystems (mesosystem), external environments that affect them indirectly, including policies made by local governments (exosystem), and wider societal and cultural factors (macrosystem).

Through teacher resilience during post-disaster educational situations, teachers rely on their capabilities and support mechanisms maintained at the community, institutional, and policy dimensions per the ecological systems theory. Teacher resilience during adversity develops through interactive contributions from family support networks combined with community involvement and institutional preparedness alongside

government policy implementation (Nordgren, 2022). Adapting to post-disaster settings, teachers demonstrate individual strength in connection with community recovery processes, along with institutional capabilities and the implementation of national guidelines.

Ecological systems theory enables the study of how multiple interconnected systems in communities work together to establish educational practices while supporting teacher resilience. Educational continuity throughout a crisis depends upon how effectively distinct systems within a community work together. To build successful teacher assistance programs that function in areas facing natural hazards, such as Balochistan, we must grasp how interconnected systems affect education systems.

Previous Studies on Teachers and Climate Disasters

Research into teacher resilience after climate-induced disasters has become vital, particularly for highly disaster-prone areas such as South Asia. In India, Bangladesh, and the Philippines, researchers found significant teacher responses to floods, cyclones, and other climate disruptions (Ullah et al., 2025). Ullah's (2025) research establishes community-based support, together with adaptive teaching practices and psychological resilience, as essential components to maintain educational services during crises.

In a review of climate change perception in education, Ahmed and colleagues (2021) found that teachers and students demonstrate an awareness of the global impacts of climate change and link its causes to human activity. The study notes that prior exposure to disasters can influence teachers' attitudes, preparedness, and adaptive capacity. Teachers working in vulnerable areas are key stakeholders in post-disaster education recovery and vital contributors to climate education in their communities.

Existing literature does not sufficiently address teacher resilience dynamics operating under climate-induced displacement conditions in flood-prone Balochistan. Several studies examine educational responses in other regions and specific disaster types (Ahmed et al., 2022; Kothiyal & Halder, 2024). Other research explores development challenges in Balochistan, such as agricultural adaptation (Khan et al., 2023) and water governance (Yasin et al., 2020). Detailed evaluations of teachers working amid climate-induced displacement in chronically affected areas of Pakistan remain lacking.

The growing severity of natural disasters, largely due to climate change, necessitates an understanding of teacher resilience in maintaining educational services within regions hit by disasters, such as Balochistan. Research has yet to analyze how community support systems, alongside institutional structures and national policies, help develop teacher resilience in disaster-prone regions and, specifically, how teachers navigate their roles in disaster-affected areas of Pakistan, where displacement is recurring and institutional support is limited. This study addresses that gap by examining the lived experiences of primary school teachers in flood-prone Balochistan, shedding light on the resilience strategies they adopt in the face of long-term climate disruptions.

Theoretical Framework

Resilience Theory in Educational Contexts

Resilience theory, as postulated by Masten (2001), sees resilience as a dynamic process through which individuals or systems maintain or recover functioning in the presence of adversity. It is based on the interaction between the destabilizers, such as risk factors (e.g., displacement and loss of resources), and the protective processes (e.g., social support, self-efficacy, and adaptive coping) that protect against these threats. Resilience explains itself among four interrelated capacities.

- **Resistance:** Obtaining small initial effects of stressors,
- **Recovery:** Restoring previous levels of functioning,
- **Adaptation:** Flexibly changing strategies in changing conditions.
- **Growth:** Making positive change, to move beyond the pre-crisis baseline (Masten, 2001; McAllister & McKinnon, 2009).

Pedagogical Resilience. Pedagogical resilience that recognizes how teachers innovate or adapt instructional procedures to maintain learning during disruptions (Mansfield et al., 2016). Examples are multi-grade lessons upon destruction of classrooms (adaptation) or use of open spaces to ensure student engagement (growth).

Community Resiliency Roles. Teachers are a part of local support networks or what Martinsone and Žydžiūnaite (2023) refer to as community resiliency roles. Educators broker protective processes by liaising with families, NGOs, and community elders to source resources (resistance), restore routines (recovery), and co-construct new learning environments (adaptation/growth).

Application to Balochistan's 2022 Floods

Teachers' resistance was observed in their quick establishment of peer support circles; recovery unraveled as they repaired makeshift classrooms; adaptation was a consequence of improvised curricula using local materials; and growth took the form of community-led psychosocial activities going beyond the pre-flood activities. This framework informed our study on how primary school teachers in Balochistan utilized individual, pedagogical, and community resources in maintaining the continuation of education amid climate displacement.

Ecological Systems Theory and Climate-Induced Displacement

Bronfenbrenner's ecological systems theory (1979) frames individual experiences within five nested environmental layers, each of which shapes how teachers and students navigate climate-driven upheaval. Applied to the Balochistan floods, this lens reveals multiple points of intervention for sustaining educational continuity.

Microsystems. At the most immediate level, displacement ruptured the classroom–home nexus. Teachers were uprooted from familiar schools and thrust into camp-style shelters or overcrowded community spaces, while students contended with family loss, food insecurity, and fractured peer networks—factors shown to undermine learning and well-being (Wiedermann et al., 2023).

Mesosystem. Connections among home, school, and community were weakened and reformed. Parental focus on basic survival needs reduced academic support, yet emergent solidarity, through peer support circles and local elders assisting with makeshift classrooms, helped rebuild essential linkages that buffer against educational discontinuity (Mostafizur Rahman et al., 2023).

Exosystem. Teachers' working conditions were shaped by external institutions that they could not influence. Delayed or uneven relief from the District Education Office and slow NGO deployments constrained access to tents, textbooks, and psychosocial services, undermining teachers' capacity to reopen schools quickly (Government of Balochistan, 2023).

Macrosystem. Broader cultural and socioeconomic norms like conservative gender roles limiting female teachers' mobility and the predominance of local dialects dictated who could teach, how classrooms were reassembled, and which instructional materials were relevant. Balochistan's arid climate and agrarian economy entrenched structural vulnerabilities (Nandy, 2022).

Chronosystem. Unlike rapid-onset disasters, the monsoon-fueled floods represented a slow-onset crisis, extending displacement and recovery over months. This prolonged disruption compounded trauma, eroded institutional memory, and demanded sustained adaptive strategies rather than short-term fixes.

As a result of the Balochistan floods, thousands of people were forced from their homes, many of them relocated to temporary camps, while others went to relatives in urban areas (Kurosaki, 2024; van der Eng, 2024). By mapping the floods onto these ecological layers, the study identifies levers for policy and practice—from reinforcing microsystem supports (targeted psychosocial counseling) to reshaping macrosystem interventions (gender-inclusive disaster planning)—that collectively bolster teacher resilience and educational continuity under climate stress.

Integration with Local Context

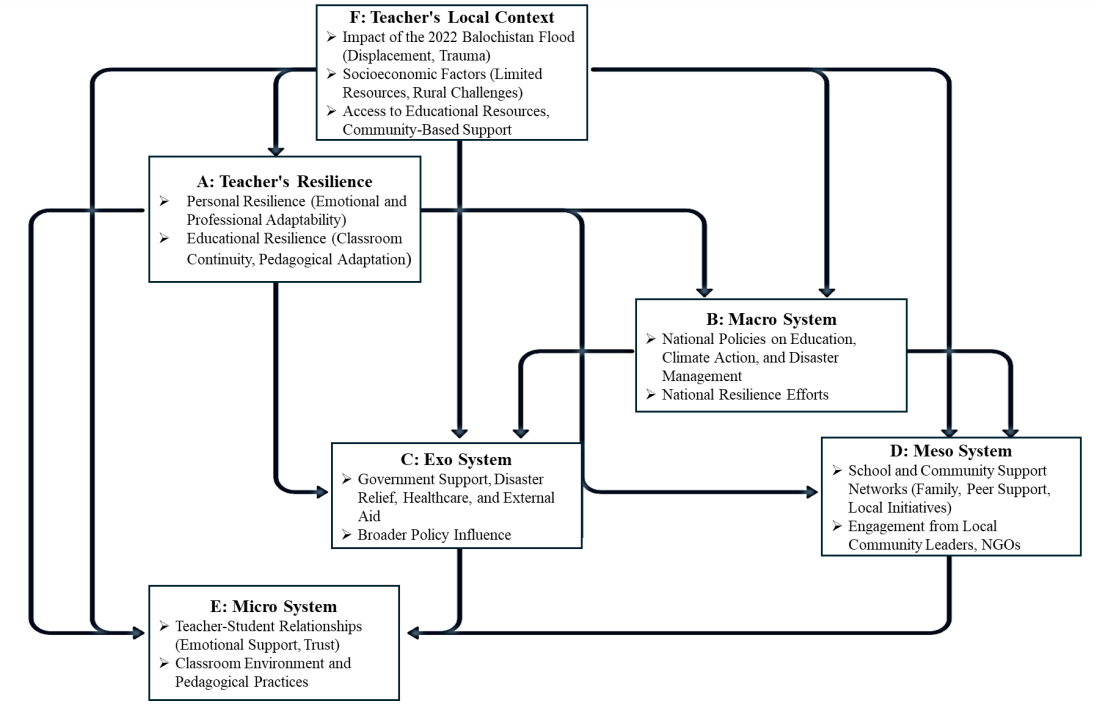
Pakistan's most socioeconomically disadvantaged region, Balochistan, is beset with challenges in a politically unstable, underdeveloped, and climate-vulnerable region (Karim et al., 2024). Because of its arid climate and dependence on agriculture, the region is vulnerable to the effects of climate change (Nandy, 2022). These conditions worsened in 2022 when floods displaced communities and damaged infrastructure, homes, and agricultural lands (Anwana & Owojori, 2023). These challenges are amplified by

climate-induced displacement. Many teachers work in temporary shelters with scarce resources and little support. Balochistan teachers rely on community-based resilience rooted in local networks to be resilient emotionally and pedagogically to support students and adapt teaching strategies(Mostafizur Rahman et al., 2023). Policy interventions and community solidarity aid teachers' resilience.

The conceptual framework presented in Figure 1 draws upon Bronfenbrenner's ecological systems theory to illustrate how various layers of influence shape teacher resilience during climate-induced emergencies. At the macro level, national education and disaster management policies establish the structural boundaries within which teachers operate, influencing available resources and institutional responses. The mesosystem connects schools with community networks, where collaboration with peers, families, and NGOs is crucial in reinforcing emotional and logistical support. The exosystem encompasses broader forces such as government relief programs, healthcare access, and external aid—all of which indirectly impact teachers by shaping the conditions under which they work. The microsystem centers on the immediate classroom environment, where teacher-student relationships and pedagogical strategies are adapted in real time to maintain continuity in learning. These interrelated systems interact with the teacher's local context (e.g., displacement, resource scarcity) to influence how resilience is enacted personally and professionally.

Figure 1

A conceptual framework illustrating the interaction between resilience theory and ecological systems theory in shaping teacher resilience during the Balochistan flood: An exploration of the multi-layered influences on teacher adaptation and educational continuity



This framework highlights how the theories intersect to show the ways in which Balochistan's teachers adapt their roles and interactions within professional and community networks to meet the daily demands of disaster recovery. Socio-political challenges, regional vulnerability to climate change, and the capacity of the existing educational system to respond to displacement are critical factors in determining the nature of resilience strategies teachers adopt. An understanding of these dynamics allows us to analyze how climate-induced displacement and teacher resilience operate within the region as a system and how future disasters can be better managed.

Key Concepts and Operational Definitions

We define key concepts to ensure clarity:

Teacher Resilience. The ability of educators to sustain professional roles, adapt instructional practices, and support students emotionally and academically in the face of personal loss, displacement, and systemic disruption following the Balochistan floods.

Pedagogical Resilience. The teacher resilience measure manifests how the instructors creatively change or innovate instructional practices by giving multi-grade lessons, outdoor teaching, or mobile learning to sustain the attention and learning continuity of students in a crisis (Mansfield et al., 2016).

Adaptive Teaching Strategies. Context-responsive instructional approaches employed by teachers to sustain education during emergencies, including the use of community-gathered materials, improvised curricula, and remote or blended modalities.

Climate-Induced Displacement. Forced or voluntary relocation of individuals and communities due to environmental changes directly linked to climate change, such as extreme flooding, that disrupt daily life, infrastructure, and access to education.

Methodology

Research Design

This study employed a qualitative research methodology to understand teacher resilience in primary school teachers after the Balochistan floods. Qualitative methods are ideal for examining a climate-induced displacement phenomenon as they allow for a nuanced focus on how teachers personally experience and cope using their strategies and resilience mechanisms. These methods allow participants to tell rich stories of adaptation and recovery in their own words. 15 teachers participated in the study—8 through individual semi-structured interviews and 7 through two small focus group discussions (Group 1: 4 rural teachers; Group 2: 3 rural teachers). While the focus groups were smaller than conventional formats, the design was intentional, accommodating travel limitations and connectivity issues in flood-affected areas. This approach allowed for the collection of rich, in-depth data that illuminated how teachers demonstrated

resilience and how community, institutional, and personal factors shaped responses to the floods. Qualitative methods captured socio-cultural dimensions of teacher resilience in the post-disaster context of Balochistan, giving a picture of teachers' challenges and adaptive strategies in Balochistan's schooling environment.

Participants

To capture a rich and nuanced understanding of teacher resilience during the floods, the researchers conducted semi-structured interviews (n=8) and focus groups (n=7). The participants were 15 primary school teachers from urban and rural areas of Balochistan, the Killa Saifullah district, which was severely impacted by the floods. Teachers were identified in collaboration with the District Education Office (DEO) of Killa Saifullah and two NGOs active in flood relief. The DEO provided a list of primary schools affected by the floods. Teachers were selected using purposeful sampling to ensure a diverse representation of experiences across geographic, institutional, and demographic lines. Participants varied in terms of years of teaching experience (ranging from 1 year to over a decade) and degree of flood exposure, including displacement, school closures, and remote teaching conditions. Selection criteria prioritized individuals who worked in schools or communities affected by the floods, allowing for a more focused analysis of how teachers enacted resilience under varying conditions. Urban teachers took part in interviews to capture in-depth personal narratives, while rural teachers were convened in focus groups to accommodate travel/connectivity constraints and to leverage their shared community experiences. Table 1 includes a summary of participants.

Table 1

Summary of participants' experience, location, flood exposure, and data collection method

Participant Code	Years of Experience	Geographic Location	Exposure to Floods	Data Collection Method
P1	2	Urban	Directly impacted	Interview
P2	12	Rural	Displaced, the school closed	Focus Group
P3	5	Urban	Displaced, teaching remotely	Interview
P4	10	Rural	School impacted, no physical classroom	Focus Group
P5	3	Urban	Displaced	Interview
P6	8	Rural	No displacement	Focus Group
P7	7	Rural	Displaced, teaching remotely	Interview

Data Collection

The study employed semi-structured interviews and focus groups for data collection. Researchers conducted semi-structured interviews on a one-on-one basis that allowed teachers to share their personal stories, how they navigated challenges, and their coping strategies. Interviews covered the impact of the floods on teaching, students, infrastructure, teachers' resilience strategies (such as adaptive teaching methods), how the community and institution supported recovery from the disaster, and personal coping mechanisms for dealing with the emotional and psychological stress due to floods. In those cases where face-to-face meetings were not feasible due to geographical or mobility constraints, these interviews were conducted virtually. Interviews were recorded and transcribed with the consent of the participants.

15 teachers took part. 8 in individual interviews and 7 across 2 focus group discussions (a group of 4 rural teachers and a group of 3 urban teachers). The focus groups met at safe, neutral locations or online, depending on participants' availability. Sessions were recorded for thematic analysis.

Recruitment Process

Participants were recruited by contacting schools in Balochistan affected by the floods. The researcher approached teachers via phone or email and explained to them in detail the study's purpose. Local educational institutions or NGOs working in the region provided recruitment assistance. Teachers received no financial incentives. Translators

facilitated interviews and focus groups, ensuring that each participant, rural educators speaking local languages or dialects, could engage in the data collection process.

Data Analysis

The research team analyzed interview and focus group data using thematic analysis to identify patterns of teacher resilience and coping amidst climate-induced displacement. Researchers first familiarized themselves with the data and noted their initial impressions. Using open coding, the research team identified adaptive teaching strategies, psychological resilience, community support, and institutional recovery efforts. They labeled key phrases and responses in the transcripts, which uncovered a broad array of emerging concepts. Initial codes were organized using axial coding to explore relationships between categories, which helped identify broader thematic patterns. Initial codes were clustered into specific themes, which were germane to the teachers' life occurrences, and mapped onto the conceptual framework for the purpose of illustrating how each model explains teachers' adaptive behaviors to the floods.

Ethical Considerations

Ethical approval was obtained from the Southwest University Research Ethics Committee. Written informed consent was secured from participants via signed consent forms outlining the study's purpose, procedures, potential risks, and confidentiality. Participants were informed of their right to ask questions at any point and to withdraw or skip questions without penalty. Data was anonymized, with pseudonyms replacing names to safeguard identities. Given the emotional sensitivity of discussing the floods, participants were reminded they could share only what felt comfortable. Psychological support resources were made available during and after the study.

Findings

Balochistan's primary school teachers demonstrated resilience when faced with the floods, adopting strategies to sustain educational continuity despite multiple challenges. Table 2 shows major themes, sub-themes, and the participant identifiers of those who matched those themes. Thematic analysis produced the categories that represent regular patterns of educational personnel adapting to challenges following the floods.

Table 2

Thematic Summary Table

Theme	Sub-Theme	Participant Codes
Teacher Resilience Strategies	Emotional Support and Psychological Resilience	P1, P6, P8, P9, P11, P13, others (12 total)
	Adaptive Teaching Methods	P3, P5, P7, P9, P11, others (14 total)
	Use of Local Knowledge and Resources	P2, P5, P6, P10, others (9 total)

Challenges Faced by Teachers	Limited Resources	P4, P6, P7, P8, P9, P11, P13
	Psychological Strain and Emotional Exhaustion	P6, P8, P9, P11, P13, others (11 total)
	Cultural Challenges	P1, P2 , P7, P9, P14, P15
Role of Community	Community Solidarity and Support	P2, P5, P8, P10, P13
	Government and NGO Support	P12, P8, P10, P14
Differentiating Factors in Teacher Resilience	Socioeconomic Background	P13 P8, P10, P12
	Language Barriers	P14 P8, P10, P11
	Community Solidarity	P5, P6, P10, P11, P15

Teacher Resilience Strategies

Emotional Support and Psychological Resilience. 12 out of 15 teachers emphasized the importance of emotional support in coping with the psychological toll of the disaster. Teachers reported that they sought emotional support from colleagues, other community members, and family. Teachers who had nothing in common spoke to other educators in support circles, discussing their experiences in an attempt to take some of the burden and emotional stress off their chests and create a sense of solidarity and collective healing. As noted by one teacher, “Talking to my colleagues and knowing we are all going through the same thing made me feel less alone in this feeling” (P1). Another teacher emphasized the importance of relationships with colleagues in supporting emotional healing: “In the past, I used to cry in private, but when my colleagues are at my back, it makes me think once more and be strong enough to continue."(P4)

Adaptive Teaching Methods. Teachers provided examples of how they adapted their teaching methods to accommodate the changing circumstances. When schools were closed temporarily, teachers found creative ways to continue delivering lessons, from using mobile phones for virtual learning to posting online lessons. Some turned to outdoor lessons and taught in community spaces when classrooms became useless. According to one teacher, “The classrooms were flooded, so we started teaching outside, under the trees.”Another teacher said, "To make the best of the situation, “we used our phones to contact students and share lessons.” Another teacher warned, “However, not all had access, but we did what we could do.” (P3)

Use of Local Knowledge and Resources. 9 teachers mentioned using local materials for teaching when conventional materials were unavailable. They used old textbooks, handmade visual aids, or natural elements, like stones and chalk, for writing. In some cases, **community elders** helped to create educational content related to local history and culture, which not only helped teachers teach students but also brought the community together. As one teacher mentioned, "We had to make do with whatever resources we could find—old books, chalk, and even stones for writing practice. The community supported us by gathering any available materials.” (P5)

Challenges Teachers Faced

The teachers were resilient when faced with a myriad of challenges affecting their ability to offer education in the short or long term. They had limited resources, and recovery was psychologically taxing and culturally biased, making it difficult.

Limited Resources. The floods destroyed or damaged schools, leaving classrooms, learning materials, and basic infrastructure unusable. Schools encountered scenarios where the teachers had to deliver lessons without proper textbooks, teaching aids, or sometimes even the most basic supplies such as paper, pens, and chalk. As one teacher said, "We had to teach with no textbooks, and there was barely enough space in the room for the students to sit, but we did the best we could" (P6). Another participant added, "The floods brought down everything" (P4). According to P7, "We had no choice but to be creative with the few materials we had left." These quotes demonstrate the persistent behavior of teachers who made decisions based on resources available amid the crisis. Educators depended mainly on neighborhood help and individual decision-making because they received minimal assistance from institutions. Teachers' capacity to make adjustments without formal materials defines their situational resilience based on informal relationships rather than organization-driven programs. Insufficient availability of necessary resources reveals fundamental structural problems that affect disaster management, particularly in underdeveloped areas such as Balochistan, before the floods.

Psychological Strain and Emotional Exhaustion. Many teachers—11 out of 15 participants—reported living through psychological strain from property loss, displacement, and worrying about the safety of their families. Beyond the difficulty of continuing to teach in the face of the devastation of their communities and the displacement of their students, the emotional toll of what they'd experienced personally weighed heavily. Teachers admitted helplessness in supporting their students, who were traumatized by the floods. A participant explained:

> Given that, at the same time, we worried about our own homes and family, it was hard to focus on teaching. I knew that children needed me; that's why I still went down. 'The emotional stress was overwhelming,' said another teacher. I had to do it, forcing myself to stay engaged with the students even when I did not have the energy. (P8)

Cultural Challenges. Post-disaster, teachers experienced cultural barriers in rural areas where gender roles and local expectations put extra pressure on teachers to function and excel. Women teachers reported facing obstacles in offering emotional support to students due to conservative norms that negatively impacted their mobility and interactions with boys. A woman teacher reflected, "As a woman, it was hard to reach out to male students who were also displaced. The cultural norms often hindered the support we could give." (P10)

Role of Community and Policy Support

Teachers successfully maintained their educational activities during flood recovery because of community support, together with policy intervention. Local community support and policy guidance played essential roles in teachers maintaining their positions during the educational process.

Community Solidarity and Support. Several teachers cited the local community as very important to their resilience. Participants P2, P5, P8, P10, and P11 mentioned community members stepping in to provide emotional encouragement or material aid regarding their children. The teachers said that the solidarity of the local community balances their resilience. The community came together on many occasions to provide material support through donations of food, clothing, and school supplies. Communities helped teachers and students rebuild the makeshift schools in safer areas, and in some locations, local elders and youth filled in to help deliver lessons where teachers could not. “Whenever we needed anything, someone was always there to help—to rebuild the classroom or to help the children.” (P11)

Government and NGO Support. Teachers emphasized in their responses that while community support was very important to sustaining their resilience, governmental and NGO support are needed to ensure that teachers and education employees in these contexts receive emotional support in addition to material support. Local government agencies and NGOs provided schools with emergency relief through tents, teaching materials, and psychological resources for teachers. Teachers complained that they were not getting enough from the official responses fast enough. "They were a part of it, the NGOs helped, but it was too slow," said one teacher.“It did not get to us till many schools were closed for weeks.” (P12)

Differentiating Factors in Teacher Resilience

The study revealed that socio-economic and cultural factors affected teachers’ responses to challenges and strategies for educational continuity as they coped with the floods.

Socioeconomic Background. Teachers from higher socio-economic backgrounds in the study described greater resources and more support, personally and professionally, enabling them to recover more quickly. Teachers from lower-income families experienced greater financial pressures and had fewer resources with which to adapt. As a teacher reflected, “We were stranded to just get by, 'but teachers from wealthier families could rebuild their homes and schools faster.” (P13)

Language Barriers. In the communities where local languages and dialects are the predominant languages, teachers who could speak these languages had greater interactions with students, and teaching in the aftermath of the floods was not a challenge. Teachers who were not fluent in the local dialects had difficulties reaching all students and giving them enough support. A teacher said that:

> Being able to speak the language of the local people was crucial. I was able to easily understand the children's needs and be able to help them process their emotions. Such naming was much harder for teachers who did not speak the language. (P14)

Community Solidarity. The extent of community solidarity is an important factor that participants described as affecting teacher resilience. In cohesive communities with strong support networks, teachers indicated higher resilience and a stronger collective responsibility. Another teacher said, "in our area, we all worked together, so it was not just the teachers who were resilient; it was the whole community." (P15)

This study's findings indicate that the floods demonstrated the resilience of primary school teachers. Teachers used several coping strategies, from emotional support and adaptive teaching methods to community-based resources. The challenge of constrained resources, psychological strain, and cultural barriers made teachers poorly suited to continue teaching effectively. It was the role of community support that allowed teachers to maintain educational continuity. Teachers' resilience strategies were shaped by their socioeconomic background and language barriers, along with community solidarity. These contributions provide insights into how trauma, climate-induced displacement, and educational continuity interact to impact teacher and student achievement in disaster-prone regions. This can help inform future disaster recovery and educational policy in places that undergo similar tragedies.

Discussion

This study about teacher resilience after the 2022 Balochistan floods yields an understanding of the disruption to teachers due to a disaster. Concerning resilience theory and climate-induced displacement, the study finds that teacher resilience is a multifaceted phenomenon including emotional, cognitive, and social dimensions that sustain educational continuity in the face of adversity. Existing literature on resilience supports these findings (Ghosh & Orchiston, 2022; Tong, 2021; Yusriadi & Kaslin, 2025).

Emotional resilience through community support and coping strategies was vital for teachers to continue their jobs. This is consistent with resilience in education theory, which assumes resilience is not an individualist attribute and that educators can be aided by strong social relationships (Carmen et al., 2022). Teachers shifted their teaching methods towards adaptations or adaptive teaching methods. They used mobile learning and outdoor classrooms, supporting prior studies about how teachers innovatively use resources available to create alternative educational environments (Vidergor, 2021).

The study affirms much of the existing literature, adding nuances particular to the case of climate-induced displacement. This study finds that while climate-induced displacement has been well-studied among refugee and migrant populations (Boltz et al., 2021), the impact of displacement on local communities, including teachers in a state

of calamity, remains under-researched. In Balochistan, teachers not only lost homes and property but also witnessed their entire communities fleeing, deepening their sense of loss and uncertainty. When teachers talk about the emotional burden of post-disaster education, this implies that resilience in post-disaster education goes beyond logistical adaptation and has a lot to do with emotional recovery.

The findings show the intersectionality of resilience for teachers whose socioeconomic status, language proficiency, and gender roles impacted their ability to respond to the crisis. This is congruent with recent research in disaster resilience that demonstrates that it is not monolithic but, rather, contextual and dependent on social and cultural factors (Hill et al., 2023). Teachers who came from wealthier backgrounds or who spoke the local languages had an easier time overcoming distinct challenges, as opposed to others who struggled to keep their professional roles.

Contextualizing Teacher Resilience

Balochistan teachers show resilience comparable to teacher resilience in other disaster-prone areas worldwide, though it depends on whether the climate-induced disaster is a one-time event or slow-onset. The Balochistan case deals with climate-induced displacement instead of an isolated one-time event, such as a hurricane or earthquake. Unlike rapid-onset disasters, climate-induced displacement, due to slow-onset events (droughts, floods), is a long-term problem for educators, specifically recovery (Azadi et al., 2022). Rapid-onset climate-induced displacement refers to sudden disasters (e.g., hurricanes, floods) that force people to flee immediately, causing short-term, often temporary movement back or elsewhere (Almulhim et al., 2024). Slow-onset events (e.g., prolonged droughts, desertification, sea-level rise) gradually erode livelihoods and habitability, ultimately compelling communities to relocate after a longer period of deteriorating conditions. Rapid-onset disasters trigger immediate displacement, whereas slow-onset changes lead to more gradual, long-term displacement as stresses accumulate (Richards & Bradshaw, 2017; Rigaud et al., 2018).

The mass displacement following Hurricane Katrina in 2005, which caused over a million Gulf Coast residents to flee from their homes, has been described as the largest climate-induced displacement event in the United States (U.S.). This illustrates how an extreme weather event exacerbated by climate factors can uproot entire communities (Baussan, 2015). After Hurricane Katrina, it was the teachers in New Orleans who showed their resilience through community solidarity and adaptive teaching methods (Yarmoham et al., 2025). Like the teachers in Balochistan, New Orleans teachers depended on each other and their communities to rebuild education after schools were obliterated. In contrast with New Orleans, extensive displacement of teachers has been a prolonged problem in Balochistan, as most of the students, as well as the teachers, were displaced for several years, which made it harder to accommodate education with any stability and permanence. The emotional and psychological strain on teachers was considerable and was more marked in slow-onset disasters than in sudden catastrophes.

Teachers' responses drew on adaptive learning techniques and community engagement (Hanne, 2020) in Haiti and the Philippines, where displacement has been caused by climate change and disasters. Distinct linguistic diversity and rooted cultural norms in Balochistan formed the basis of the resilience strategies that teachers adopted. Local language proficiency and gender norms were felt in the unique ways teachers related to students and communities, as has not been the case in other contexts. While such factors are present in other disaster-affected regions, their manifestation in Balochistan shaped distinct resilience strategies that may not be directly comparable to other settings.

Policy Implications

The emotional and psychological needs of teachers in disaster-prone areas are relevant to respond to the effects of climate change. Educational policymakers should prioritize these needs. Teacher resilience should be included within pre-service training and ongoing professional development programs that speak to mental health support, emotional coping strategies, and community involvement.

Teacher training programs must provide teachers with strategies to help them build their resilience and to help their students during times of crisis. Psychological resilience training should be incorporated into teacher education programs to assist educators in managing the emotional impact of disasters while still effectively doing the jobs they are employed to do. As one teacher said, "We were not trained to handle these kinds of situations. To handle the trauma, we need more psychological support" (P10). These results imply that future teacher training should emphasize preparedness for disaster and emotional intelligence.

Local and national policy support should improve teacher resources during and after disasters. This covers helping teachers access teaching materials, alternative learning platforms, and financial support. Governments should collaborate with NGOs and local communities to create emotional support networks to ease teachers' workloads.

Disaster preparedness programs should extend beyond infrastructure. We recommend that policymakers create complete disaster plans discussing provisions for teacher welfare, training in adaptive teaching methods, and emotional recovery. The long-term effectiveness of education in disaster-prone regions would depend on policy commitment to teacher well-being.

Limitations

Multiple limitations affect this study's understanding of teacher resilience during climate-induced displacement. The research sample consisted of 15 educators who worked in urban and rural schools of Balochistan, although the participant selection was restricted to one district. These narrow geographical research boundaries might not provide a comprehensive understanding of how teachers experience displacement in different regions of the province or the country. This study does not capture possible

effects of divergent district-level institutional support, infrastructure development, and community involvement because these evaluations are unknown and not quantified. The research findings require cautious interpretation because they only represent an initial stage from which studies across different contexts should build.

While the study's qualitative design is strong in capturing individual narratives and personal experiences, it is limited in its ability to generalize the findings. Future research using a mixed-methods approach that could provide qualitative insight and quantitative data could provide a larger view of this phenomenon of teacher resilience. This study is limited to the period after the 2022 floods hit. The long-term effects on teachers' professional development and the rebuilding of educational systems were inaccessible. More research is needed to better understand the longitudinal effects of disasters on teacher resilience and education continuity, including how teachers sustain resilient responses over time as they endure successive shocks.

Conclusion

This research explores primary school teachers' resilience to respond to floods and their experiences of climate-induced displacement. Teachers demonstrated resilience through adaptive teaching, emotional support, and community networks. Teachers dealt with psychological strain, lack of resources, and interruptions in their personal lives while adapting to mobile classrooms and outdoor education. The challenges teachers faced in implementing technology depended on the teacher's gender, socioeconomic status, and language proficiency, with wealthier and more connected language teachers facing less barriers. Women teachers and teachers from marginalized backgrounds faced the biggest challenges due to cultural taboos and social norms.

We propose practical recommendations to improve teacher resilience in similar contexts. Importantly, to proactively prepare teachers for the psychological, emotional, and instructional challenges they may face while participating in disaster response and recovery efforts, provide teacher support as part of disaster preparedness, provide emotional and psychological assistance to teachers, offer flexible/playback instructional resources, and financial support. Teachers need to be trained in psychological resilience through professional development as well, ideally through workshops and support sessions facilitated by educational psychologists, school counselors, or trained mental health professionals in collaboration with local education authorities or NGOs.

More research is needed on gender-specific resilience and long-term recovery strategies for teachers in post-disaster settings. Exploring opportunities to leverage technology to support teachers' recovery may afford sustainable education solutions in disaster-prone areas. This study emphasizes the need to provide teachers with resources and emotional support to ensure educational continuity amidst disasters and displacement.

Muhammad Arif *is a PhD Fellow in Educational Leadership and Management at Southwest University, Chongqing, China, where his research focuses on teacher leadership, curriculum reforms in rural education, and AI integration in learning environments. He also holds a Master's degree in World History from the same university. His academic interests span educational policy reform, sustainable development, and international diplomacy. As the co-founder of Sustainability Insight Pakistan, he actively promotes sustainable practices aligned with the UN Sustainable Development Goals. Arif has authored numerous peer-reviewed publications on AI in education, gender and equity issues, and environmental learning. He is also a regular speaker at international conferences on education, technology, and leadership.*

Aneta Ismail *is a graduate student pursuing an MPhil in World History at Southwest University, Chongqing, China. She holds a Bachelor of Science in Pakistan Studies from Sardar Bahadur Khan Women's University, Quetta. Her research interests lie at the intersection of World History, Afghan History, Refugee Narratives, and Comparative Historical Methodology. Aneta's academic work focuses on regional stability and geopolitical shifts in South and Central Asia, particularly following the U.S. withdrawal from Afghanistan. She has co-authored peer-reviewed articles on Sino-American diplomacy, refugee marginalization, and gendered educational barriers in Balochistan. She is committed to fostering a deeper understanding of global historical developments through rigorous comparative analysis, scholarly collaboration, and interdisciplinary research.*

Professor Yao Jia Li *is a faculty member at the Faculty of Education, Southwest University, Chongqing, China. Her academic interests center on Educational Leadership, Curriculum Reform, and Teacher Professional Development. Professor Li has supervised numerous postgraduate research projects and is actively involved in research focusing on improving educational practices in rural and underserved communities. Her work bridges theory and practice, aiming to contribute meaningfully to the discourse on sustainable and inclusive education systems.*

References

Ahmed, K. J., Chowdhury, M. T. A., Ahmed, M. N. Q., & Haq, S. M. A. (2021). Understanding climate change perception of teachers and students: An overview. In G. M. M. Alam, M. O. Erdiaw-Kwasie, G. J. Nagy, & W. Leal Filho (Eds.), *Climate vulnerability and resilience in the global south (Climate change management)*. Springer. https://doi.org/10.1007/978-3-030-77259-8_20

Ahmed, R., Barkat, W., Ahmed, A., Tahir, M., & Nasir, M. (2022). The impact of flooding on education of children and adolescents: Evidence from Pakistan. *Water Economics and Policy, 8*(3), 1-18. https://doi.org/10.1142/s2382624x22400094

Alied, M., Salam, A., Sediqi, S. M., Kwaah, P. A., Tran, L., & Huy, N. T. (2023). Disaster

after disaster: The outbreak of infectious diseases in Pakistan in the wake of the 2022 floods. *Annals of Medicine and Surgery*, *86*(2), 891-8. https://doi.org/10.1097/ms9.0000000000001597

Almulhim, A. I., Alverio, G. N., Sharifi, A., Shaw, R., Huq, S., Mahmud, M. J., Ahmad, S., & Abubakar, I. R. (2024). Climate-induced migration in the Global South: An in depth analysis. *Npj Climate Action*, *3*(1), 47-59. https://doi.org/10.1038/s44168-024-00133-1

Aman, K., Abbas, Z., & Waheed, A. (2025). Socioeconomic impacts of the 2022 floods on Pakistan: An analysis. *Sociology & Cultural Research Review, 3*(1), 779-99. https://www.scrrjournal.com/index.php/14/article/view/124

Anwana, E., & Owojori, O. (2023). Analysis of flooding vulnerability in informal settlements literature: Mapping and research agenda. *Social Sciences, 12*(1), 40-61. https://doi.org/10.3390/socsci12010040

Azadi, H., Barati, A. A., Nazari Nooghabi, S., & Scheffran, J. (2022). Climate-related disasters and agricultural land conversion: Towards prevention policies. *Climate and Development*, *2*(6), 1-15. https://doi.org/10.1080/17565529.2021.2008291

Baussan, D. (2015). *When you can't go home: The Gulf Coast 10 years after Katrina*. Center for American Progress. https://cdn.americanprogress.org/wp-content/uploads/2015/08/18102058/ClimateDisplacement.pdf

Boltz, L. O., Yadav, A., Dillman, B., & Robertson, C. (2021). Transitioning to remote learning: Lessons from supporting K-12 teachers through a MOOC. *British Journal of Educational Technology, 52*(4), 1377-93. https://doi.org/10.1111/bjet.13075

Borazon, E. Q., & Chuang, H.-H. (2023). Resilience in educational system: A systematic review and directions for future research. *International Journal of Educational Development*, *99*(6), 102761. https://doi.org/10.1016/j.ijedudev.2023.102761

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Harvard University Press.

Carmen, E., Fazey, I., Ross, H., Bedinger, M., Smith, F. M., Prager, K., McClymont, K., & Morrison, D. (2022). Building community resilience in a context of climate change: The role of social capital. *Ambio, 51*(6), 1371-87. https://doi.org/10.1007/s13280-021-01678-9

Clarà, M., Vallés, A., Franch, A., Coiduras, J., Silva, P., & Cavalcante, S. (2025). Developing teacher resilience by modifying cognitive appraisals: What is

reappraised in teacher reappraisal? *Contemporary Educational Psychology*, *81*(6), 102354. https://doi.org/10.1016/j.cedpsych.2025.10235

Fu, Q., & Zhang, X. (2024). Promoting community resilience through disaster education: Review of community-based interventions with a focus on teacher resilience and well-being. *PLOS One, 19*(1), e0296393. https://doi.org/10.1371/journal.pone.0296393

Ghosh, R. C., & Orchiston, C. (2022). A systematic review of climate migration research: gaps in existing literature. *SN Social Sciences*, *2*(5), 1-22. https://doi.org/10.1007/s43545-022-00341-8

Government of Balochistan. (2023). *Integrated flood resilience and adaptation project*. Labor management procedures. https://documents1.worldbank.org/curated/en/099110924060533801/pdf/P18032319204d00b11b7bb1721bbfd9a666.pdf

Gu, Q., & Day, C. (2007). Teachers' resilience: A necessary condition for effectiveness. *Teaching and Teacher Education, 23*(8), 1302-16. https://doi.org/10.1016/j.tate.2006.06.006

Hanne, K. (2020). Professional development for inclusive and adaptive education: Lesson study in a Norwegian context. *Professional Development in Education, 2*(2), 1-15. https://doi.org/10.1080/19415257.2020.1850509

Hill, L., Armitage, D., Collins, A. M., & Pittman, J. (2023). Principles for the consideration of intersectionality in place-based disaster risk governance in islands. *Sustainable Development, 2*(2),1496-1. https://doi.org/10.1002/sd.2684

Ismail, A., Jamil, R., Abbas, S. T., Arif, M., Wang, Y., & Wang, W. (2024). Discrimination and social exclusion among Afghan refugees in Pakistan: *Challenges and solutions. International Journal of Contemporary Issues in Social Sciences, 3*(2), 354-64. https://ijciss.org/index.php/ijciss/article/view/643

Ioana, D. (2024). Resistance to change in the Romanian educational system: Challenges and opportunities. *Journal of Educational Sciences*, *49*(1), 179-91. https://doi.org/10.35923/jes.2024.1.10

Jaffar, K., Reba, A., Jamil, H. B., & Iqbal, M. (2023). The inclusion of education of disaster risk reduction: What matters in Pakistan educational policy? *SSRN Electronic Journal, 2*(2),189-203. https://doi.org/10.2139/ssrn.4388906

Karim, S., Xiang, K., & Hameed, A. (2024). Impact of special economic zones on socioeconomics and local development in Pakistan: Evidence from Allama Iqbal special economic zone, Faisalabad. *PLOS ONE, 19*(11), e0310488-e0310488. https://doi.org/10.1371/journal.pone.0310488

Khan, N., Ma, J., Zhang, H., & Zhang, S. (2023). Rural farmers' perceptions for the impacts of climate change and adaptation policies on wheat productivity: Insights from a recent study in Balochistan, Pakistan. *Atmosphere*, *14*(8), 1278-1296. https://doi.org/10.3390/atmos14081278

Kothiyal, A., & Halder, S. (2024). Toward a housing design that can withstand natural disasters: A study in Sundarbans. In P. K. Ray, R. Shaw, Y. Soshino, A. Dutta, & T. A. Geumpana (Eds.), *Technology innovation for sustainable development of healthcare and disaster management* (pp. 123-45). Springer. https://doi.org/10.1007/978-981-97-2049-1_8

Krisna, S., Zeenat, A.-H., & Imran, M. (2023). Educational sustainability: An anthropocenic study in the wake of the 2022 floods in Pakistan. *ECNU Review of Education, 2*(2),1-20. https://doi.org/10.1177/20965311231209503

Kurosaki, T. (2024). Comment on "Pakistan's Economy: Fallout of 2022 economic distress magnified the need for structural reforms." *Asian Economic Policy Review*, *20*(1), 147-48. https://doi.org/10.1111/aepr.12489

Mansfield, C. F., Beltman, S., Broadley, T., & Weatherby-Fell, N. (2016). Building resilience in teacher education: An evidence-informed framework. *Teaching and Teacher Education*, *54*(54), 77-87. https://doi.org/10.1016/j.tate.2015.11.016

Manzoor, Z., Ehsan, M., Khan, M. B., Manzoor, A., Akhter, M. M., Sohail, M. T., Hussain, A., Shafi, A., Abu-Alam, T., & Abioui, M. (2023). Floods and flood management and its socio-economic impact on Pakistan: A review of the empirical literature. *Frontiers in Environmental Science*, *10*(10). https://doi.org/10.3389/fenvs.2022.1021862

Martinsone, B. & Žydžiūnaite, V. (2023). Teachers' contributions to the school climate and using empathy at work: Implications from qualitative research in two European countries. *Frontiers in Psychology, 14*, 1160546. https://doi.org/10.3389/fpsyg.2023.1160546

Masten, A. S. (2001). Resilience in children threatened by extreme adversity: Reflection and redefinition. In C. R. Snyder & C. L. Diener (Eds.), *Handbook of positive psychology* (pp. 74-88). Oxford University Press.

McAllister, M., & McKinnon, J. (2009). The importance of teaching and learning resilience in the health disciplines: A critical review of the literature. *Nurse Education Today*, *29*(4), 371-9. https://doi.org/10.1016/j.nedt.2008.10.011

Mostafizur Rahman, M., Alam Shobuj, I., Tanvir Hossain, M., & Tasnim, F. (2023). Impact of disaster on mental health of women: A case study on the 2022 flash flood in Bangladesh. *International Journal of Disaster Risk Reduction, 96*(2), 103935. https://doi.org/10.1016/j.ijdrr.2023.103935

Mustak, S. (2022). Climate change and disaster-induced displacement in the Global South: A review. *Sustainable Development Goals Series, 2*(2), 107-20. https://doi.org/10.1007/978-3-030-91010-5_9

Nandy, D. (2022). Terror financing and regulatory economy of Pakistan: An investigation of an economically failed state. *International Journal of Politics and Security, 2*(2). https://doi.org/10.53451/ijps.1058025

Nordgren, A. (2022). Artificial intelligence and climate change: Ethical issues. *Journal of Information, Communication and Ethics in Society, 21*(1), 1-15. https://doi.org/10.1108/jices-11-2021-0106

Noviana, E., Syahza, A., Putra, Z. H., Hadriana, H., Yustina, S. E., Desfi, R. P., Arli, R., & Biondi, D. (2023). Why is didactic transposition in disaster education needed by prospective elementary school teachers? *Heliyon*, *9*(4), e15413-e15413. https://doi.org/10.1016/j.heliyon.2023.e15413

Raghunathan, S., Darshan Singh, A., & Sharma, B. (2022). Study of resilience in learning environments during the COVID-19 pandemic. *Frontiers in Education*, *6*(1), 1-18. https://doi.org/10.3389/feduc.2021.677625

Rashid, A., & Qixiang, W. (2025). Integrating disaster, catastrophe, and climate change education in Pakistan's educational curriculum and state institutions: A comprehensive review. *Climate Research*, *94*(3), 1-18. https://doi.org/10.3354/cr01747

Richards, J. A., & Bradshaw, S. (2017). *Uprooted by climate change: Responding to the growing risk of displacement.* Oxfam International.

Rigaud, K. K., de Sherbinin, A., Jones, B., Abu-Ata, N. E., & Adamo, S. (2021). *Groundswell Africa: Deep dive into internal climate migration in Senegal*. World Bank.

Tong, P. (2021). Characteristics, dimensions, and methods of current assessment for urban resilience to climate-related disasters: A systematic review of the literature. *International Journal of Disaster Risk Reduction*, *60*(1), 102276. https://doi.org/10.1016/j.ijdrr.2021.102276

Ullah, W., Dong, H., Shah, A. A., Xu, C., & Alotaibi, B. A. (2025). Unveiling the multi-dimensional vulnerabilities of flood-affected communities in Khyber Pakhtunkhwa, Pakistan. *Water, 17*(2), 198-221. https://doi.org/10.3390/w17020198

Van der Eng, P. (2024). Pakistan's economy: Fallout of 2022 economic distress magnified the need for structural reforms. *Asian Economic Policy Review*, *3*(1). https://doi.org/10.1111/aepr.12486

Vidergor, H. E. (2021). Coping with teaching in innovative learning spaces: Challenges, insights, and practices. *Learning Environments Research, 2*(2), 707-724. https://doi.org/10.1007/s10984-021-09396-5

Wiedermann, C. J., Barbieri, V., Plagg, B., Marino, P., Piccoliori, G., & Engl, A. (2023). Fortifying the foundations: A comprehensive approach to enhancing mental health support in educational policies amidst crises. *Healthcare (Basel), 11*(10), 1423-34. https://doi.org/10.3390/healthcare11101423

Yarmoham, M., Akbari, F., Asal, M., & Rezaei, F. (2025). Community-based disaster preparedness: A training program based on needs assessment. *Health in Emergencies & Disasters Quarterly, 10*(2), 131-42. https://doi.org/10.32598/hdq.10.2.562.2

Yasin, H. Q., Breadsell, J., & Tahir, M. N. (2020). Climate-water governance: A systematic analysis of the water sector resilience and adaptation to combat climate change in Pakistan. *Water Policy, 1*(8),1-35. https://doi.org/10.2166/wp.2020.113

Yuksel, H. İ. & Akbel, E. (2023). Earthquakes and disaster education in our country and in the world. *Usak University Journal of Engineering Sciences*, *6*(1), 52-66. https://doi.org/10.47137/uujes.1302947

Yusriadi, Y. & Kaslin, A. (2025). Resilience of rural communities facing global challenges. *Journal of Indonesian Scholars for Social Research*, *5*(1), 65-72. https://doi.org/10.59065/jissr.v5i1.174