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Weathering the Storm: Coping Strategies, Disaster Resilience, and Instructional Continuity among Public-School Teachers in Batanes, Philippines

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ABSTRACT

Teachers in hazard-exposed island communities carried simultaneous responsibilities for personal recovery, learner support, school safety, and continuity of instruction. Evidence specific to Batanes remained limited. The study examined teachers' resilience and disaster-related coping strategies and identified individual and school resources associated with confidence in maintaining instruction during typhoons and other natural hazards. A cross-sectional survey invited all 214 eligible public-school teaching personnel on the division roster. Of 154 returned questionnaires, 148 complete responses were analyzed. Measures included the six-item Brief Resilience Scale, the 14 two-item situational Brief COPE subscales, a six-item Instructional Continuity Confidence Scale, a six-event disruption-burden count, and indicators of DRRM training, practiced continuity planning, and backup communication. Linear regressions used standard errors clustered by school (25 clusters), with Holm adjustment for 14 exploratory correlations. Resilience averaged 3.46 (SD = 0.57) on a 1-5 scale, and continuity confidence averaged 3.76 (SD = 0.59). Acceptance, planning, active coping, and religion were the most frequently endorsed strategies. In the adjusted resilience regression ($R^2 = 0.412$), positive reframing, acceptance, and active coping were positively associated with resilience, whereas self-blame was negatively associated. In the continuity regression ($R^2 = 0.560$), resilience, active coping, planning, DRRM training, a practiced continuity plan, and a backup communication channel were positively associated with confidence. The pattern supported a combined personal-and-system interpretation of resilience. Cognitive and action-oriented coping mattered, but preparedness routines and redundant communication remained distinct resources for instructional continuity. School policy could therefore pair psychosocial support with rehearsed, low-connectivity continuity arrangements.

1. Introduction

Disaster resilience in education had moved beyond the protection of buildings. The Sendai Framework positioned risk knowledge, governance, investment, and preparedness as connected priorities, while the Comprehensive School Safety Framework linked safer facilities with educational continuity management and risk-reduction education.[1,2] In that view, a resilient school system had to protect life, preserve access to learning, and recover essential functions without transferring unreasonable burdens to teachers.

The Philippine Disaster Risk Reduction and Management Act required risk reduction to be mainstreamed across education and other development sectors.[3] Within basic education, Department of Education Order No. 37, s. 2015 institutionalized a comprehensive DRRM framework intended to protect learners and education workers and sustain quality education during emergencies.[4] Revised suspension guidance in Department of Education Order No. 022, s. 2024 further connected safety decisions with feasible alternative delivery arrangements.[5] These mandates made teachers central to preparedness, communication, learner accounting, psychosocial support, and the resumption of instruction.

Batanes offered a distinctive setting for examining those responsibilities. The province had 18,831 residents in the 2020 census and six municipalities distributed across island communities.[6] PAGASA climatological normals reported annual rainfall of 2,346.2 mm at Basco and 2,607.9 mm at Itbayat, with the wettest monthly values concentrated from August through November.[7] A post-disaster coastal survey following Super Typhoon Meranti documented highly variable inundation and run-up conditions along Batan and Sabtang, demonstrating that exposure differed even within a compact province.[8] Geographic separation, weather-dependent transport, and intermittent communications could therefore complicate both staff support and learning continuity.

Local resilience was not reducible to individual toughness. A participatory Batanes study identified place-based indicators that emphasized self-reliance, collective organization, governance, communication, infrastructure, and access to basic supplies.[9] Ethnographic work likewise described Ivatan ecological and agrometeorological knowledge as an adaptive body of observation and practice that evolved through experience and incorporated new information.[10] These findings suggested that teachers' coping occurred within community systems of mutual aid, hazard knowledge, and resource constraint.

The educational cost of disruption also extended beyond immediate safety. Philippine evidence from TIMSS and school administrative records associated additional school-as-shelter closure days with lower mathematics and science achievement.[11] Although that evidence concerned learner outcomes rather than teacher wellbeing, it clarified why continuity demands could become

urgent after even short closures. Teachers were expected to restart lessons while recovering from the same power loss, transport interruption, home damage, and emotional strain experienced by their learners.

1.1 Conceptual framework

The study treated coping as a situational process rather than a fixed personal style. Transactional stress theory described coping as cognitive and behavioral efforts made after a person appraised demands and available resources.[14] Conservation of Resources theory further proposed that stress intensified when valued resources were threatened or lost, a useful lens for simultaneous losses of electricity, transport, communication, teaching materials, and recovery time.[15] A social-ecological account of resilience added that positive adaptation depended on access to culturally meaningful resources as well as personal capacity.[16]

Teacher-resilience scholarship had similarly described resilience as multidimensional, dynamic, and shaped by both personal and contextual resources.[17] Evidence-informed frameworks highlighted emotional regulation, motivation, relationships, professional resources, and adaptability rather than a single heroic trait.[18] A systematic review organized antecedents through job demands and resources and emphasized that leadership, collegial support, and school culture operated alongside self-efficacy and coping.[19] These perspectives supported an analysis in which coping strategies, disaster burden, training, planning, and communication resources were considered together.

Research following disasters had shown why such integration mattered. Elementary teachers in post-earthquake Yogyakarta exhibited links among distress, classroom behavior, and efficacy, and benefited from a brief psychosocial intervention.[20] Interviews with educators affected by Hurricanes Matthew and Harvey described emotional strain, expanded roles, and resource shortages, while highlighting the value of emergency plans that accounted for staff needs.[21] A later intervention with disaster-affected Indonesian teachers reported improvements across resilience, social support, coping, and help-seeking outcomes.[22] Collectively, those studies suggested that teacher resilience could not be separated from institutional preparedness and psychosocial support.

1.2 Research gap and objectives

Published work had documented Batanes community resilience and Ivatan risk knowledge, yet teacher-specific quantitative evidence on disaster coping and instructional continuity remained scarce. National policy named teachers as critical actors, but it did not establish which coping processes and school resources were most closely associated with recovery confidence in a remote island division. This gap limited locally tailored staff-development and continuity planning.

- Objective 1. The study described disaster exposure, resilience, instructional continuity confidence, and the frequency of 14 coping strategies among public-school teachers in Batanes.
- Objective 2. The study tested the bivariate associations between each coping subscale and resilience while controlling the familywise error rate across the 14 tests.
- Objective 3. The study estimated the independent associations of selected coping strategies and contextual resources with resilience and instructional continuity confidence.

The prespecified expectations were that active coping, planning, acceptance, positive reframing, and support-seeking would show positive associations; self-blame and behavioral disengagement would show negative associations; and practiced continuity planning, recent DRRM training, and backup communication would remain positively associated with continuity confidence after adjustment.

2. Methods

2.1 Design, period, and setting

The study used an analytical cross-sectional design and followed STROBE guidance for transparent reporting of observational research.[26] Data collection was conducted from 3 March to 4 April 2026, outside an active emergency-response period. The setting covered public elementary, junior high, and senior high schools in Basco, Itbayat, Ivana, Mahatao, Sabtang, and Uyugan. School identifiers were replaced with 25 anonymous cluster codes before analysis.

2.2 Participants and sampling

Eligible participants were full-time public-school teachers, master teachers, school heads with teaching loads, and teachers-in-charge who had served in Batanes for at least one year and had experienced at least one weather- or hazard-related class suspension during the preceding 24 months. Personnel on extended leave, exclusively administrative staff, private-school teachers, and returned forms with more than 20% unanswered scale items were excluded.

The division roster listed 214 eligible personnel, so a census invitation was used. An a priori fixed-regression calculation with 10 predictors, two-sided alpha = .05, power = .80, and a medium effect of $f^2 = .15$ required 118 respondents.[27] A total of 154 questionnaires were returned (72.0% response), and six were excluded for incomplete scales. The final analytic sample was 148, equivalent to 69.2% of the eligible roster and above the prespecified minimum.

2.3 Measures

Resilience. The Brief Resilience Scale contained six items rated from 1 (strongly disagree) to 5 (strongly agree). Negatively worded items were reverse-scored, and the item mean was computed when all six responses were present. Higher scores indicated greater perceived ability to recover from stress. The original validation supported the scale's intended focus on the capacity to bounce back.[23] Internal consistency in the analytic sample was alpha = .88.

Coping strategies. The situational Brief COPE contained 28 items rated from 1 (I had not been doing this at all) to 4 (I had been doing this a lot). The stem referred to coping during typhoons, earthquakes, prolonged weather disturbances, or their immediate aftermath. The instrument yielded 14 two-item subscales: active coping, planning, instrumental support, emotional support, positive reframing, acceptance, religion, humor, self-distraction, venting, denial, substance use, behavioral disengagement, and self-blame.[24] Because the instrument did not define a validated overall score and factor structures varied by context, subscales were analyzed

separately. Two-item consistency was estimated with the Spearman-Brown coefficient, which was more appropriate than alpha for two-item scales.[25]

Instructional continuity confidence. The six-item ICCS assessed confidence in preparing low-connectivity materials, contacting learners and caregivers, adjusting instruction after closures, accounting for learners, coordinating alternative delivery, and resuming lessons safely. Responses ranged from 1 (not confident) to 5 (very confident). Five reviewers with backgrounds in school DRRM, educational measurement, and basic-education administration evaluated relevance; item-level content-validity indices ranged from .80 to 1.00 and the average scale index was .93. A principal-components screening yielded one dominant component (eigenvalue = 3.86; 64.4% of variance; loadings = .78-.84). The six-item mean was used, and internal consistency was alpha = .89.

Disruption burden. A count from 0 to 6 recorded whether, during the preceding 24 months, a teacher had experienced home damage, temporary displacement, a power interruption lasting at least three days, transport isolation, loss of phone or internet contact, or school use as an evacuation or relief site. Each experience contributed one point. The count represented cumulative exposure rather than a psychometric scale.

Preparedness resources and covariates. Dichotomous indicators recorded DRRM training during the previous three years, participation in a practiced school continuity plan during the previous 12 months, access to at least one backup learner-contact channel that did not depend on mobile data, and assignment in Itbayat or Sabtang. Age, sex, years of experience, position, school level, and municipality were collected for description.

2.4 Procedures and data protection

The questionnaire was available as a sealed paper packet and as an encrypted online form with equivalent wording. Invitation codes prevented duplicate returns but were removed after eligibility and completeness checks. Participation materials described voluntariness, the right to skip any question, and the separation of responses from personnel evaluation. Names were not entered in the analysis file. Storage and access procedures were aligned with the privacy principles of Republic Act No. 10173.[31]

2.5 Statistical treatment

Categorical variables were summarized with counts and percentages. Continuous variables were reported as mean and SD when distributions were sufficiently symmetric and as median and IQR when skewed. Scale means also received 95% confidence intervals. No cut point was used to label respondents as resilient or non-resilient because neither the BRS nor ICCS established a context-specific diagnostic threshold.

Pearson correlations evaluated the association of each Brief COPE subscale with BRS score. The 14 exploratory p values were adjusted with Holm's sequential procedure to control the familywise error rate.[30] The two primary linear regressions estimated BRS score and ICCS score. Predictor sets were selected before analysis from the conceptual frame and were not determined by stepwise screening. Ordinary least-squares coefficients were accompanied by school-clustered standard errors with a finite-sample correction, using 25 school clusters and t tests referenced to 24 cluster degrees of freedom.[28] Unstandardized coefficients (B), standardized coefficients (beta), 95% CIs, and two-sided p values were reported. Variance-inflation factors, Cook's distances, and residual plots were examined. HC3 heteroskedasticity-consistent standard errors were used as a sensitivity check because the respondent count was below 250.[29] A leave-one-municipality-out analysis examined whether key coefficient directions depended on any single municipality. Statistical significance was set at $p < .05$, but interpretation considered magnitude, precision, multiplicity, and design limitations.

3. Results

3.1 Participant flow and characteristics

Of the 214 eligible personnel, 154 returned a questionnaire, and 148 supplied complete scale data. Teachers from all six municipalities and all three school levels were represented. The mean age was 42.30 years (SD = 8.68), and median teaching experience was 16 years (IQR = 11-23). Women comprised 75.7% of the analytic sample. Elementary teachers comprised 56.8%, and 76.4% held Teacher I-III positions.

Table 1. Participant characteristics (N = 148)

Characteristic	n	%
Sex: Woman	112	75.7
Sex: Man	35	23.6
Sex: Prefer not to say	1	0.7
School level: Elementary	84	56.8
School level: Junior high school	43	29.1
School level: Senior high school	21	14.2
Position: Teacher I-III	113	76.4
Position: Master Teacher	20	13.5
Position: School head/teacher-in-charge	15	10.1

Characteristic	n	%
Municipality: Basco	68	45.9
Municipality: Itbayat	20	13.5
Municipality: Ivana	15	10.1
Municipality: Mahatao	18	12.2
Municipality: Sabtang	14	9.5
Municipality: Uyugan	13	8.8

Note. Age: M = 42.30, SD = 8.68, range = 24-61. Teaching experience: median = 16 years, IQR = 11-23.

3.2 Disaster burden and continuity resources

The mean disruption-burden count was 2.60 of six events (SD = 1.31; 95% CI 2.39-2.81). Most teachers reported two or three disruption experiences. Recent DRRM training was reported by 107 teachers (72.3%), participation in a practiced continuity plan by 103 (69.6%), and a backup communication channel by 98 (66.2%).

Table 2. Disaster exposure and preparedness resources

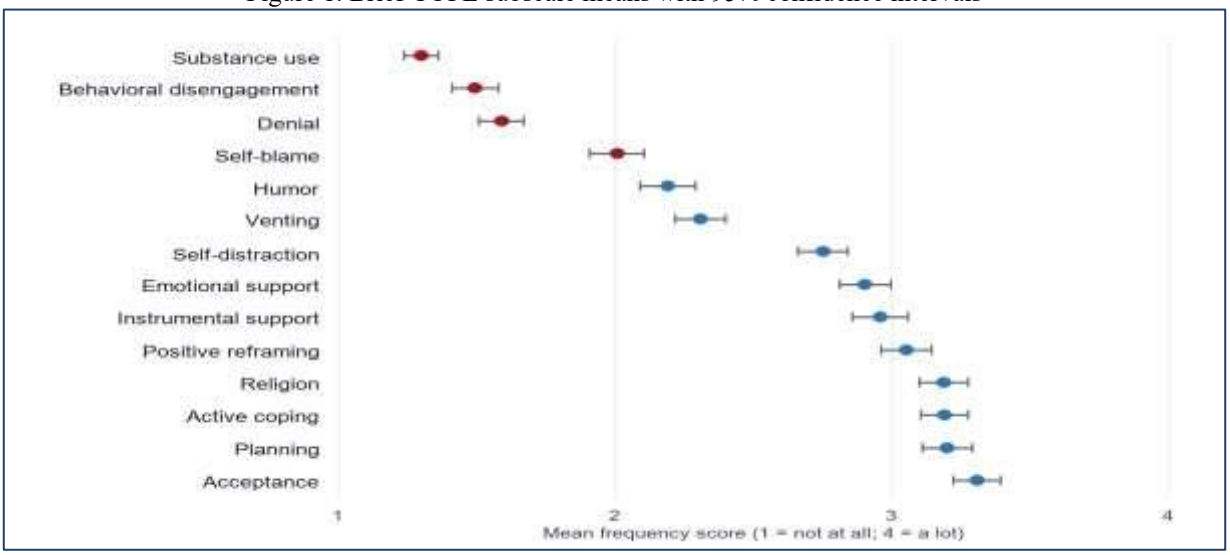
Indicator	n	%
Disruption burden: 0-1 events	35	23.6
Disruption burden: 2-3 events	74	50.0
Disruption burden: 4-6 events	39	26.4
DRRM training in previous 3 years	107	72.3
Practiced continuity plan in previous 12 months	103	69.6
Backup learner-contact channel	98	66.2
Assignment in Itbayat or Sabtang	34	23.0

3.3 Resilience, continuity confidence, and coping profile

Mean resilience was 3.46 (SD = 0.57; 95% CI 3.37-3.56). Mean instructional continuity confidence was 3.76 (SD = 0.59; 95% CI 3.67-3.86). Internal consistency was strong for both six-item scales (alpha = .88 and .89, respectively).

Acceptance received the highest coping score, followed by planning, active coping, and religion. Denial, behavioral disengagement, and substance use received the lowest scores. The rank pattern indicated that respondents more often reported accommodation, preparation, action, and faith-based coping than withdrawal-oriented responses. Figure 1 displayed the means without converting them into unvalidated qualitative categories.

Figure 1. Brief COPE subscale means with 95% confidence intervals



Note. Blue markers represented action, support, cognitive, faith, humor, and distraction strategies. Red markers represented self-blame, denial, behavioral disengagement, and substance use. Colors did not define clinical categories.

Table 3. Coping strategy scores, two-item consistency, and correlations with resilience

Coping strategy	M	SD	SB	r	Holm p
Acceptance	3.31	0.52	0.55	0.43	<.001
Active coping	3.19	0.53	0.49	0.31	.001
Planning	3.20	0.55	0.54	0.21	.087
Religion	3.19	0.54	0.58	0.14	.436
Positive reframing	3.05	0.56	0.63	0.42	<.001
Instrumental support	2.96	0.62	0.60	0.24	.028
Emotional support	2.91	0.57	0.57	0.11	.632
Self-distraction	2.75	0.55	0.51	0.12	.632
Venting	2.31	0.57	0.44	-0.02	.883
Humor	2.19	0.61	0.63	0.15	.427
Self-blame	2.01	0.61	0.55	-0.32	<.001
Denial	1.59	0.50	0.53	-0.20	.098
Behavioral disengagement	1.50	0.52	0.62	-0.27	.009
Substance use	1.30	0.38	0.27	-0.06	.883

Note. SB = Spearman-Brown coefficient. r = Pearson correlation with BRS score. Holm p controlled the familywise error rate across 14 correlations. Brief COPE source and scoring followed Carver.[24,25]

3.4 Coping correlates of resilience

After Holm adjustment, resilience correlated positively with acceptance ($r = .43$, adjusted $p < .001$), positive reframing ($r = .42$, adjusted $p < .001$), active coping ($r = .31$, adjusted $p = .001$), and instrumental support ($r = .24$, adjusted $p = .028$). It correlated negatively with self-blame ($r = -.32$, adjusted $p < .001$) and behavioral disengagement ($r = -.27$, adjusted $p = .009$). The remaining correlations did not meet the adjusted .05 threshold.

Spearman-Brown coefficients ranged from .27 to .63. The substance-use coefficient was .27 and reflected restricted variation near the response floor; venting was .44. Those subscales were therefore interpreted cautiously, and no aggregate adaptive-versus-maladaptive score was constructed.

3.5 Adjusted associations with resilience

The resilience regression explained 41.2% of observed variance (adjusted $R^2 = 0.370$; cluster-robust $F(10, 24) = 8.45$, $p < .001$). Positive reframing, acceptance, and active coping retained positive independent associations. Self-blame retained a negative association. The 95% CI for disruption burden ended at approximately zero ($p = .058$), and DRRM training had a similarly imprecise positive estimate ($p = .065$). Emotional support, behavioral disengagement, practiced planning, and outer-island assignment did not show independent associations after simultaneous adjustment.

Table 4. School-clustered linear regression estimates for resilience

Predictor	B	SE	beta	95% CI	p
Positive reframing	0.25	0.08	0.24	0.09, 0.41	.003
Acceptance	0.29	0.09	0.26	0.11, 0.47	.003
Active coping	0.18	0.08	0.17	0.02, 0.34	.028
Emotional support	0.01	0.07	0.01	-0.13, 0.15	.869
Behavioral disengagement	-0.08	0.08	-0.07	-0.24, 0.09	.347
Self-blame	-0.21	0.09	-0.23	-0.40, -0.03	.025
Disruption burden	-0.07	0.04	-0.17	-0.15, 0.00	.058
Recent DRRM training	0.13	0.07	0.11	-0.01, 0.28	.065

Predictor	B	SE	beta	95% CI	p
Practiced continuity plan	0.13	0.08	0.11	-0.04, 0.30	.125
Itbayat/Sabtang assignment	-0.02	0.10	-0.02	-0.23, 0.18	.806

Note. N = 148; 25 school clusters. B values represented change in BRS points per one-unit predictor change. Maximum VIF = 1.34; maximum Cook's D = 0.075.

3.6 Adjusted associations with instructional continuity confidence

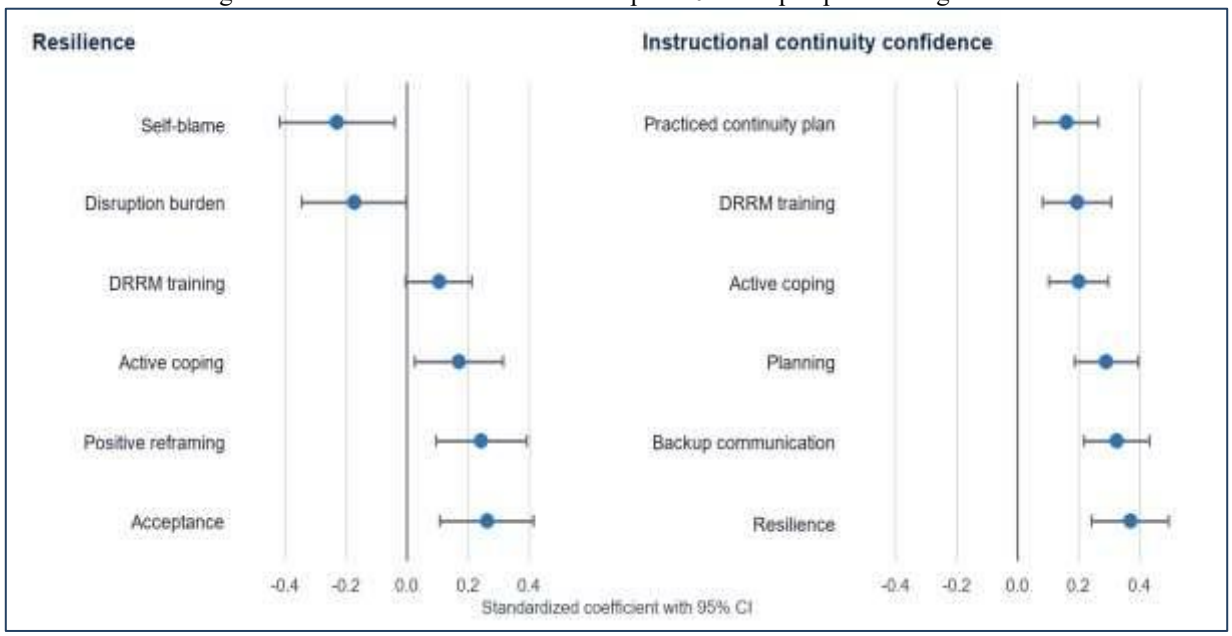
The continuity regression explained 56.0% of observed variance (adjusted $R^2 = 0.528$; cluster-robust $F(10, 24) = 42.97$, $p < .001$). Resilience, active coping, planning, recent DRRM training, participation in a practiced continuity plan, and access to a backup communication channel were positively associated with confidence. Instrumental support had a positive but imprecise estimate ($p = .111$). Positive reframing, disruption burden, and outer-island assignment did not retain independent associations when the other variables were held constant.

Table 5. School-clustered linear regression estimates for instructional continuity confidence

Predictor	B	SE	beta	95% CI	p
Resilience score	0.38	0.07	0.37	0.25, 0.52	<.001
Active coping	0.22	0.05	0.20	0.11, 0.34	<.001
Planning	0.31	0.06	0.29	0.20, 0.43	<.001
Instrumental support	0.13	0.08	0.14	-0.03, 0.30	.111
Positive reframing	-0.05	0.07	-0.04	-0.19, 0.10	.533
Recent DRRM training	0.26	0.08	0.20	0.10, 0.41	.002
Practiced continuity plan	0.21	0.07	0.16	0.07, 0.35	.006
Backup communication	0.41	0.07	0.33	0.27, 0.55	<.001
Disruption burden	-0.03	0.02	-0.06	-0.08, 0.02	.234
Itbayat/Sabtang assignment	-0.08	0.06	-0.05	-0.20, 0.05	.207

Note. N = 148; 25 school clusters. B values represented change in ICCS points per one-unit predictor change. Maximum VIF = 1.63; maximum Cook's D = 0.060.

Figure 2. Standardized coefficients with $p < .10$ in the prespecified regressions



3.7 Diagnostic and sensitivity analyses

Collinearity was limited: maximum variance-inflation factors were 1.34 for the resilience regression and 1.63 for the continuity regression. Maximum Cook's distances were 0.075 and 0.060, both below the conventional value of 1. Residual plots showed no severe curvature or single-point domination.

HC3 sensitivity estimates preserved the direction and substantive interpretation of all coefficients. Leave-one-municipality-out analyses also preserved the directions of positive reframing, acceptance, self-blame, resilience, practiced planning, backup communication, and planning. Statistical precision varied when Basco was removed because that analysis excluded nearly half the sample, but no key direction reversed.

4. Discussion

4.1 Principal findings

The study produced three main findings. First, teachers most often reported acceptance, planning, active coping, and religion, while withdrawal-oriented strategies were less frequent. Second, resilience was independently associated with positive reframing, acceptance, active coping, and lower self-blame. Third, instructional continuity confidence was associated not only with resilience and action-oriented coping but also with recent training, a practiced plan, and redundant communication. The results therefore favored a combined personal-and-system account over an interpretation centered on individual endurance alone.

The resilience regression explained 41.2% of observed variance, while the continuity regression explained 56.0%. Those values indicated substantial association within the analytic sample but did not imply causation or complete explanation. Unmeasured school leadership, material resources, household conditions, prior mental health, and hazard severity could have contributed to the remaining variance and to some observed relationships.

4.2 Coping strategies and resilience

Positive reframing and acceptance each retained an association with resilience after adjustment. In transactional terms, those processes could have helped teachers reinterpret uncontrollable conditions while identifying actions that remained possible.[14] Acceptance did not mean passivity; it coexisted with active coping and planning among the most frequently reported strategies. This distinction mattered in disasters, where acknowledging a closure, power loss, or transport delay could precede the practical work of reorganizing instruction.

Active coping also retained a positive association with resilience. That finding aligned with teacher-resilience frameworks that emphasized problem solving, adaptability, and professional agency.[17,18] It also fit the Batanes literature on collective self-reliance and practical organization, although the present design could not determine whether such community practices produced the individual score pattern.[9,10]

Self-blame remained negatively associated with resilience. The result suggested that internal attribution of responsibility during large, externally driven disruptions could deplete coping resources without improving control. Conservation of Resources theory had emphasized the compounding effects of resource loss; self-directed blame could have added emotional cost to material and professional demands.[15] School debriefings could therefore distinguish accountable preparation from personal fault for uncontrollable hazard consequences.

Behavioral disengagement correlated negatively with resilience in the bivariate analysis but did not retain an independent association in the regression. Shared variance with self-blame, acceptance, positive reframing, and exposure may have accounted for that attenuation. The low two-item reliability for substance use and restricted variation at the floor also limited strong conclusions about that subscale. These results reinforced the decision not to collapse all Brief COPE strategies into a single score.[24,25]

4.3 School resources and instructional continuity

Backup communication had one of the largest standardized associations with continuity confidence. In an island setting, a continuity plan that depended on one data network would have remained vulnerable to simultaneous power and signal interruption. Redundancy could have included printed contact trees, designated radio relays, pre-positioned learner lists, municipal coordination points, and agreed schedules for low-bandwidth check-ins. The finding was consistent with national DRRM policy and school-safety frameworks that connected continuity with communication, coordination, and all-hazards planning.[2-5]

Participation in a practiced plan and recent DRRM training also retained positive associations. A written plan alone may not have generated the same procedural memory as a rehearsal that clarified who contacted families, who protected records, which materials were pre-positioned, and when instruction shifted to an alternative mode. Interview research after hurricanes had similarly emphasized that effective emergency plans needed to anticipate staff roles and social-emotional needs, rather than address infrastructure alone.[21]

Resilience was independently associated with continuity confidence, but the resource variables retained their own associations. This pattern supported a social-ecological interpretation: personal recovery capacity mattered, yet teachers also relied on access to usable channels, routines, colleagues, and leadership.[16,19] Resilience should therefore not have been used to normalize repeated exposure or to excuse preventable resource gaps.

4.4 Implications for Batanes schools

The findings supported a layered response. Universal preparedness could have included annual continuity rehearsals before the wettest months, updated learner contact maps, and offline teaching packets. Team-level support could have included peer check-ins, workload redistribution, and structured post-event debriefs. Targeted support could have included confidential referral pathways for teachers whose distress affected daily functioning. INEE standards and guidance had placed teacher wellbeing, supervision, and relevant professional development within the core of education response rather than outside it.[12,13]

Cultural and local knowledge could have informed, but not replaced, formal hazard information. Ivatan observations, community relationships, and customary mutual aid could have strengthened message credibility and logistics, while official forecasts and safety protocols remained the decision basis.[7,10] This combination would have respected place-based knowledge without transferring technical warning responsibilities to individual teachers.

The Department of Education's psychosocial support resources already provided activities intended to help learners cope after disasters.[32] Parallel attention to the adults delivering those activities could have included protected recovery time, supervisor training in psychological first response, explicit referral options, and limits on assigning teachers to simultaneous teaching, relief, reporting, and counseling roles. Disaster-affected teacher interventions had shown that group-based, culturally grounded support could improve coping and help-seeking.[20,22]

Table 6. Evidence-to-action matrix for school and division planning

Observed signal	Proposed action	Practical indicator
Backup communication was strongly associated with continuity confidence	Maintain at least two learner-contact channels, including one that did not require mobile data	% of schools with tested redundant contact trees
Practiced planning retained an independent association	Conduct a hazard-specific continuity rehearsal and after-action review before peak disruption months	% of schools completing rehearsal and corrective log
Training retained an independent association	Refresh DRRM and emergency pedagogy skills with role-specific scenarios	% of personnel completing scenario-based refresher
Self-blame was negatively associated with resilience	Use non-punitive debriefing and clear responsibility boundaries	Availability and uptake of confidential debrief/referral pathway
Action-oriented coping was associated with both outcomes	Embed brief planning, prioritization, and resource-mapping exercises in staff development	Pre/post confidence and follow-through on action plans

Note. Indicators were proposed for monitoring and required local validation. Actions aligned with DepEd DRRM, Comprehensive School Safety, and INEE guidance.[2,4,12,13]

4.5 Strengths and limitations

The study had several methodological strengths. It used a census invitation across all municipalities, exceeded the a priori sample requirement, retained the Brief COPE's 14 subscales, used a two-item reliability coefficient, controlled multiplicity for exploratory correlations, accounted for school clustering, and reported both standardized and unstandardized effects with confidence intervals. Sensitivity checks reduced dependence on one variance estimator or one municipality.

Several limitations constrained interpretation. The cross-sectional design could not establish temporal order. Self-reports could have reflected recall, social desirability, or common-method variance. The BRS measured perceived recovery capacity rather than verified post-disaster functioning. The ICCS received content review and an initial structural screening but required confirmation in an independent sample. The census response remained incomplete, so nonrespondents could have differed from respondents. School-clustered inference used 25 clusters, which was adequate for correction but still warranted caution. Municipality estimates were descriptive because unequal sample sizes and small cells limited reliable between-municipality comparisons.

The survey also did not measure clinical distress, burnout, household income, school-level material inventories, or objective days to resume instruction. Future field research could use repeated measurements before and after disruptive events, administrative records of closures and contact success, independent validation of the ICCS, and qualitative interviews that centered teachers' own language for coping and mutual aid. A multilevel longitudinal design could separate teacher, school, municipality, and event influences.

4.6 Interpretation boundaries

The associations described patterns within one small island division and did not rank municipalities, schools, or individual teachers. Higher coping-frequency scores were not automatically beneficial in every circumstance; the usefulness of a strategy depended on timing, controllability, culture, and available resources. Religion and support-seeking, for example, could have provided meaning or connection without directly restoring communications or transport. The findings were therefore interpreted as a profile of concurrent resources and responses, not a universal hierarchy of coping.

5. Conclusion

Batanes teachers reported a coping profile centered on acceptance, planning, active coping, and religion. Resilience was positively associated with positive reframing, acceptance, and active coping and negatively associated with self-blame. Confidence in instructional continuity was associated with resilience, action-oriented coping, DRRM training, a practiced continuity plan, and redundant communication.

The evidence supported an integrated approach to educational resilience. Individual coping skills could have been strengthened through practical training and peer support, while schools and the division could have reduced avoidable demands through rehearsed roles, low-connectivity materials, backup contact channels, and staff-centered psychosocial provisions. Such an approach would have treated teachers as professionals embedded in households, schools, and island communities rather than as unlimited emergency resources.

References

[1] United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030. Geneva: UNDRR; 2015. https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030

[2] Global Alliance for Disaster Risk Reduction and Resilience in the Education Sector. Comprehensive School Safety Framework 2022-2030: For Child Rights and Resilience in the Education Sector. 2022. https://gadrrres.net/files/css-framework-2022-2030-en.pdf
[3] Republic of the Philippines. Republic Act No. 10121: Philippine Disaster Risk Reduction and Management Act of 2010. https://lawphil.net/statutes/repacts/ra2010/ra_10121_2010.html
[4] Department of Education. DO 37, s. 2015: The Comprehensive Disaster Risk Reduction and Management in Basic Education Framework. 12 August 2015. https://www.deped.gov.ph/2015/08/12/do-37-s-2015-the-comprehensive-disaster-risk-reduction-and-management-drrm-in-basic-education-framework/
[5] Department of Education. DO 022, s. 2024: Revised Guidelines on Class and Work Suspension in Schools During Disasters and Emergencies. 23 December 2024. https://www.deped.gov.ph/2024/12/23/december-23-2024-do-022-s-2024-revised-guidelines-on-class-and-work-suspension-in-schools-during-disasters-and-emergencies/
[6] Philippine Statistics Authority, Regional Statistical Services Office II. Women and Men of Batanes. 28 March 2025. https://rsso02.psa.gov.ph/content/women-and-men-batanes-0
[7] Philippine Atmospheric, Geophysical and Astronomical Services Administration. Climatological Normals: Basco, Batanes and Itbayat stations. Accessed 21 August 2026. https://pagasa.dost.gov.ph/climate/climatological-normals
[8] Tajima Y, Lapidez JP, Camelo J, Saito M, Matsuba Y, Shimozono T, et al. Post-disaster survey of storm surge and waves along the coast of Batanes, the Philippines, caused by Super Typhoon Meranti/Ferdie. Coastal Engineering Journal. 2017;59(1):1750009. https://doi.org/10.1142/S0578563417500097
[9] Talubo JP, Malenab RA, Morse S, Saroj D. Practitioners' participatory development of indicators for island community resilience to disasters. Sustainability. 2022;14(7):4102. https://doi.org/10.3390/su14074102
[10] Esteban RC, Valientes EA. Ivatan indigenous knowledge, classificatory systems, and risk reduction practices. Journal of Nature Studies. 2019;18(1):76-96. https://www.journalofnaturestudies.org/files/JNS18-1/76-96_Esteban_Ivatan%20Indigenous%20Knowledge.pdf
[11] Abrigo MRM, Francisco KA, Santos KCP. School closures, shelter-use and learning outcomes in the Philippines: evidence from 2019 TIMSS. Economics of Education Review. 2026;110:102738. https://doi.org/10.1016/j.econedurev.2025.102738
[12] Inter-agency Network for Education in Emergencies. INEE Minimum Standards for Education: Preparedness, Response, Recovery. 2024 ed. New York: INEE; 2024. https://inee.org/minimum-standards
[13] Inter-agency Network for Education in Emergencies. Guidance Note on Teacher Wellbeing in Emergency Settings. New York: INEE; 2022. https://inee.org/resources/guidance-note-teacher-wellbeing-emergency-settings
[14] Lazarus RS, Folkman S. Stress, Appraisal, and Coping. New York: Springer Publishing Company; 1984. ISBN 9780826141903. https://www.ncbi.nlm.nih.gov/nlmcatalog/8501102
[15] Hobfoll SE. Conservation of resources: a new attempt at conceptualizing stress. American Psychologist. 1989;44(3):513-524. https://doi.org/10.1037/0003-066X.44.3.513
[16] Ungar M. The social ecology of resilience: addressing contextual and cultural ambiguity of a nascent construct. American Journal of Orthopsychiatry. 2011;81(1):1-17. https://doi.org/10.1111/j.1939-0025.2010.01067.x
[17] Beltman S, Mansfield C, Price A. Thriving not just surviving: a review of research on teacher resilience. Educational Research Review. 2011;6(3):185-207. https://doi.org/10.1016/j.edurev.2011.09.001
[18] Mansfield CF, Beltman S, Broadley T, Weatherby-Fell N. Building resilience in teacher education: an evidenced informed framework. Teaching and Teacher Education. 2016;54:77-87. https://doi.org/10.1016/j.tate.2015.11.016
[19] Lu J, Chen J, Li Z, Li X. A systematic review of teacher resilience: a perspective of the job demands and resources model. Teaching and Teacher Education. 2024;151:104742. https://doi.org/10.1016/j.tate.2024.104742
[20] Seyle DC, Widyatmoko CS, Silver RC. Coping with natural disasters in Yogyakarta, Indonesia: a study of elementary school teachers. School Psychology International. 2013;34(4):387-404. https://doi.org/10.1177/0143034312446889
[21] Cannon SR, Davis CR, Long R. Using an emergency plan to combat teacher burnout following a natural hazard. Educational Policy. 2023;37(6):1603-1636. https://doi.org/10.1177/08959048221120273
[22] Parrott E, Lomeli-Rodriguez M, Rahman A, Direzkia Y, Bernardino A, Burgess R, Joffe H. Fostering resilient recovery: an intervention for disaster-affected teachers in Indonesia. SSM - Mental Health. 2024;6:100355. https://doi.org/10.1016/j.ssmmh.2024.100355
[23] Smith BW, Dalen J, Wiggins K, Tooley E, Christopher P, Bernard J. The Brief Resilience Scale: assessing the ability to bounce back. International Journal of Behavioral Medicine. 2008;15(3):194-200. https://doi.org/10.1080/10705500802222972
[24] Carver CS. You want to measure coping but your protocol's too long: consider the Brief COPE. International Journal of Behavioral Medicine. 1997;4(1):92-100. https://doi.org/10.1207/s15327558ijbm0401_6
[25] Eisinga R, te Grotenhuis M, Pelzer B. The reliability of a two-item scale: Pearson, Cronbach, or Spearman-Brown? International Journal of Public Health. 2013;58:637-642. https://doi.org/10.1007/s00038-012-0416-3
[26] von Elm E, Altman DG, Egger M, Pocock SJ, Gotzsche PC, Vandenbroucke JP; STROBE Initiative. The Strengthening the Reporting of Observational Studies in Epidemiology statement: guidelines for reporting observational studies. Lancet. 2007;370(9596):1453-1457. https://doi.org/10.1016/S0140-6736(07)61602-X
[27] Faul F, Erdfelder E, Buchner A, Lang AG. Statistical power analyses using G*Power 3.1: tests for correlation and regression analyses. Behavior Research Methods. 2009;41:1149-1160. https://doi.org/10.3758/BRM.41.4.1149
[28] Cameron AC, Miller DL. A practitioner's guide to cluster-robust inference. Journal of Human Resources. 2015;50(2):317-372. https://doi.org/10.3368/jhr.50.2.317
[29] Long JS, Ervin LH. Using heteroscedasticity-consistent standard errors in the linear regression model. American Statistician. 2000;54(3):217-224. https://doi.org/10.1080/00031305.2000.10474549

[30] Holm S. A simple sequentially rejective multiple test procedure. Scandinavian Journal of Statistics. 1979;6(2):65-70. https://www.jstor.org/stable/4615733
[31] Republic of the Philippines. Republic Act No. 10173: Data Privacy Act of 2012. https://lawphil.net/statutes/repacts/ra2012/ra_10173_2012.html
[32] Department of Education Disaster Risk Reduction and Management Service. The Psychosocial Support Activity Pack: A Teacher's Guide. Accessed 21 August 2026. https://drrms.deped.gov.ph/