Implementation of Risk Reduction and Resilience Education in Private Augustinian Basic Education Schools in the Philippines

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ABSTRACT

Risk reduction and resilience education (RRRE), the third pillar of the Comprehensive School Safety Framework, has rarely been examined in Philippine private schools. This study described the perceived level of RRRE implementation in the six basic education schools of the Augustinian Province of Santo Niño de Cebu, compared implementation across school-related classifications, and examined its association with the other two pillars: safety of learning facilities and effectiveness of school disaster management. A cross-sectional descriptive-correlational survey was conducted in April–May 2021. Of 285 eligible administrators, safety officers, and Grades 1–10 teachers, 146 (51.2%) rated 15 RRRE items adapted from the Comprehensive School Safety policy survey on a five-point implementation scale. Data were analyzed using means, standard deviations, the Mann–Whitney *U* test, the Kruskal–Wallis *H* test, and Spearman's rho, with effect sizes and 95% confidence intervals derived from the reported statistics. RRRE was rated at the threshold between implemented and widely implemented (M = 4.20, SD = 0.69, 95% CI [4.08, 4.31]). Item means fell within a narrow band (4.14–4.30); pre-service and in-service training, vertical curricular integration, learning materials, and stakeholder training were rated lowest. Respondents from central-district schools rated implementation higher than those from city-outskirts schools (U = 1801.00, p = .001, r = .27). Ratings also differed across six disaster-experience groups (H[5] = 34.40, p < .001, ε^2 = .24), although the undocumented grouping rule precludes a directional interpretation. RRRE correlated strongly with learning-facility safety (ρ = .73, 95% CI [.64, .81]) and with disaster management effectiveness (ρ = .78, 95% CI [.70, .85]). The findings describe co-occurring perceptions in one private school network rather than causal effects or student outcomes. They support sustained teacher training, a vertically aligned RRRE curriculum, targeted support for outskirts schools, and integrated school safety planning, and they call for multi-source, longitudinal, and intervention research.

Keywords: risk reduction and resilience education, comprehensive school safety, disaster risk reduction education, private schools, Philippines

INTRODUCTION

Schools have a dual role in disaster risk reduction: they must be protected from hazards, and they are where children and communities learn to live with them. The Comprehensive School Safety Framework (CSSF) organizes this role into three mutually reinforcing pillars: safe learning facilities, school disaster management, and risk reduction and resilience education (Global Alliance for Disaster Risk Reduction and Resilience in the Education Sector [GADRRRES], 2017, 2022). The third pillar, risk reduction and resilience education (RRRE), concerns what learners and educators know, value, and do about risk. It covers the formal curriculum, teacher education, extracurricular and community-based learning, and the development of critical-thinking and life-saving skills within a culture of safety (GADRRRES, 2017). The Sendai Framework for Disaster Risk Reduction 2015–2030 calls for disaster risk knowledge to be built into formal and non-formal education (United Nations Office for Disaster Risk Reduction [UNDRR], 2015). Sustainable Development Goal 4 commits states to

education for sustainable development (Target 4.7) and to safe and effective learning environments (Target 4.a; United Nations General Assembly, 2015).

The Philippines is highly exposed to typhoons, floods, earthquakes, and volcanic hazards, and its schools also face fires, security threats, and health emergencies. Republic Act No. 10121 (2010) mandates the integration of disaster risk reduction education into school curricula, and Department of Education (DepEd) Order No. 37, s. 2015 adopted a comprehensive disaster risk reduction and management framework for basic education that is aligned with the CSSF pillars (DepEd, 2015). These provisions bind private as well as public schools, yet private and faith-based schools remain underrepresented in Philippine school safety research.

Education is a consistent correlate of disaster preparedness. Formal education and prior disaster experience were associated with preparedness in the Philippines and Thailand (Hoffmann & Muttarak, 2017), and education reduces vulnerability directly through knowledge and skills and indirectly through access to resources (Hoffmann & Blecha, 2020; Torani et al., 2019). How RRRE is implemented, however, matters as much as whether it is mandated. Across 30 national curricula, infusion into existing subjects predominated, teaching was largely content-focused, and teacher training was brief and without follow-up (Selby & Kagawa, 2012). Policies on curriculum integration and teacher training were adopted less often than policies on disaster management and safer construction (Paci-Green et al., 2020). Disaster education programs improve knowledge and attitudes, but evidence of change in preparedness behavior is weaker (Adiyoso & Kanegae, 2013; Johnson et al., 2014), and learners' own perspectives are often absent from the research (Amri et al., 2018). Teacher readiness is decisive for delivery (Oktari et al., 2020). Filipino pre-service teachers report awareness of disaster risk reduction and management but difficulty applying it in their partner schools (Suanco et al., 2023). In Philippine elementary schools, disaster risk reduction in education scored lowest among school safety components because of shortages of personnel, budget, and information (Acierto et al., 2023), and implementation was related to staff awareness and preparedness (Dela Cruz & Ormilla, 2022). Contextual differences in resources and institutional capacity, such as those between urban and rural settings, also shape resilience (Cutter et al., 2016), and the CSSF treats preparedness education, facilities, and management as interdependent (Widowati et al., 2023).

Three gaps follow. Philippine evidence concerns mostly public schools; few studies test whether RRRE varies with school characteristics; and RRRE is rarely analyzed together with the other two pillars. This study addresses these gaps in the six basic education schools of the Augustinian Province of Santo Niño de Cebu, a private Catholic school network spanning Luzon, the Visayas, and Mindanao.

The study adopts the systems view of the CSSF as its theoretical lens. In this view, school safety emerges from the alignment of physical protection, organizational management, and learning, and weakness in any one pillar undermines the others (GADRRRES, 2017, 2022). RRRE is therefore treated as an organizational practice that depends on curriculum structures, teacher capacity, and leadership priorities, rather than as a set of isolated lessons. Two expectations follow from this lens. First, schools with greater contextual capacity, such as access to resources, partners, and information, are expected to report fuller implementation (Acierto et al., 2023; Cutter et al., 2016). Second, because the same institutional priorities underpin all three pillars, implementation of RRRE is expected to co-vary with facility safety and disaster management (Widowati et al., 2023). The national policy environment, which assigns DRR education to schools through Republic Act No. 10121 (2010) and DepEd Order No. 37, s. 2015, provides a common baseline against which school-level variation can be examined (DepEd, 2015).

The study distinguishes several constructs that are often conflated. *Disaster occurrence* is a hazard event affecting the school; *exposure* is the presence of people and assets in hazard-prone settings; *vulnerability* is susceptibility to harm; *perceived risk* is an appraisal of the likelihood and severity of harm; *preparedness* comprises the capacities and arrangements for response; and *resilience* is the capacity to absorb, adapt to, and recover from disruption. The study measured none of these directly. It measured school personnel's perceptions of whether RRRE provisions were implemented, together with their self-reported experience of disasters, which indicates experienced occurrence only. It addressed three questions: (RQ1) What is the perceived level of RRRE implementation, overall, by indicator, and by school classification? (RQ2) Does it differ by basic education level, disaster-experience group, geographic location, number of teachers, population size, and years of existence?

(RQ3) Is it associated with the perceived safety of learning facilities and the perceived effectiveness of school disaster management? The null hypotheses were that there are no differences (H_{01}) and no associations (H_{02}). Figure 1 summarizes the conceptual framework.

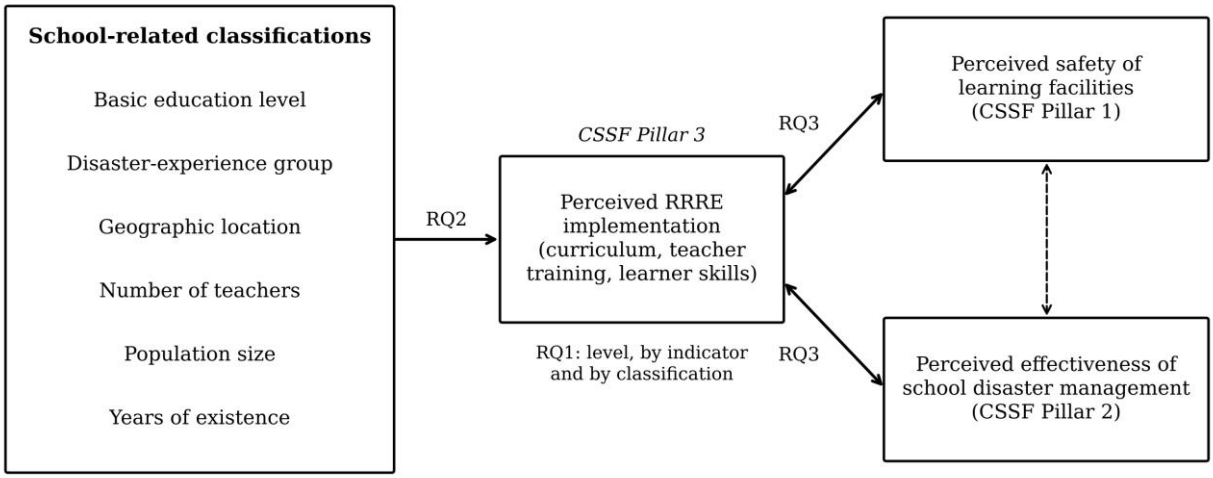

Figure 1: Conceptual framework of the study. Solid arrows denote the comparisons (RQ2) and associations (RQ3) tested; the broken arrow denotes the association between the other two pillars, reported for completeness. All variables are school personnel's perceptions or self-reports.

METHODOLOGY

Design, Locale, and Participants

A cross-sectional descriptive-correlational survey design was used. The study is the RRRE component of a doctoral study on all three CSSF pillars (Convocar-Paracale, 2025). The setting comprised the six private, Catholic basic education schools of the Augustinian Province of Santo Niño de Cebu: two in Iloilo City and one each in Bacolod City, Cebu City, Biñan (Laguna), and Mati (Davao Oriental). No public schools were included. The schools are coded A to F. All 285 administrators, safety officers, and Grades 1–10 teachers employed in school year 2020–2021 were eligible. Of these, 146 (51.2%) voluntarily completed the questionnaire (Table 1), forming a purposive, self-selected sample. The breakdown of respondents by role was not recorded in the analysis file.

Table 1: Eligible Population and Respondents by School

School	Eligible personnel	Respondents (*n*)	Response rate (%)
A	44	19	43.2
B	116	63	54.3
C	29	12	41.4
D	25	14	56.0
E	41	20	48.8
F	29	18	62.1
Total	285	146	51.2

Note. The school-level counts in the source records sum to 284; the reported institutional total of 285 is used.

Variables and Operational Definitions

Perceived RRRE implementation was the mean of 15 items describing curriculum provisions, teacher training, and learner skills (Table 3). Each item was rated from 5 (*widely implemented*: 76%–100% of provisions met) to 1 (*not implemented*: below 5% met). Mean scores were interpreted as widely implemented (4.20–5.00),

implemented (3.40–4.19), partially implemented (2.60–3.39), less implemented (1.80–2.59), or not implemented (1.00–1.79). These verbal bands are descriptive conventions; they are not empirically validated cut scores.

Perceived safety of learning facilities (33 items, adapted from the DepEd Educational Facilities Manual) and *perceived effectiveness of school disaster management* (21 items covering risk assessment, risk reduction, and capacity development, adapted from the Comprehensive School Safety policy survey) were measured with parallel five-point scales and were used here only for RQ3.

Disaster experience was recorded with a checklist of events experienced during the respondent's employment in the school, with multiple responses allowed. The checklist included hydrometeorological hazards (typhoon, flood, flash flood), a geophysical hazard (earthquake), human-induced or technological events (fire, bomb threat, acts of violence), biological events (health emergencies), and an open "others" option. For analysis, responses were grouped into six categories coded 1 to 6. The type of disaster was not considered in this grouping, and the rule used to assign checklist responses to the six codes (for example, the number of event types checked) is not documented. Disaster frequency, severity, recency, and school-level hazard exposure were not measured. The remaining classifications were basic education level (elementary or junior high school), geographic location (central district or city outskirts), number of teachers (fewer than 20, 21–50, more than 50), school population size (fewer than 500, 500–1,000, more than 1,000), and years of existence (below 50 years, 50 years and above). Respondents reported these characteristics on the questionnaire; they were not verified against school records. Cross-checking the category sizes against school-level respondent counts shows that geographic location and years of existence partition the sample consistently by school, but population size and number of teachers do not. This means that respondents from the same school reported different categories for these two attributes, and both variables therefore contain classification error.

Instrument, Validity, and Reliability

The questionnaire had two parts: a profile section and the three pillar scales. The RRRE and disaster management scales were adapted from the Comprehensive School Safety policy survey developed by Save the Children with the Global Facility for Disaster Reduction and Recovery and were reformatted as Likert-type items. Five experts (educators with expertise in disaster management, a biology professor, and a statistician) rated each item as suitable, not suitable, or needing revision on appropriateness, relevance of terminology, syntax, and comprehensibility; their suggestions were incorporated into the final version. A pilot test in the senior high school department of the University of San Agustin, whose personnel were outside the study population, yielded a Cronbach's alpha of .984 for the full questionnaire. The pilot sample size was not reported. Reliability was not estimated separately for the RRRE scale or for its curriculum, teacher-training, and skills components, and it was not re-estimated in the main sample. Because alpha rises with the number of items, a value of .984 across 69 items says little about the internal consistency of the 15-item RRRE scale and may also indicate item redundancy (McNeish, 2018). The item-to-component mapping for the RRRE scale was not specified, so component scores were not computed.

Data Collection

With permission from the presidents, directors, and principals of the schools, the first author collected data in April–May 2021, during the COVID-19 pandemic, when most schools operated remotely. Questionnaires were administered in person or through Google Forms, and paper questionnaires were retrieved personally. No interviews, classroom observations, document analyses, school safety audits, or student surveys were conducted.

Data Analysis

Frequencies, percentages, means, and standard deviations were used to describe implementation. Because the item responses were ordinal and group sizes were unequal, the Mann–Whitney *U* test was used for two-group classifications, the Kruskal–Wallis *H* test for classifications with three or more groups, and Spearman's rho for associations, with $\alpha = .05$ (two-tailed). Post hoc pairwise comparisons were not performed.

Effect sizes and confidence intervals were computed from the test statistics reported in the analysis output. For Mann–Whitney tests, $r = |z|/\sqrt{N}$ and the rank-biserial correlation $r?5?7?5?0 = 1 - 2U/(n_1 n_2)$ were computed (Fritz et al., 2012; Kerby, 2014). For Kruskal–Wallis tests, $\varepsilon^2 = H/(N - 1)$ was computed (Tomczak & Tomczak, 2014). Confidence intervals for means used the *t* distribution. Confidence intervals for Spearman coefficients used the Fisher *z* transformation with the Bonett and Wright (2000) standard error. Effect sizes were interpreted against conventional benchmarks (Cohen, 1988), with the caveat that these benchmarks are field-general. Respondents were nested within six schools, and the tests assume independent observations. The *p* values are therefore likely to be optimistic for school-level classifications, and multilevel modeling was not possible with six clusters (Raudenbush & Bryk, 2002).

RESULTS

Level of Perceived Implementation (RQ1)

Overall, RRRE was rated widely implemented ($M = 4.20$, $SD = 0.69$). The unrounded mean (4.197) lies at the lower boundary of the band, and its 95% CI [4.08, 4.31] spans the boundary between implemented and widely implemented (Table 2). Six of the 15 indicators were rated widely implemented (Table 3). The highest concerned resilience education on values, social skills, and peace ($M = 4.30$) and a culture of prevention and safety ($M = 4.27$). The lowest were pre-service and in-service training ($M = 4.14$), followed by integration of competencies at all levels, quality teaching and learning materials, and stakeholder training (each $M = 4.15$). Item means spanned only 0.16 points, and all item confidence intervals overlapped. The ranking therefore indicates a pattern rather than reliable differences between items.

Table 2: Perceived RRRE Implementation by School Classification and Tests of Difference

Classification	*n*	*M*	*SD*	95% CI	Mean rank	Test	Effect size
Whole group	146	4.20	0.69	[4.08, 4.31]			
Basic education level						$U = 2555.00$, $z = -0.43$, $p = .665$	$r = .04$
Elementary	72	4.22	0.64	[4.07, 4.37]	75.01		
Junior high school	74	4.17	0.74	[4.00, 4.34]	72.03		
Disaster-experience group?5?5						$H(5) = 34.40$, $p < .001$	$\varepsilon^2 = .24$
Group 1	32	4.65	0.49	[4.48, 4.83]	103.02		
Group 2	33	4.21	0.57	[4.01, 4.41]	72.77		
Group 3	48	4.14	0.62	[3.96, 4.32]	69.03		
Group 4	17	4.20	0.60	[3.89, 4.51]	71.62		
Group 5	11	3.55	0.96	[2.90, 4.20]	39.91		
Group 6	5	3.12	0.36	[2.67, 3.57]	12.60		
Geographic location						$U = 1801.00$, $z = -3.26$, $p = .001$	$r = .27$
Central district	83	4.37	0.59	[4.24, 4.49]	83.30		
City outskirts	63	3.97	0.75	[3.79, 4.16]	60.59		
Number of teachers?5?9						$H(2) = 0.22$, $p = .894$	$\varepsilon^2 = .00$
Fewer than 20	12	4.29	0.73	[3.83, 4.75]	75.50		
21–50	58	4.12	0.82	[3.91, 4.34]	71.51		
More than 50	76	4.24	0.56	[4.11, 4.37]	74.70		
Population size?5?9						$H(2) = 0.86$, $p = .649$	$\varepsilon^2 = .01$
Fewer than 500	49	4.25	0.67	[4.06, 4.44]	76.20		
500–1,000	46	4.09	0.82	[3.85, 4.33]	68.82		
More than 1,000	51	4.24	0.56	[4.09, 4.40]	75.13		
Years of existence						$U = 2279.50$, $z = -1.05$, $p = .296$	$r = .09$
Below 50 years	89	4.16	0.60	[4.04, 4.29]	70.61		

50 years and above	57	4.25	0.80	[4.04, 4.46]	78.01		

Note. Bands: 4.20–5.00 = widely implemented; 3.40–4.19 = implemented; 2.60–3.39 = partially implemented. CIs and effect sizes were computed from the reported statistics. Rank-biserial correlations: level = .04, location = .31, years = .10. ?5?5 Codes 1–6 from the original analysis; the groups do not correspond to schools. ?5?9 Respondent-reported and inconsistent within schools.

Table 3: Item Means for Perceived RRRE Implementation, Ranked From Highest to Lowest

Item: Our school/school's …	*M*	*SD*	95% CI	Band
provides resilience education on values, social skills, peace education, health promotion, and positive relationships	4.30	0.67	[4.19, 4.41]	WI
practices a culture of prevention, awareness of risks, and a culture of safety	4.27	0.73	[4.15, 4.39]	WI
disaster and risk reduction education includes the cognitive, affective, and social domains	4.25	0.70	[4.14, 4.36]	WI
has disaster risk reduction education on local hazards	4.24	0.75	[4.12, 4.36]	WI
classroom activities develop public awareness campaigns for household risk reduction	4.21	0.75	[4.09, 4.33]	WI
integrates basic life skills and safety education in the different subjects	4.20	0.82	[4.07, 4.33]	WI
infuses risk reduction throughout the curriculum into career subjects	4.19	0.76	[4.07, 4.31]	I
curriculum includes climate change education and its impacts	4.18	0.74	[4.06, 4.30]	I
develops critical-thinking and life-saving skills	4.18	0.78	[4.05, 4.31]	I
has social cohesion and a culture of safety and resilience	4.18	0.75	[4.06, 4.30]	I
integrates topics into formal, non-formal, and extracurricular approaches with the community	4.18	0.81	[4.05, 4.31]	I
learning outcomes and competencies integrate risk reduction at all levels	4.15	0.76	[4.02, 4.28]	I
training on disaster risk reduction, resilience, and climate change includes all stakeholders	4.15	0.76	[4.02, 4.28]	I
has quality teaching and learning materials on risk reduction education	4.15	0.81	[4.02, 4.28]	I
pre-service and in-service training includes risk reduction curricular material and methods	4.14	0.78	[4.01, 4.27]	I

Note. N = 146. WI = widely implemented; I = implemented.

Differences Across Classifications (RQ2)

Central-district respondents rated implementation higher than outskirts respondents (mean ranks 83.30 vs. 60.59), U = 1801.00, z = −3.26, p = .001, r = .27, a small-to-moderate effect. The raw mean difference was 0.39 points (Welch 95% CI [0.17, 0.62]). The central-district group comprised respondents from two schools (B and E), so this contrast cannot be separated from other school-specific characteristics. Ratings differed across the six disaster-experience groups, $H(5)$ = 34.40, $p < .001$, ε^2 = .24, with mean ranks declining from Group 1 (103.02) to Group 6 (12.60). The two smallest groups had the lowest means and the widest intervals. No differences were found by basic education level, years of existence, number of teachers, or population size, and these effects were negligible ($r \leq .09$, $\varepsilon^2 \leq .01$). H_{01} was rejected for location and disaster-experience group only.

Associations With the Other Pillars (RQ3)

Perceived RRRE implementation correlated strongly and positively with perceived learning-facility safety and with perceived disaster management effectiveness (Table 4); H_{02} was rejected.

Table 4: Spearman Correlations Among the Three Pillars of Comprehensive School Safety

Variable pair	ρ	95% CI	*p*
RRRE implementation – safety of learning facilities	.734	[.637, .808]	< .001
RRRE implementation – effectiveness of school disaster management	.784	[.700, .846]	< .001
Safety of learning facilities – effectiveness of school disaster management	.774	[.688, .839]	< .001

Note. N = 146. All three ratings were provided by the same respondents.

DISCUSSION

Implementation at the Threshold

RRRE is broadly in place in Augustinian basic education schools, but the evidence places it at the threshold between implemented and widely implemented rather than securely within the higher band. The confidence interval for the overall mean crosses the 4.20 cut-off, so the label "widely implemented" depends on rounding and should be stated with that qualification. The highest-rated indicators are values-oriented and affective: resilience education on values, peace, and social relationships, and a culture of prevention. This profile fits the formative mission of Catholic schools. The lowest-rated indicators are structural: competencies mapped across levels, quality materials, stakeholder training, and pre-service and in-service training. Although the item differences are small and statistically indistinct, the pattern agrees with the infusion-based integration and brief teacher training that Selby and Kagawa (2012) found internationally, with the comparatively low adoption of curriculum and training policies reported by Paci-Green et al. (2020), and with the Philippine finding that disaster risk reduction in education trails other school safety criteria (Acierto et al., 2023). Because teachers are the channel through which RRRE reaches learners (Oktari et al., 2020; Suanco et al., 2023), gaps in training and materials are likely to limit the depth of implementation even where institutional commitment is high.

The Role of School Context

The higher ratings in central-district schools are consistent with urban–rural differences in resilience capacity (Cutter et al., 2016) and with reports that shortages of personnel, budget, and information hinder disaster risk reduction education (Acierto et al., 2023). Central schools may also have readier access to local disaster risk reduction and management offices and to training partners. However, the study did not measure resources, partnerships, or leadership. Because location coincides with school membership (two central schools versus four outskirts schools), the difference may reflect any characteristic that distinguishes these particular schools. This finding should therefore be read as a between-school contrast to be explained, not as an effect of location.

The disaster-experience result produced the largest effect in the study, but it is also the least interpretable. The parent study interpreted the higher ratings as reflecting schools with "more significant disaster experiences" (Convocar-Paracale, 2025). The six codes, however, do not correspond to schools, and their construction is undocumented. If the codes counted the number of event types experienced, Group 1 (the highest-rated group) would be respondents with the fewest types of experience, which is the opposite of the original interpretation. If they followed some other rule, the direction is unknown. Prior experience has been linked to preparedness (Hoffmann & Muttarak, 2017), but the present data cannot show whether experience raises or lowers perceived implementation. Because disaster type, frequency, severity, and recency were not measured, the study cannot distinguish natural from human-induced or biological events, and it cannot separate experienced occurrence from exposure or risk. The finding is reported for completeness and is flagged for re-analysis once the coding rule is confirmed.

The absence of differences by level and years of existence, together with negligible effect sizes, may reflect the shared provincial policies of the Augustinian Order and the national DepEd framework (DepEd, 2015), which set a common baseline independent of institutional scale. The null results for number of teachers and population size are inconclusive because of classification error.

Statistical Versus Practical Significance

Statistical significance and practical importance diverge in several places. The location difference is statistically clear, but at 0.39 points on a five-point scale it separates "implemented" from "widely implemented" rather than adequate from inadequate practice; its practical weight lies in signaling where support should go first. Conversely, the item-level differences that most clearly suggest priorities, such as the weaker ratings for teacher training and materials, are too small to be statistically distinguishable, yet they are educationally meaningful because they point to the structural conditions on which sustained RRRE depends. The large disaster-group effect is statistically robust but of little practical use until its meaning is established. For school leaders, the more

useful reading is therefore the overall profile, high commitment with thinner structures, rather than any single significant test.

Interdependence of the Pillars

The strong associations among all three pillars are consistent with the CSSF premise that the pillars are interdependent (GADRRRES, 2022; Widowati et al., 2023). Schools perceived to invest in one pillar tend to be perceived as investing in the others, possibly because the same leadership priorities and resources drive all three. Three cautions apply. First, the design cannot establish the direction of influence. Second, the same respondents rated all three pillars on parallel scales in one sitting, so common-method variance and general halo effects are likely to have inflated the coefficients (Podsakoff et al., 2003). Third, ratings are nested within six schools, so part of the association may reflect between-school differences rather than co-variation within schools. The coefficients are better interpreted as evidence that personnel perceive school safety as a coherent whole than as estimates of how strongly the pillars are linked in practice.

Perceived Versus Demonstrated Preparedness

The study measured school personnel's perceptions of whether RRRE provisions are in place. It did not measure teachers' disaster risk knowledge or instructional competence, learners' knowledge or skills, or observed preparedness behavior. High perceived implementation should therefore not be read as evidence that students are prepared, resilient, or safe. Evaluations of disaster education consistently find that knowledge gains do not translate automatically into preparedness behavior (Adiyoso & Kanegae, 2013; Johnson et al., 2014). Child-centred perspectives further suggest that learners' own accounts of risk and participation are needed to judge whether RRRE reaches them (Amri et al., 2018). Students' perspectives and performance-based evidence, such as observed evacuation drills and scenario-based tasks, are therefore needed to link implementation to outcomes.

Implications

Taken together, the findings suggest that the priority in these schools is depth rather than coverage. Curriculum leaders can move beyond infusion by mapping RRRE competencies vertically across grade levels and horizontally across subjects in line with local hazard profiles, and by developing or adopting materials that support this mapping. Teacher development should provide sustained, practice-based pre-service and in-service training in risk reduction content and active pedagogy rather than one-time orientations (Johnson et al., 2014; Selby & Kagawa, 2012). School leaders should examine why outskirts schools rate implementation lower and direct support accordingly, including partnerships with local disaster risk reduction and management offices as envisioned in Republic Act No. 10121 (2010). Because the pillars are perceived as moving together, school safety plans should review RRRE, facilities, and disaster management in a single cycle.

For teacher education institutions, the findings suggest that RRRE content and pedagogy should be embedded in pre-service programs rather than left to in-service orientation. Pre-service teachers already recognize the importance of disaster risk reduction but report difficulty applying it in schools (Suanco et al., 2023). Field study and internship experiences that include hazard mapping, drill planning, and the design of RRRE-integrated lessons would allow new teachers to enter schools prepared to deliver the competencies that this study found weakest. For the Augustinian Province, a network-level RRRE coordinator or community of practice could share materials and training across the six schools and reduce the gap between central and outskirts schools.

Limitations

Several limitations bound these conclusions. First, the sample came from six private Catholic schools of one religious province. Although the schools are located in Luzon, the Visayas, and Mindanao, they are not representative of Philippine schools, and no public, non-sectarian, or rural-remote schools were included, so the findings are transferable only to similar private, faith-based settings. Second, the response rate was 51.2%, participation was voluntary, and respondents' roles were not reported, so non-response and self-selection bias cannot be ruled out. Third, all data are single-source self-reports, which are vulnerable to social desirability and

common-method bias. Fourth, reliability was established only for the full questionnaire in a pilot; no subscale or main-sample reliability is available. Fifth, the disaster-experience variable was coarsely defined, and its coding rule is undocumented. Sixth, two classification variables were reported inconsistently within schools. Seventh, the nesting of respondents within six schools violates the independence assumption of the tests used. Finally, data were collected during the COVID-19 pandemic, when schools operated largely remotely, which may have shaped how personnel judged facilities and the delivery of RRRE.

Contributions

Within these limits, the study contributes in three ways. Empirically, it offers the first systematic evidence on RRRE in the Augustinian school network and one of the few Philippine analyses of RRRE together with the other CSSF pillars in private basic education. Conceptually, it shows that personnel perceive the three pillars as tightly linked, and it identifies a values-strong, structure-weak profile of implementation. Methodologically, by reporting effect sizes, confidence intervals, and the limits of the original measures, it gives future studies a transparent baseline against which to build multi-source and longitudinal designs.

CONCLUSION

School personnel perceived RRRE as implemented at the threshold of the widely implemented band, with relative strength in values-based resilience education and relative weakness in teacher training, vertical curricular integration, and learning materials. Perceived implementation was higher in central-district than in outskirts schools and varied across disaster-experience groups, but it did not differ meaningfully by education level or years of existence. It was strongly associated with perceived facility safety and disaster management effectiveness. These findings describe perceptions and co-occurrence in one private school network; they do not establish causes, student outcomes, or national patterns.

RECOMMENDATIONS

Practice and Policy Recommendations Supported by the Findings

1. Provide sustained pre-service and in-service training on RRRE content and pedagogy, with follow-up and coaching rather than one-time sessions. This responds to the lowest-rated indicator (Table 3).

2. Develop a vertically and horizontally aligned scope and sequence of RRRE competencies for Grades 1–10, matched to local hazard profiles and supported by quality teaching and learning materials. This responds to the low ratings for integration at all levels and for materials (Table 3).

3. Investigate and address the lower ratings in outskirts schools, through school-level needs assessment and partnerships with local disaster risk reduction and management offices and community stakeholders. This responds to the location difference (Table 2).

4. Review RRRE, facility safety, and disaster management together in a single school safety planning and monitoring cycle at school and provincial levels. This responds to the strong inter-pillar associations (Table 4).

Future Research Recommendations Addressing the Study's Limitations

1. Representativeness. Include public and private, sectarian and non-sectarian schools across geographically and socioeconomically diverse Philippine regions, including rural and remote schools, using probability sampling stratified by region and school type to strengthen external validity.

2. Disaster classification and measurement. Operationally define disaster categories (hydrometeorological, geophysical, technological or human-induced, and biological), and measure frequency, severity, and recency

of school-level disaster events from records. Distinguish experienced occurrence from hazard exposure, vulnerability, perceived risk, preparedness, and resilience, and link schools to official hazard maps.

3. Statistical reporting. Report reliability (Cronbach's alpha and McDonald's omega) for each scale and subscale in the main sample, confirm the factor structure of the RRRE scale, report exact p values, effect sizes, and confidence intervals, and use multilevel models that account for the nesting of respondents within schools when enough schools are sampled.

4. Methodological triangulation. Use mixed-methods designs that combine surveys with semi-structured interviews of administrators, teachers, and safety officers; classroom observations of RRRE lessons; document analysis of curriculum maps and lesson plans; and independent school safety audits. Convergence or divergence across sources would test the credibility of self-reports and explain the mechanisms behind differences such as the location effect.

5. Students' perspectives and performance-based assessment. Survey and interview learners about their risk knowledge, perceptions, and participation, and assess demonstrated preparedness through observed evacuation drills, emergency response demonstrations, scenario-based performance tasks, and school-based safety exercises scored with validated rubrics.

6. Longitudinal and intervention research. Use longitudinal, quasi-experimental, or cluster-randomized designs with baseline and follow-up measurements and comparison schools to test whether teacher professional development in RRRE and the integration of RRRE across curriculum areas improve (a) teachers' instructional competence and preparedness practices, (b) students' disaster awareness, resilience, and demonstrated preparedness behaviors, and (c) school safety practices, emergency response capacity, and institutional preparedness (Shadish et al., 2002).

Ethical Statement

The study was approved by the University of San Agustin Center for Educational and Institutional Research, and the Research Ethics Committee of the University of San Agustin approved data collection in its institution. Participants gave written informed consent. Participation was voluntary and uncompensated, names were optional, and individual responses and school identities were kept confidential.

Conflict Of Interest

The authors declare no conflict of interest.

Data Availability Statement

The data are not publicly available because they contain institutional information collected under confidentiality assurances. De-identified aggregate data are available from the corresponding author upon reasonable request.

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