

From Safety Resources to Emergency Readiness: Examining the Implementation Gap in Ghanaian Second-Cycle Schools

James Frimpong-Asante

Kwame Nkrumah University of Science and Technology

Christian Kofi Sarpong

kofichristian160@gmail.com

Kwame Nkrumah University of Science and Technology

Kelvin Ofori

Kwame Nkrumah University of Science and Technology

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Abstract

School safety requires more than the provision of physical resources or the adoption of formal policies. It also depends on whether safety arrangements are implemented through regular training, maintenance, drills, coordination and monitoring. This paper examines the implementation gap between safety resources and emergency readiness in Ghanaian second-cycle schools, focusing on the Ahafo Region. A quantitative cross-sectional survey was conducted among teachers and school administrators, yielding 144 usable responses from 200 questionnaires distributed. Data were analysed using descriptive statistics, Pearson correlation and multiple regression. Safety equipment, training programmes and emergency protocols were assessed as operational safety domains, while institutional safety commitment was assessed through leadership prioritisation, budgeting, policy enforcement, safety committees, coordination and monitoring. The findings show relatively low-to-moderate scores for safety equipment ($M = 2.66\text{--}3.18$), training programmes ($M = 2.40\text{--}3.09$) and emergency protocols ($M = 2.50\text{--}3.07$), compared with consistently high scores for institutional safety commitment ($M = 4.30\text{--}4.44$). Safety equipment, training and emergency protocols were strongly interrelated, but their relationships with institutional safety commitment were weak, and the regression model was not statistically significant ($R^2 = .047$, $p = .080$). The findings indicate a gap between formal institutional commitment and the operationalisation of safety practices. The paper argues that improving school safety requires attention to implementation capacity, routine practice, maintenance, training, coordination and accountability, rather than resource provision alone.

1. INTRODUCTION

Schools are expected to provide environments that protect students, teachers and staff from hazards while enabling effective teaching and learning (World Bank Group, 2023). The increasing exposure of educational institutions to disasters, infrastructural failures, health emergencies and climate-related hazards has strengthened the importance of school safety and emergency preparedness. Schools are not only places of instruction; they are also institutional environments in which large populations must be protected and organised during emergencies. International school-safety frameworks consequently emphasise safe learning facilities, school disaster management and risk-reduction education as interconnected elements of a resilient education system (UNESCO, 2023).

The scale of disruption associated with hazards reinforces this concern. Climate-related hazards alone disrupted schooling for at least 242 million children in 2024 (UNICEF, 2024). In Sub-Saharan Africa, the challenge is intensified by infrastructure deficits, financial constraints and exposure to hazards including fire, flooding and structural failure (UNESCO, 2016; UNDRR, 2016). The consequences can be particularly severe where emergency systems are weak. The 2021 school fire in Maradi, Niger, which resulted in the deaths of children, illustrates the human consequences of inadequate school safety arrangements (UNICEF, 2022).

Ghanaian schools face similar safety concerns. Recurring fire incidents, flooding and infrastructure deficiencies have raised questions about the adequacy of safety management and emergency response systems (Africa Education Watch, 2023). Second-cycle schools are particularly important in this context because many accommodate large numbers of students and combine classrooms, laboratories, dining facilities, dormitories and other spaces with different risk profiles. In the Ahafo Region, schools operate within contexts that include seasonal flooding, bushfires and infrastructure-related challenges. Yet empirical evidence on the extent to which safety resources and formal institutional arrangements are translated into operational emergency readiness remains limited.

The presence of a safety resource does not necessarily indicate that a school is prepared to use it. A fire extinguisher may be available but not serviced; an emergency plan may exist but not be communicated; and staff may express confidence in emergency response despite limited practical training. Similarly, school leadership may formally prioritise safety while operational practices remain weak. These distinctions point to an implementation problem: the effectiveness of school safety depends not only on what institutions possess or formally endorse, but also on how safety arrangements are enacted in everyday organisational practice.

This study therefore examines the implementation gap between operational safety resources and institutional safety arrangements in second-cycle schools in the Ahafo Region. Safety equipment, training programmes and emergency protocols are treated as operational dimensions of school safety. Institutional safety commitment is assessed through leadership prioritisation, safety budgeting, responsiveness to safety concerns, policy adoption and enforcement, safety committees, coordination with education authorities and the incorporation of safety into evaluation processes. The distinction is important because these institutional indicators describe the organisational environment supporting safety rather than direct evidence of emergency-response performance.

The study addresses three research questions: (1) What is the status of safety equipment, training programmes and emergency protocols in second-cycle schools in the Ahafo Region? (2) What is the level of institutional safety commitment in these schools? and (3) What relationships exist between operational safety resources and institutional safety commitment?

By distinguishing formal institutional commitment from operational safety practice, the study contributes to the growing literature on school safety by drawing attention to implementation as a critical dimension of preparedness. It also provides empirical evidence from a Ghanaian regional context in which school safety research remains limited.

2. LITERATURE REVIEW

2.1 Theoretical Perspective

The study is informed by Heinrich's Domino Theory of Accident Prevention (Heinrich, 1931). The theory conceptualises accidents as the outcome of a sequence of interconnected events and proposes that

removing a critical link in the sequence can prevent accidents or reduce their consequences. In school environments, unsafe acts may include failure to follow evacuation procedures or inappropriate use of equipment, while unsafe conditions may include defective safety equipment or inadequate emergency arrangements.

The theory provides a useful starting point for considering the role of safety equipment, training and emergency procedures. However, school safety is not solely a linear accident-causation problem. Organisational leadership, institutional culture, coordination, resource management and implementation processes shape whether safety provisions are translated into effective practice. The present study therefore uses Heinrich's framework to recognise the importance of unsafe conditions and unsafe acts while acknowledging that institutional processes may influence how those conditions and behaviours develop. This broader interpretation is consistent with critiques of linear accident models that emphasise the role of organisational and systemic factors (Reason, 1990; Tierney, 2014).

2.2 Safety Equipment

Safety equipment comprises devices and facilities intended to prevent injury, control hazards and support emergency response. In schools, these may include fire extinguishers, first-aid kits, emergency exits, evacuation signs, alarm systems and appropriately maintained electrical installations. Their effectiveness depends on availability, accessibility and functionality (FEMA, 2020; ISO, 2018). Equipment that is present but poorly maintained may provide limited protection during an emergency.

2.3 Training Programmes

Training programmes provide personnel with knowledge and practical skills for preventing and responding to emergencies. School safety training may include fire safety, first aid, evacuation procedures, equipment use, simulations and emergency-response exercises. Preparedness exercises can strengthen knowledge and response competence, particularly where training is practical and repeated (Skryabina et al., 2020). Training effectiveness is nevertheless influenced by administrative support, frequency and relevance to the hazards faced by the institution.

2.4 Emergency Protocols

Emergency protocols are procedures that guide actions during emergencies. They may specify evacuation arrangements, communication systems, responsibilities, coordination with emergency services and post-incident procedures (FEMA, 2020). Clear protocols can reduce confusion, but written plans have limited value when they are not communicated, practised and periodically reviewed. Drills and simulations provide mechanisms through which formal procedures can become organisational routines (Drabek and McEntire, 2003; Tierney, 2014).

2.5 Institutional Safety Commitment

Institutional safety commitment refers to the extent to which leadership and organisational systems prioritise, support and monitor safety. In this study, it encompasses leadership attention to safety,

allocation of resources, responsiveness to safety concerns, approved safety policies, enforcement of safety rules, active safety committees, relationships with education authorities and inclusion of safety in staff or school evaluation. These dimensions describe the institutional arrangements through which operational safety practices are supported and monitored.

2.6 Empirical Review

Existing studies identify safety equipment, training and emergency protocols as important components of school safety. Evidence from Ghana has identified weaknesses in fire safety equipment and emergency management in senior high schools (Owusu and Amankwah, 2019; Boateng, 2018). International evidence similarly indicates that functional equipment can support effective emergency response (Smith and Roberts, 2018).

Training is also important. Mensah (2020) reported that safety training can strengthen awareness and competence among teachers and students, while Skryabina et al. (2020) found that scenario-based preparedness exercises can improve response. Emergency protocols are similarly valuable when they are clear and practised. FEMA (2020) emphasises structured emergency procedures, while Asante (2022) highlights weaknesses in emergency planning within Ghanaian schools. Collectively, these studies indicate that equipment, training and protocols are necessary elements of school safety, but their effectiveness depends on implementation.

A gap remains in understanding how these operational dimensions relate to institutional safety arrangements in Ghanaian second-cycle schools. Much of the existing literature treats resources and preparedness as directly connected constructs. Less attention has been given to whether formal institutional commitment is reflected in operational practice. The present study addresses this gap by examining the status of operational safety domains alongside institutional safety commitment and by investigating whether the two dimensions are statistically aligned.

2.7 Conceptual Framework and Hypotheses

The conceptual framework links safety equipment, training programmes and emergency protocols to institutional safety commitment, as indicated in the Fig. 1. The framework assumes that operational safety practices exist within an institutional environment shaped by leadership, policy, budgeting, coordination and monitoring. The relationships are examined statistically as associations rather than as evidence of causality.

Source: Authors' construct (2026)

H1

Safety equipment is significantly associated with institutional safety commitment.

H2

Training programmes are significantly associated with institutional safety commitment.

H3

Emergency protocols are significantly associated with institutional safety commitment.

3. METHODOLOGY

3.1 Study Area

As shown in Fig. 2, the study was conducted in the Ahafo Region of Ghana, a relatively new administrative region created in 2019 (Government of Ghana, 2019). The region contains rural and urban settlements and an economy influenced by agriculture and mining. Second-cycle schools operate in communities including Goaso, Duayaw Nkwanta, Bechem, Hwidiem, Kukuom and Kenyasi. The schools operate within a context characterised by seasonal flooding, bushfires and infrastructure-related challenges. The region has sixteen senior high schools administered under the Ministry of Education and the Ghana Education Service.

Source: Mapsofindia.com (2026)

3.2 Research Design

The study adopted a positivist research philosophy and deductive approach. A descriptive cross-sectional survey design was employed to assess school safety practices and institutional arrangements at a single point in time. The design was appropriate for describing existing conditions and examining statistical associations among the study constructs. Because the study is cross-sectional, the observed relationships are interpreted as associations rather than causal effects.

3.3 Population, Sample and Sampling

The target population comprised teachers and school administrators in second-cycle institutions in the Ahafo Region. These groups were selected because they participate in implementing safety policies, supervising facilities and responding to emergencies. A sample of 200 respondents was selected using purposive sampling to identify participants with relevant knowledge and experience of school safety management (Palinkas et al., 2015). Of the 200 questionnaires distributed, 144 completed questionnaires were returned and deemed usable, giving a response rate of 72%.

3.4 Instrument and Measurement

Data were collected using a structured questionnaire comprising demographic items and four substantive constructs. Safety equipment was measured using five items, training programmes using five items, emergency protocols using five items, and institutional safety commitment using eight items. Responses were recorded on a five-point Likert scale.

As indicated in Table 1, the eight-item institutional safety commitment construct measured leadership prioritisation, safety budgeting, responsiveness to safety concerns, policy adoption, enforcement, safety committee activity, coordination with education authorities and the incorporation of safety into evaluation. These indicators capture institutional commitment and governance arrangements rather than direct behavioural measures of emergency response. The construct was therefore operationalised as institutional safety commitment in the analysis.

Table 1
Reliability Test Results

Construct	Items	Cronbach's alpha
Safety equipment	5	0.71
Training programmes	5	0.74
Emergency protocols	5	0.63
Institutional safety commitment	8	0.74
Source: Authors' construct (2026)		

The questionnaire was reviewed by experts in school safety management, educational administration and research methodology to establish face and content validity. A pilot test involving 20 respondents was conducted. Cronbach's alpha values of 0.71 and 0.74 were obtained for safety equipment and training programmes, respectively. Emergency protocols recorded an alpha of 0.63, indicating marginal internal consistency but acceptable use for exploratory analysis. Institutional safety commitment recorded an alpha of 0.74.

3.5 Data Collection

Data collection was conducted over four weeks after permission was obtained from school authorities. Research assistants were trained to support consistent administration of the questionnaire. Two hundred questionnaires were distributed and 144 usable questionnaires were returned.

3.6 Data Analysis

Data were coded and analysed using SPSS Version 26. Frequencies and percentages were used to describe respondent characteristics. Means and standard deviations were used to summarise the four substantive constructs. Pearson correlation was used to examine bivariate associations, while multiple regression was used to examine whether safety equipment, training programmes and emergency protocols jointly explained variation in institutional safety commitment. Statistical significance was assessed at the 0.05 level. Normality, linearity and homoscedasticity were assessed and considered acceptable, while multicollinearity was examined using Variance Inflation Factors.

3.7 Ethical Considerations

Participation was voluntary and respondents provided informed consent before completing the questionnaire. Participants were informed of the purpose of the study and their right to withdraw without penalty. Confidentiality and anonymity were maintained, and information was used solely for research purposes. Permission to undertake data collection was obtained from the relevant school authorities.

4. RESULTS

4.1 Characteristics of Respondents

The 144 respondents comprised 82 males (56.9%) and 62 females (43.1%). Almost all respondents were from public schools (97.9%), with 2.1% from mission/religious schools. Grade A and Grade B schools accounted for 92.4% of respondents. Most respondents were associated with mixed schools (78.5%), while 21.5% were associated with day schools, as indicated in Table 2.

Table 2
Background of Respondents

Characteristic	Category	Frequency	Percent
Gender	Male	82	56.9
	Female	62	43.1
Type of school	Public	141	97.9
	Mission/Religious	3	2.1
School category	Grade A	60	41.7
	Grade B	73	50.7
	Grade C	9	6.3
	Grade D	2	1.4
School status	Mixed	113	78.5
	Day school	31	21.5
Source: Authors' construct (2026)			

4.2 Safety Equipment

Safety equipment scores ranged from 2.66 to 3.18. Regular inspection and servicing of fire extinguishers recorded the lowest mean (2.66), while first-aid kits recorded the highest (3.18), as shown in Table 3. The findings indicate weaknesses not only in equipment availability but also in maintenance and inspection. This distinction is important because equipment that is not regularly inspected may not be functional when required. The findings are consistent with concerns regarding safety-equipment provision and maintenance in Ghanaian schools (Owusu and Amankwah, 2019; Boateng, 2018).

Table 3
Safety Equipment Measurement

Code	Measure	Mean	SD
SE1	Functioning fire extinguishers in key buildings	2.69	1.184
SE2	Fire extinguishers regularly inspected and serviced	2.66	1.154
SE3	Adequately stocked first-aid kits	3.18	1.151
SE4	Clearly marked evacuation signs and emergency exits	2.76	1.148
SE5	Regular inspection of electrical systems	2.82	1.238
Source: Authors' construct (2026)			

4.3 Emergency Protocols

Emergency protocol scores ranged from 2.50 to 3.07. The lowest scores concerned written and accessible emergency plans (2.50) and regular evacuation drills (2.51). Communication systems recorded the highest mean (3.07), as noted in Table 4. The results suggest that formal and practical aspects of emergency management are unevenly developed. In particular, infrequent drills indicate that procedures may not be sufficiently converted into practical knowledge and response routines.

Table 4
Emergency Protocols Measurement

Code	Measure	Mean	SD
EP1	Written and accessible emergency response plan	2.50	1.031
EP2	Evacuation drills conducted at least once per term	2.51	1.128
EP3	Clearly assigned emergency roles and responsibilities	2.99	1.144
EP4	Clear communication system for emergencies	3.07	1.181
EP5	Past incidents recorded and reviewed for improvement	3.05	1.155
Source: Authors' construct (2026)			

4.4 Training Programmes

Training scores ranged from 2.40 to 3.09. Emergency response training received by teachers during the preceding two years recorded the lowest mean (2.40), while staff confidence in implementing emergency procedures recorded the highest (3.09), as indicated in Table 5. The difference between reported training and confidence suggests that confidence may not necessarily reflect the extent of formal practical training. Collaboration with emergency services was also limited, indicating scope for strengthening external support and practical learning.

Table 5
Training Programs Measurement

Code	Measure	Mean	SD
TP1	Teachers received emergency response training in the past two years	2.40	1.026
TP2	Education on what to do during emergencies	2.93	1.186
TP3	Training in fire-extinguisher operation	2.63	1.152
TP4	Collaboration with emergency services for training or drills	2.70	1.207
TP5	Staff confidence in implementing emergency procedures	3.09	1.146

4.5 Institutional Safety Commitment

Institutional safety commitment recorded consistently high scores, ranging from 4.30 to 4.44. Leadership prioritisation and the existence of an approved safety policy recorded the highest means (4.44), as noted in Table 6. These findings indicate that respondents generally perceived strong institutional commitment to safety. However, the high institutional scores contrast sharply with the lower operational scores for equipment, training and emergency protocols. This divergence is the central empirical feature of the study.

Table 6
Institutional Safety Commitment Measurement

Code	Measure	Mean	SD
ISC1	Leadership prioritises safety in decision-making	4.44	0.512
ISC2	Specific budget allocated for safety resources and training	4.30	0.474
ISC3	Safety concerns raised by staff addressed promptly	4.36	0.496
ISC4	Written safety policy approved by school leadership	4.44	0.512
ISC5	Safety rules enforced	4.30	0.474
ISC6	Active school safety committee with regular meetings	4.36	0.496
ISC7	Formal relationships with district education authorities on safety	4.30	0.474
ISC8	Safety performance included in appraisal or school evaluation	4.36	0.496
Source: Authors' construct (2026)			

4.6 The Implementation Gap

The results reveal a marked difference between formal institutional safety commitment and operational safety practice. Institutional commitment indicators exceeded 4.30, whereas safety equipment indicators ranged from 2.66 to 3.18, training indicators from 2.40 to 3.09 and emergency protocol

indicators from 2.50 to 3.07. The pattern suggests that formal commitment is not consistently accompanied by operational implementation.

The implementation gap is particularly evident in the relationship between policy and practice. Respondents reported high levels of leadership prioritisation and approved safety policies, yet regular fire-extinguisher servicing, recent staff training, accessible emergency plans and evacuation drills received much lower scores. The findings therefore suggest that the existence of formal arrangements should not be treated as equivalent to emergency readiness. Safety systems become operational when resources are maintained, procedures are communicated and personnel are repeatedly trained and tested.

4.7 Correlation Analysis

Safety equipment, emergency protocols and training programmes were strongly and positively correlated ($r = .610-.685, p < .01$), as shown in Table 7. The results indicate that the operational dimensions of school safety tend to occur together. Schools reporting stronger equipment provision also tended to report stronger training and emergency protocols.

The relationships between operational safety domains and institutional safety commitment were weak and negative. Emergency protocols ($r = -.202, p < .05$) and training programmes ($r = -.183, p < .05$) had statistically significant negative correlations with institutional safety commitment, while safety equipment ($r = -.153$) was not statistically significant. These counterintuitive relationships should be interpreted cautiously. The institutional commitment measure captures perceptions of leadership and governance, whereas the operational measures capture specific practices and resources. The difference in construct content, together with the high concentration of institutional commitment responses, may have attenuated or distorted the expected associations.

Table 7
Correlations

Variables	Safety equipment	Emergency protocols	Training programmes	Institutional safety commitment
Safety equipment	1	.667	.685	– .153
Emergency protocols	.667	1	.610	– .202
Training programmes	.685	.610	1	– .183
Institutional safety commitment	– .153	– .202	– .183	1

Source: Authors’ construct (2026)

4.8 Multiple Regression Analysis

As indicated in Table 8, the regression model was not statistically significant, $F(3,140) = 2.296$, $p = .080$, and explained 4.7% of the variance in institutional safety commitment ($R^2 = .047$; adjusted $R^2 = .026$). None of the predictors was statistically significant: safety equipment ($\beta = .021$, $p = .869$), emergency protocols ($\beta = -.152$, $p = .188$) and training programmes ($\beta = -.105$, $p = .377$).

The findings indicate that the three operational safety domains did not significantly explain variation in the institutional safety commitment measure. This result should not be interpreted as evidence that equipment, training or emergency protocols are unimportant to actual emergency readiness. Rather, the analysis indicates that these operational measures were not statistically aligned with the institutional commitment construct measured in the survey. The relatively low explanatory power also suggests that organisational factors not captured in the model may be relevant to the translation of formal commitment into operational practice.

Table 8
Regression results

Model statistic	Value
R	.217
R ²	.047
Adjusted R ²	.026
F(3,140)	2.296
p	.080
Standard error of estimate	.290

Predictor	B	SE	Beta	t	p
Constant	4.620	.105	—	44.040	.000
Safety equipment	.008	.046	.021	.165	.869
Emergency protocols	-.063	.047	-.152	-1.322	.188
Training programmes	-.038	.043	-.105	-.885	.377
Source: Authors' construct (2026)					

4.9 Hypothesis Testing

The summary of the hypothesis results has been presented in Table 9.

Table 9
Summary of Hypothesis Results

Hypothesis	Beta	p-value	Decision
H1: Safety equipment is significantly associated with institutional safety commitment	.021	.869	Not supported
H2: Training programmes are significantly associated with institutional safety commitment	– .105	.377	Not supported
H3: Emergency protocols are significantly associated with institutional safety commitment	– .152	.188	Not supported
Source: Authors' construct (2026)			

5. Discussion

The study demonstrates that the principal challenge in the sampled schools is not adequately captured by asking whether institutions have safety policies or resources. The results show a substantial divergence between institutional safety commitment and operational safety practice. While respondents reported strong leadership commitment, budgeting, policy adoption and safety governance, operational indicators remained low to moderate. The findings therefore support an implementation perspective in which formal commitments must be translated into routine practices before they can contribute meaningfully to emergency readiness.

The safety-equipment results show that maintenance is a significant practical concern. Regular inspection and servicing of fire extinguishers recorded the lowest equipment score. This finding demonstrates why availability alone is an inadequate measure of safety capacity. Functional status, accessibility and routine inspection are equally important. A resource that is present but not maintained may provide little protection when an emergency occurs.

Training results reveal a similar implementation challenge. Teachers' recent emergency-response training received a mean of 2.40, while staff confidence was 3.09. The difference suggests that perceived confidence may exceed the level of formal practical preparation. Regular practical training and simulation exercises are therefore important for strengthening competence. The limited collaboration with emergency services further indicates an institutional opportunity for external expertise and practical exercises.

Emergency protocols also demonstrate the gap between formal arrangements and practice. Written emergency plans and evacuation drills recorded the lowest scores in this domain. The existence of a protocol is therefore not sufficient. Procedures must be accessible, communicated, assigned to specific responsibilities and tested through drills. Without repeated practice, personnel may be uncertain about evacuation routes, assembly points, communication procedures and individual responsibilities during an emergency.

The high institutional safety commitment scores are important because they suggest that the sampled schools do not necessarily lack formal recognition of safety. Rather, the evidence points to a difficulty in converting that commitment into operational practice. Leadership commitment, budgeting and policy structures provide an institutional foundation, but implementation requires maintenance, training, drills, monitoring and accountability. The implementation gap identified in this study therefore concerns the distance between institutional intent and enacted safety practice.

The non-significant regression findings reinforce the need for conceptual precision. Because the dependent construct measures institutional safety commitment rather than direct emergency-response performance, the regression does not constitute a definitive test of whether resources improve actual preparedness. The result instead indicates that operational safety measures did not explain meaningful variation in the institutional commitment construct. Future research should directly assess emergency readiness through observation, document verification, drill performance and practical simulations.

6. Conclusion

This study examined the implementation gap between safety resources and emergency readiness in second-cycle schools in the Ahafo Region of Ghana. The evidence shows a pronounced divergence between institutional safety commitment and operational safety practice. Leadership prioritisation, safety budgeting, policy adoption, enforcement and safety committees received high ratings, while safety equipment maintenance, staff training, emergency plans and evacuation drills received substantially lower ratings.

The findings suggest that school safety cannot be strengthened through resource provision or formal policy adoption alone. Effective emergency readiness depends on the capacity of institutions to operationalise safety through regular training, functional equipment, tested procedures, coordination and continuous monitoring. The strong interrelationships among safety equipment, training and emergency protocols indicate that these operational domains form an interconnected system. However, their weak relationships with institutional safety commitment show that formal commitment does not automatically translate into implementation.

The study consequently argues for a shift from a resource-availability perspective to an implementation perspective. Schools require not only safety resources but also organisational mechanisms that ensure those resources are maintained, understood, practised and evaluated. Strengthening this implementation capacity is essential for translating institutional safety commitments into meaningful emergency readiness.

7. Practical Implications

The findings have several implications for school management and education authorities. First, safety policies should be accompanied by implementation schedules specifying responsibilities, timelines and monitoring indicators. Second, school safety committees should be functional and responsible for

routine safety inspections, emergency drills, incident reviews and communication. Third, emergency-response training should be continuous and practical rather than limited to occasional awareness activities. Fourth, equipment should be subject to documented inspection and maintenance schedules. Fifth, schools should strengthen collaboration with emergency-response agencies to support training, drills and technical assessments. Finally, safety performance should be incorporated into routine school monitoring and evaluation so that institutional commitment is assessed against observable implementation.

8. Limitations and Future Research

The study has several limitations. First, it relied on self-reported questionnaire data, which may be affected by social desirability and perception bias. Second, the cross-sectional design does not permit causal inference. Third, the study focused on second-cycle schools in the Ahafo Region, which limits the generalisability of the findings to other regions and school contexts. Fourth, the emergency protocols scale recorded a Cronbach's alpha of 0.63, indicating marginal internal consistency. Fifth, the institutional safety commitment measure captures organisational perceptions rather than direct observation of emergency-response performance. Finally, students were not included as respondents, although their experiences and preparedness are important to school safety.

Future research should combine questionnaires with observations, document reviews, interviews and performance-based emergency simulations. Objective measures could include equipment functionality, frequency and quality of drills, staff training records, evacuation performance and response times. Comparative research across regions and school types could also determine whether the implementation gap identified in this study is widespread across Ghanaian schools.

Declarations

Ethical Statement

This study was approved by the Academic Committee of the Department of Land Economy, Kwame Nkrumah University of Science and Technology, Ghana. All procedures performed in this study involving human participants were conducted in accordance with relevant institutional guidelines and ethical standards.

Informed Consent

Informed consent was obtained from all individual participants included in the study. For participants below the legal age of consent, permission was obtained from their parents or legal guardians prior to participation.

Conflict of Interest

The authors declare that they have no conflict of interest.

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Authors' Contributions

All authors contributed to the conception and design of the study. James Frimpong-Asante, Christian Kofi Sarpong and Kelvin Ofori contributed to data collection and analysis. Christian Kofi Sarpong prepared the initial manuscript, and all authors contributed to its review and approved the final version.

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Figures

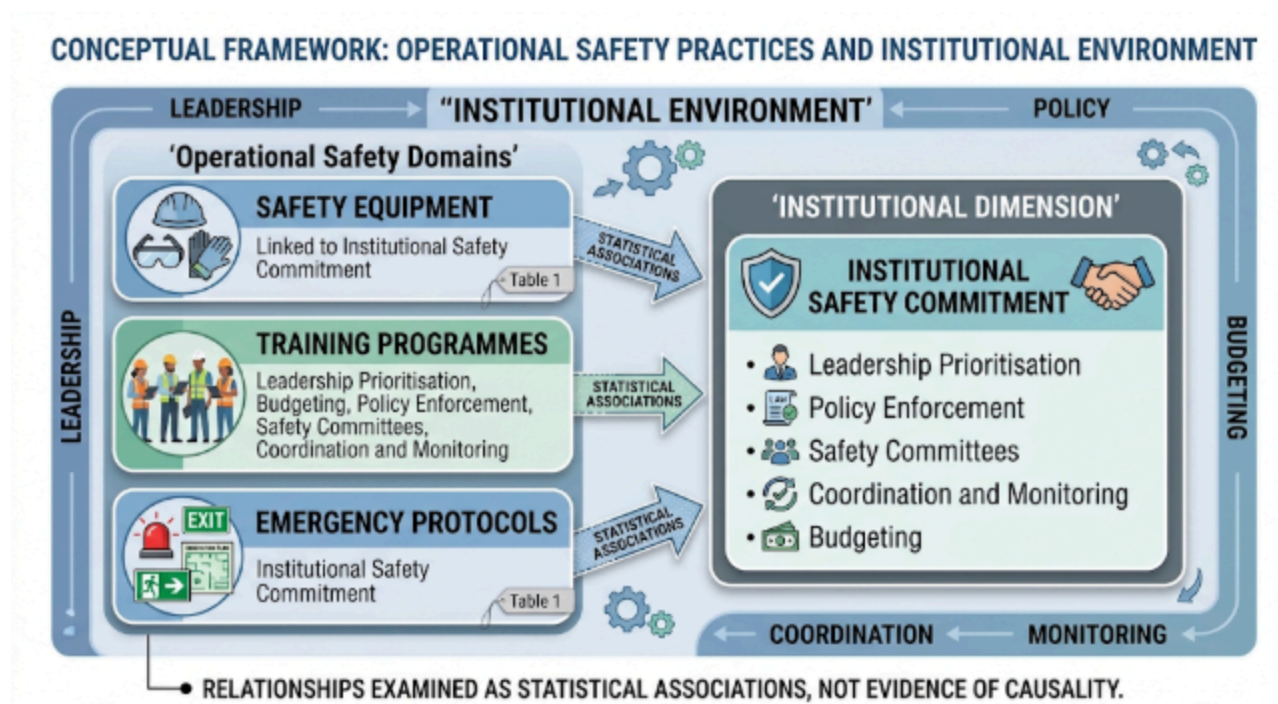


Figure 1

Conceptual Framework

Source: Authors' construct (2026)



Figure 2

Map of the Study Area

Source: Mapsofindia.com (2026)