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Safe school programs and disaster risk reduction in hazard-prone primary schools in Cambodia

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សារគន្លឹះ

- សាលាបឋមសិក្សាពុំទាន់មានសុវត្ថិភាពទាំងស្រុងសម្រាប់សិស្សនៅឡើយទេ។ ដូច្នេះ ការអនុវត្តកម្មវិធីសាលារៀនប្រកបដោយសុវត្ថិភាព និងការកាត់បន្ថយហានិភ័យនៃគ្រោះមហន្តរាយមានសារៈសំខាន់យ៉ាងខ្លាំងក្នុងការការពារសិស្ស និងគ្រូពីការស្លាប់របួស និងគ្រោះថ្នាក់ផ្សេងៗ។ សាលារៀនដែលកម្មវិធីទាំងនេះបានជ្រើសរើសយកមកអនុវត្តនាពេលបច្ចុប្បន្ន ដោយសារសាលារៀនទាំងនោះបានរងផលប៉ះពាល់យ៉ាងខ្លាំងដោយទឹកជំនន់ និងជំងឺរាតត្បាត ហើយរងផលប៉ះពាល់កម្រិតមធ្យមដោយគ្រោះរាំងស្ងួត ខ្យល់ព្យុះ គ្រោះថ្នាក់ចរាចរណ៍ និងសត្វអាសរពិស។
- គ្រូបង្រៀននៅសាលាមិនមែនគោលដៅគម្រោងមានឥរិយាបទចំពោះកម្មវិធីគ្រប់គ្រងហានិភ័យគ្រោះមហន្តរាយល្អជាងគ្រូនៅសាលាដែលកំពុងអនុវត្តគម្រោង និងគ្រូនៅតាមសាលាដែលកម្មវិធីត្រូវបានដកចេញ។
- លោកគ្រូ អ្នកគ្រូ ជាពិសេស អ្នកមកពីសាលាមិនមែនគោលដៅ និងអ្នកមកពីសាលាដែលកំពុងអនុវត្តគម្រោងនាពេលបច្ចុប្បន្ន ចូលរួមយ៉ាងសកម្មក្នុងសកម្មភាពកម្មវិធី

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- គ្រូបង្រៀនបានវាយតម្លៃខ្ពស់ចំពោះសកម្មភាព និងវិធានការទាំងឡាយដែលបានប្រើប្រាស់ក្នុងការកាត់បន្ថយគ្រោះថ្នាក់ និងវាយតម្លៃមធ្យមចំពោះកិច្ចខិតខំប្រឹងប្រែងដើម្បីការពារហានិភ័យដែលបណ្តាលមកពីអគ្គិសនី។ គ្រូនៅសាលាមិនមែនគោលដៅ ឬសាលាដែលកម្មវិធីត្រូវបានដកចេញបានវាយតម្លៃសកម្មភាពទាំងនេះថាមានប្រសិទ្ធភាពខ្ពស់ ចំណែកឯគ្រូនៅសាលា ដែលកំពុងអនុវត្តកម្មវិធីនាពេលបច្ចុប្បន្ន មានការចូលរួមកម្រិតមធ្យម។
- កម្មវិធីសាលារៀនមានសុវត្ថិភាពគួរតែត្រូវបានអនុវត្តតាមរយៈការអភិវឌ្ឍហេដ្ឋារចនាសម្ព័ន្ធ ការកសាងសមត្ថភាព កិច្ចសហប្រតិបត្តិការជាមួយអាជ្ញាធរមូលដ្ឋាន និងការចូលរួមពីមាតាបិតា។ នៅពេលមានគ្រោះមហន្តរាយម្តងៗ ឪពុកម្តាយតែងចង់ឱ្យកូននៅផ្ទះជាជាងទៅសាលារៀន ដោយសារពួកគាត់ព្រួយបារម្ភអំពីសុវត្ថិភាពរបស់កូន។ ការកសាងសមត្ថភាពជូននាយកសាលានិងគ្រូបង្រៀនមានសារៈសំខាន់ចំពោះការកែលម្អកម្មវិធីសាលារៀនប្រកបដោយសុវត្ថិភាព ពីព្រោះពួកគាត់ជាអ្នកពាក់ព័ន្ធសំខាន់ដែលទទួលបានអំណាចក្នុងការផ្តួចផ្តើមនិងធ្វើសកម្មភាពនានា ដែលធ្វើឱ្យស្ថានភាពសាលារៀននិងគុណភាពអប់រំបានប្រសើរឡើង។

Key messages

- Primary schools are not yet entirely safe for students. Thus, the implementation of safe school programs and disaster risk reduction is important to protect students and teachers from death, injury, and harm. Schools, where these programs are currently implemented, were selected as they were extremely affected by floods and epidemic diseases and moderately affected by drought, storms, traffic accidents, and poisonous reptiles.
- Teachers at non-target project schools have better attitudes towards disaster risk management programs than those where projects are currently being implemented, as well as those where programs have been phased out.

- Teachers, especially those from non-target schools and those where the project is currently being implemented, actively participate in safe school program activities such as training, planning, workshops, hazard mapping, and meetings with the Commune Council.
- Teachers assessed the degree to which actions and measures were used to minimize hazards as high, while efforts to prevent risks resulting from electricity were ranked as moderate. Teachers at non-target schools or those where the program had been phased out rated these actions as high, while those where the program was currently being implemented suggested a moderate level of involvement.
- Safe School Programs should be implemented via infrastructure development, capacity building, cooperation with local authorities, and parent involvement. During disasters, students tend to stay home and miss classes when parents become concerned about safety. Capacity building for principals and teachers is significant for improving safe school programs as these stakeholders because they become empowered to initiate and conduct activities that improve the condition of the school, and the quality of education.

Keywords: safe school program, disaster risk reduction, hazard-prone schools, primary schools, education, Cambodia

Background: safe school programs and disaster risk reduction

Disaster risk reduction (DRR) has become a crucial part of the school curriculum in Cambodia. Over time, the integration of DRR with safe school programs has arisen through various policies and frameworks to ensure student safety before, during, and after hazards. Key documents include the (1) *Cambodia Education Sector Emergency Preparedness and Response Plan (ERRP)*; (2) *Climate Change Strategic Plan for Education*; (3) *National Action Plan for Disaster Risk Reduction*, (4) *Child-Friendly School Policy*, and (5) Guideline on the Curriculum Development *for Integrating the Concepts of*

Disaster Risk Reduction and Resilience to Climate Change produced by Save the Children. Further, the *National Action Plan for Disaster Risk Reduction (2019-2023)* continues to build adaptive capacity and establish resilience within communities for sustainable development.

In 2007, the Ministry of Education, Youth, and Sport (MoEYS) introduced the *Child-Friendly Schools Policy* to promote safe schools, focused on health, safety, and child protection. This framework paved the way for a more concrete strategy for the integration of DRR in schools (MoEYS, 2007). While the *Child-Friendly Schools Policy* promoted school safety initiatives, a DRR and climate change adaptation (CCA) integrated curriculum was developed for Grades 4, 5 & 6. The DRR curriculum also integrated Earth Science and Geography subjects in Grade 8. To ensure a safe learning and teaching activities during disasters, the MoEYS also produced guidelines on setting up temporary learning shelters for use in flood emergencies for its Provincial Departments (MoEYS, 2014a).

In 2013, two policies were introduced to contribute to DRR education at schools in Cambodia. First, relevant line ministries developed a *Climate Change Strategic Plan for Education*. The benchmark was designed to support DRR in response to climate change. Second, the *National Action Plan for Disaster Risk Reduction (2014-2018)* provided a framework for improving school safety and the resilience in Cambodia, improving the resilience of primary and secondary education resilient (NCDM, 2013). In 2014, Cambodia's *EPRP* outlined the activities expected before, after, and during a

disaster. It has been used by all ministries and institutions, in line with the *Law on Disaster Management* (MoEYS, 2014b).

Implementing safe school programs is important if students and teachers are to be protected students from harm. These programs strengthen DRR and resilience through education. The MoEYS has been strengthening cooperation with development partners and mobilizing resources to reduce hazards to minimum standards and ensure the timely provision of education with safety at all levels. This includes early childhood, primary, and secondary education (MoEYS, 2014a). Under the ASEAN Safe Schools Initiative (ASSI), Plan International has implemented school safety programs in a range of countries since 2012. Additionally, Save the Children developed DRR materials for the school curricula. In 2019, the UNDP supported the Disaster Management Unit of the MoEYS to prepare a standard curriculum for Training of Trainer programs on school safety and disaster preparedness in Cambodia (CFE-DM, 2020).

In Cambodia, schools provide education over a period of ten months, commencing in November and finishing by August, the following year. Ordinarily, the school vacation period is in September and October. This academic calendar is challenged due to climate variability, especially floods and drought. Schools in flood-prone areas may face flooding in the early part of the academic year, as October tends to coincide with peak rainfall conditions. Schools also may face drought in May. To safeguard schools from natural hazards, child interests, needs, and rights need to be promoted. Building the capacity of parents and children with basic knowledge of disaster

management helps reduce the risks of negative impacts on children (World Vision, 2014). Thus, child participation in DRR implementation is essential in schools.

Using existing systems, *student councils* have increasingly paid more attention to the role of national and international NGOs in engaging children in civic duties in supporting societal behavioural change. The explicit objectives of the *student councils* are to (1) develop children as good children, good students, and good friends; (2) to educate children to feel affection for their country, culture, and traditions - to protect the environment - to obtain a profession - and to follow the teachings of Buddha; (3) to train and provide opportunities for children to work individually and in groups – to express opinions and to carry out voluntary activities for one's self, family, the school, and society; (4) to promote awareness about and implement child rights and democratic principles; (5) to promote awareness on how to control the spread of diseases, such as AIDS, avian flu, and drug addiction; and (6) to prevent child trafficking, child exploitation, and child labour (KAPE, 2009).

In 2003, the UNICEF and Kampuchea Action to Promote Education (KAPE) developed a formal implementation manual for *student associations*. It supported NGOs to implement child-friendly school programs in various provinces. Then, in 2007, the MoEYS, with support from UNICEF, developed a handbook outlining specific roles, policies and guidelines for *student councils*. These guidelines were intended to be relevant to Grades 4 to 9, working closely *Child-Friendly Schools Policy* framework. This framework defined six

key dimensions of an inclusive child psycho-social learning environment (KAPE, 2009).

In 2013, the MoEYS, with support from Child Rights Foundation (CRF), and in partnership with Plan International, developed safe school guidelines, backed by Dimension Three of the *Child-Friendly Schools Policy* framework. The guideline has provided specific directions on the implementation of the three pillars of safe schools: (1) a safe learning environment, (2) DRR, and (3) disaster reduction and resilience education, support mechanisms, and monitoring and evaluation. It aims to reduce disaster risks caused by humans, as well as other school hazards, thereby improving access and better continuity of education for children in Cambodia.

In 2015, the MoEYS, with support from Save the Children, developed a new Guideline on Curriculum Development for Integrating the Concepts of DRR and Resilience to Climate Change. The guideline integrates the concepts of DRR, climate change adaptation, and resilience in science and a social science subject for students in Grades 4, 5, & 6 and aimed to improve capacity and provide knowledge to teachers regarding learning about DRR and CAA for students in primary schools. This knowledge of DRR was adopted from international and regional experiences and translated into the local context. The guideline provides knowledge about (1) natural hazards (floods and drought); (2) land mines and explosive remnants of war (EWR); (3) climate change; (4) agriculture, food security and nutrition; (5) personal safety; and (6) health and sanitation. It featured teaching methodologies, case studies, role-play activities, games, and research results translated into the local

context. In general, the approach helps teachers learn how to teach primary school students about DRR and CCA (MoEYS, 2015).

This policy paper examines school-based climate risks and vulnerability, caused by hazards at primary schools. It has three specific objectives: (1) to identify hazard-prone schools; (2) to explore the knowledge and attitudes of primary school teachers about DRR and CCA; (3) to describe the integration of the safe school program into the curriculum; and examine the level of engagement in the safe school program. The findings of the research will be useful for policymakers, planners, practitioners and researchers interested in the success of the safe school program in Cambodia and beyond.

Research Methodology

The research collected data from both primary and secondary sources regarding DRR integration and safe school programs in Cambodia linked to the project, *Promoting Safe Schools Initiative in Cambodia (PSSIC) Phase II*. This project is implemented by the Child Rights Foundation in partnership with Plan International, Cambodia. Two structured questionnaires to collect quantitative data. One was used to interview students and the other to interview school principals, teachers, school support committee members, and influential adults. An unstructured questionnaire was also used to collect qualitative data from key informants from the Provincial Office of Education (PoE), principals, and teachers. Further, a standardized questionnaire was used to collect quantitative data from primary school teachers from five primary schools in *Stung Treng* Province (where the project is currently implemented), as well as two schools in *Kampong Cham* Province and three

schools in *Phnom Penh* Municipality (where the project has been phased-out), and five schools in *Takeo* Province (which are not a target of the project). A total sample of 116 teachers (49 female) was selected as interviewees (Table 1).

In addition to the interviews, field observations were carried out at all 15 schools to access additional contextual information about school safety regarding physical infrastructure, social events, and student participation (especially for girls) in disaster risk management activities. These observations were also used to validate data collected from phone interviews with the principals and teachers from the three schools in Phnom Penh. This was important as it was not possible to interview students from the schools in Phnom Penh. Focus group discussions were also held with teachers from each school to discuss relevant issues at each of the participating schools in the research. Finally, a consultative meeting was organized with the Joint Action Group on Disaster Risk Reduction Education Working Group (JAG-DRR-EWG). Participants in this group included the NGOs Save the Children, World Vision, Plan International, CRF, and ChildFund Cambodia. The meeting was organized to present preliminary findings from the research, collect feedback, and discussed policy implications and plans. The meeting took the form of a forum, facilitating interactions between the researchers and participating organizations to validate and clarify the initial results.

A desk review was used to conduct a qualitative problem and situation analysis that collected, organized, and synthesized available information from reports, previous assessments, and raw data from the projects. This enabled

the project context to be explored in detail and assessed against indicators to identify problems and gaps faced by the project over a specific period. The goal of this research is to develop key insights into the successes and challenges that the project has faced, particularly the participation and leadership of girls in implementing disaster risk management activities. This research is intended to go beyond a project evaluation to inform the nationwide advocacy on this topic.

Table 1. Interviewees for the standardized questionnaire

Name of schools	**Number**	**Total sample size**
Current project schools (Stung Treng)	5	39 (21 females)
Phased-out schools (Kampong Cham)	2	16 (8 females)
Phased out schools (Phnom Penh)	3	21 (8 females)
Non-target schools (Takeo province)	5	40 (12 females)
Total		**116 (49 females)**

The study employed advanced descriptive statistical methods using the Statistical Package for Social Science software for data processing and analysis. Quantitative analysis tools include ANOVA or f-test, t-test, and chi-square analyses. A weighted average index was used to rate the degree of vulnerability and satisfaction that teachers and students held towards disaster risk management programming at the study schools. The five-scales were: (1) considerably less; (2) less; (3) moderate; (4) high; (5) very high. F–test (ANOVA) was applied to test whether there was a significant difference between the average results from each type of school studied, namely, schools where the project is currently implemented; schools where the project has been phased out; and schools that are not a target of the project. An f-test was applied to the teacher questionnaires, while chi-square analysis was used

to test the association between two categorical variables. For instance, an association with involvement in a safe school program.

Results and Findings

Identifying hazard-prone primary schools

Table 2 shows that overall, teachers indicated a low degree of both vulnerability and satisfaction with the different hazards present at each primary school. However, these perceptions differed significantly for each type of school assessed. Principals and teachers shared similar views about the risk of floods, hot weather, water shortages, and windstorms at the five schools in *Stung Treng*.

Table 2. Perception of teachers toward a hazard-prone school

Attributes	**Phased-out project**		**Current implementation**		**Non-target project**		**Overall**		**P-*value***
	(n=37)		(n=39)		(n=40)		(n=116)		
	WAI	OA	WAI	OA	WAI	OA	WAI	OA	
Floods	0.48	M	0.67	H	0.02	VL	0.38	L	***0.000******
Droughts	0.22	L	0.57	M	0.18	VL	0.32	L	***0.000******
Storms	0.31	L	0.48	M	0.12	VL	0.30	L	***0.000******
Death from lightning	0.08	VL	0.43	M	0.10	VL	0.20	L	***0.000******
Traffic accidents	0.26	L	0.62	H	0.16	VL	0.34	L	***0.000******
Epidemics	0.16	VL	0.12	VL	0.02	VL	0.10	VL	**0.021***
Poisonous reptiles	0.04	VL	0.43	M	0.01	VL	0.16	VL	***0.000******
Falling trees	0.10	VL	0.13	VL	0.06	VL	0.10	VL	0.210

Note: weight average index measured on a five-point scale [very low (VL) = 0.00–0.20, less (L) = 0.21– 0.40, moderate (M) = 0.41–0.60, high (H) = 0.61–0.80, very high (VH) = 0.81–1.00]. OA = Overall assessment.

While seasonal flood has regularly interrupted classes, other hazards occur only occasionally. In comparison, other schools where the project is

currently implemented or has already been phased out were more prone to these other threats. While teachers at the school where the project is currently implemented perceived a high degree of vulnerability to floods and traffic accidents, they indicated a moderate degree of vulnerability to droughts, storms, death from lightning, and poisonous reptiles. Many schools in Stung Treng have been built from wood, which is less resilient to hazards such as floods and storms than brick. While schools are often located on high ground, hazards such as floods and heavy rains create difficulties for students and teachers when travelling to school. For instance, roads to *O'Trel* Primary School were often very slippery or covered with water during the rainy season. The teachers at this school were female, and experience difficulty in travelling to school during these times.

Figure 1: (a) An old school building destroyed by the storm; and **(b)** The new school building supported by United World Schools

The principal at *O'Rey* Primary School indicated that climate change was resulting in increased temperatures, especially during the dry season. Over the past two years, this had resulted in insufficient water for use at the school. Teachers have resorted to requesting students to bring bottles of water from home to consume at school. At *Pong Tuek* Primary School, floods and storms

were rated as the two most significant hazards as the school buildings were been damaged when the roof was blown away.

Similarly, a storm destroyed a building at *Veal Ksach* Primary School in 2011, which required students to move to the pagoda to study. With the financial and technical support from United World Schools and resources contributed by the community, a new wooden building with four classrooms was constructed. During the focus group discussions, teachers from *Takeo*, *Kampong Cham*, and *Stung Treng* identified different types of risks experienced when travelling to and from school including accidents, as well as physical and emotional violations. Students were not entirely safe when not accompanied by an adult. These risks were indicated to be more significant during the rainy season. For some children, it became necessary to travel to school by boat, and parents worried about their safety. During flood events, students from islands found it difficult to travel to school and tended to stay at home. This was a particular problem for students without a parent that stayed at home during the day to help bring them to school. In these cases, the student missed class, for fear of accidents during travel to school.

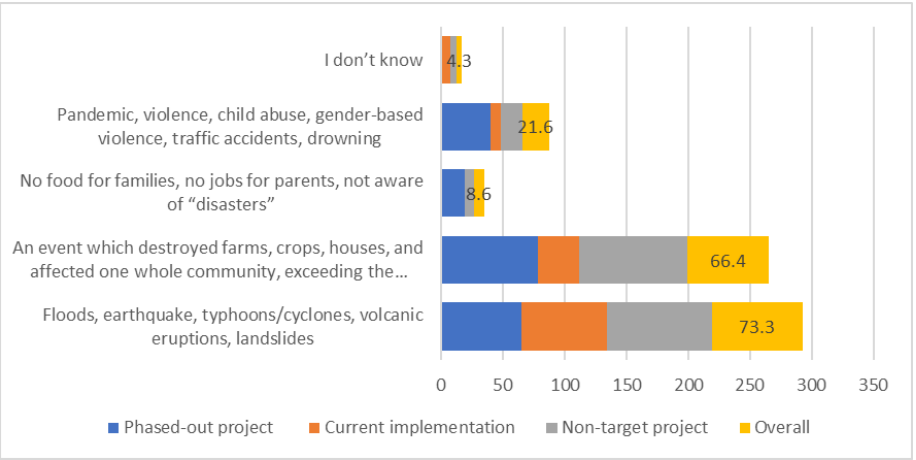
Teachers from schools that were not targeted by the project, or those where the project has been phased out indicated a very low, or low degree of vulnerability for all attributes except for flooding, which was perceived to be a moderate hazard. Seasonal flooding has affected *Boeung Trav Bun Rany Hun Sen* Primary School, where a child drowned during a flood. The principal shifted classes to the pagoda during flood events to discourage children from playing in ponds on the school campus following this.The epidemics were

perceived to have a low degree of vulnerability as the study did not consider COVID-19. Epidemics that were considered included cholera and diarrheal diseases, malaria, and dengue fever. While COVID-19 was not considered in the research, key informants revealed that it had a significant impact on access to education. Students suffered when schools were closed to help manage the pandemic. In Takeo, students could not access alternative online classes as they did not own smartphones. Other students had access to a smartphone, but could not afford to pay for an internet connection. COVID-19 did not impact the health of students as they wore masks and washed their hands regularly.

Knowledge and attitudes held by teachers

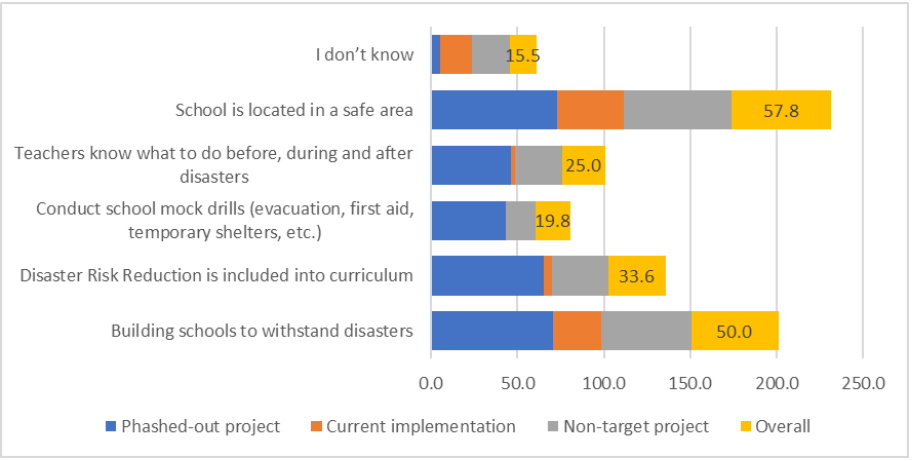
Teachers and students were requested to answer five different questions, as a measure of their knowledge of the definition of disaster (Figures 2 - 4). A small percentage of teachers claimed they could not define what a disaster is, compared to one-third of students.

Figure 2. The definition of *disaster* by teachers



Focus group discussion in *Takeo*, *Stung Treng*, and *Kampong Cham* revealed that while students learned about events happening in their community, such as floods, storms, and water scarcity, this did not translate into knowing the definition of a disaster. Overall, when defining a disaster, a high proportion of teachers (73.3%) referred to different hazards, such as floods or cyclones; 66.4% referred to the destruction of an asset such as houses or crops; while 21.6% referred to the personal tragedies such as the pandemic, traffic accidents, or violence. Only 8.6% of teachers specified food security or unemployment. These results were in contrast to teachers from schools not targeted by the project, who referred mainly to different types of hazards (85.0%), or the destruction of assets (87.5%).

Figure 3. The definition of a *safe school* by teachers



Teachers from the schools where the project had been implemented and later phased out defined the destruction of assets (78.5%) and different types of hazards (64.9%) as the definition of disaster. Other definitions include

around 40.5% of teachers mentioned impacts such as the pandemic, traffic accidents, drownings, and violence; while 18.9% and food insecurity and unemployment (18.9%). None of the teachers from these schools suggested that they did not know the definition of a disaster. None of the teachers at schools where the project was currently being implemented defined a disaster as food insecurity and unemployment. Instead, they mentioned different types of hazards (69.2%) or the destruction of houses or crops (33.3%). Notably, only 7.7% of these teachers did not know the definition of a disaster, while in schools that were not targeted by the project, this was much higher (17.5%).

When asked to define a safe school, around half of all teachers identified secure locations (57.8%), buildings that can withstand disasters (50.0%), DRR being integrated into the curriculum (33.6%), and teachers knowing how to conduct disaster risk management activities (25.0%). Teachers at schools where the project was currently being implemented had limited knowledge of safe schools. For example, only 38.5% referred to a secure location, and 28.2% referred to a building designed to withstand disasters. Teachers where the program had previously been phased out fared better.

For instance, 73% mentioned a secure location; 70.3% mentioned a building designed to withstand disasters, 64.9 % mentioned DRR being integrated within the curriculum, 45.9% mentioned teachers knowing how to conduct disaster risk management activities (45.9%), and 43.2% mentioned the practice of holding simulation drills (43.2%). At schools not targeted by the project, 62.5% mentioned a secure location, 52.5% mentioned a building

designed to withstand disasters, 32.4% mentioned DRR curriculum integration, and 27.5% mentioned teachers knowing how to conduct disaster risk management activities.

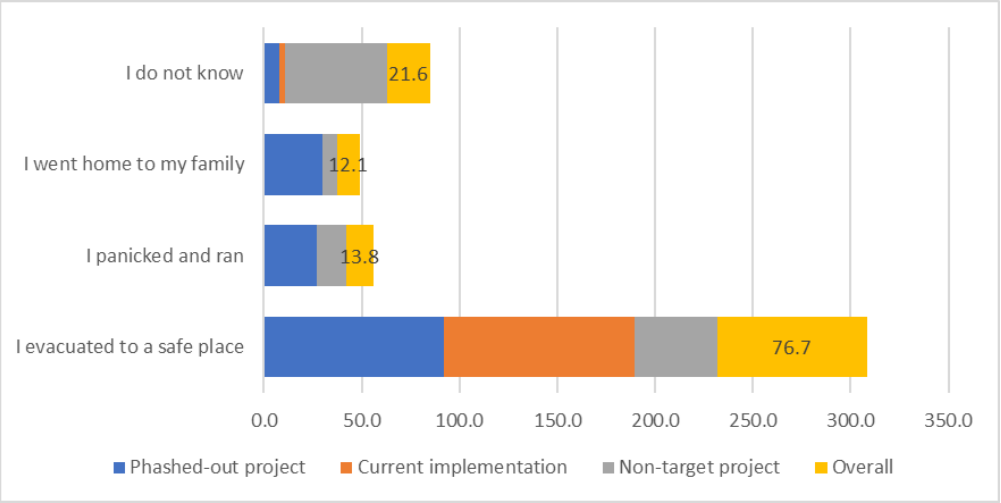
Table 3. The attitude of teachers towards disaster risk management

Attribute	**Phased out schools**		**Current implementation**		**Non-target schools**		**Overall**		**P-*value***
	(n=37)		(n=39)		(n=40)		(n=116)		
	WAI	OA	WAI	OA	WAI	OA	WAI	OA	
I believe that people need to prepare for disasters, including myself and my family.	0.29	L	0.30	L	0.39	L	0.33	L	**0.001****
In school, I want to participate with other children to do DRR activities such as knowing the hazards, preparing for disasters, practising evacuation, etc.	0.24	L	0.31	L	0.37	L	0.31	L	**0.000*****
I want to share my knowledge and understanding of disaster risk reduction and safety measures with my peer through an awareness campaign and child-to-child learning.	0.26	L	0.31	L	0.37	L	0.32	L	**0.000*****
I believe that life-saving skills and knowledge should be trained to and owned by girls, boys, and women and men.	0.29	L	0.33	L	0.33	L	0.32	L	0.306

A weight averaged index revealed that teachers rated their attitude towards preparation for disaster, engagement in disaster risk reduction with children, knowledge sharing and understanding, and life-saving skills and knowledge as low.

An ANOVA analysis indicated that teachers from schools not targeted by the project perceived had much higher perceptions of the program than schools where the project had been phased out, especially regarding disaster preparation, engaging in DRR activities with children, knowledge sharing, and understanding (Table 3).

Figure 4. How teachers responded to disaster events



Teachers worked with NGOs such as Plan International, CRF, and World Vision to organize simulation drill exercises to gradually improve their capacity. Principals and teachers were thankful to NGOs for supporting these activities. However, teachers raised concerns after the project at the school did not have the budget to continue these exercises.

Integrating the Safe School Program within Primary Schools

Overall, teachers at each type of school actively participated in implementing a Safe School Program. This generally involved training, planning a workshop at the school, and hazard mapping. More than half of the teachers also participated as volunteers in events, school simulation exercises, and meetings at the commune level. However, only about one-fifth of teachers participated in workshops in other provinces.

Table 4. Teacher participation in supporting Safe School Programs

Attributes	**Phased-out projects**	**Current implementation**	**Non-target project**	**Overall**
	(n=37)	(n=39)	(n=40)	(n=116)
Workshop at school	81.1	87.2	77.5	81.9
Workshop in another province	29.7	17.9	7.5	18.1
Training	78.4	82.1	95.0	85.3
School simulation exercise	64.9	74.4	47.5	62.1
Safe school planning	73.0	87.2	85.0	81.9
Volunteer work	54.1	87.2	55.0	65.5
Hazard mapping identification	70.3	82.1	82.5	78.4
Meeting at Commune Council	45.9	53.8	57.5	52.6
Meeting at NGO	62.2	82.1	92.5	79.3

This opportunity was only accessed by 7.5% of teachers from schools where the project was not being implemented and 17.9% of teachers from where the project is currently being implemented and 29.7% of teachers from schools where the project has been phased out. Teachers from non-target project schools had less opportunity to participate in workshops at schools to

conduct simulation exercises than teachers where the project was being implemented. Teachers from non-target project schools tended to join training and meetings at the Commune Council or NGOs instead (Table 4).

Table 5. Relationship between teachers' participation and the three types of projects

Attribute		**Types of school**			X^2	**P-*value***
		Phased-out school	**Current implementation**	**Non-target school**		
Are you involved in any activity for promoting school safety?	No	0	2	1	1.073	0.585
	Yes	16	37	39		
	Total	16	39	40		
Do you have a role in supporting a safe school for disaster risk reduction?	No	2	14	17	4.576	0.101
	Yes	14	25	23		
	Total	16	39	40		
Does the school have the infrastructure for disabled students within the school premises or access to the school?	No	0	0	2	2.809	0.245
	Yes	16	39	38		
	Total	16	39	40		
Are you getting training on first aid, prevention, and response to disasters?	No	3	14	13	1.571	0.456
	Yes	13	25	27		
	Total	16	39	40		

A consultative meeting organized by NGO members of the JAG-DRR-EWG confirmed that a Safe School Program is essential for reducing hazards at schools. It was also discussed that as a national project, it required more financial support from public investment, as NGOs could only partial support school development activities. Furthermore, the school required more

investment in infrastructure. The principal at *Kah Dach* Primary School outlined that CRF had helped to organize meetings and prepare paperwork to respond to disaster risk management, but that the school could not continue to hold these events in an ongoing manner due to a lack of resources. It was agreed that the workshops, meetings, and training were useful in disaster risk management, but they were not managed by the school, but rather by the NGO.

Chi-square analysis was used to explore the relationship between the three types of schools: the promotion of school safety, teacher support for the Safe School Program, infrastructure for disabled students, and training received on first aid, prevention, and disaster responses (Table 5). The analysis reveals no significant differences among the three types of schools for each of these attributes. For example, if there was a storm event during class time, all students would be supported by the teachers to evacuate to a safe area. In particular, students are not permitted to play in the rain due to the health impacts of doing so. Lightning strikes are one serious risk that may occur when playing in storms. Principals and teachers at *Srey Bandith* Primary School work closely with NGOs and local authorities to prepare for disasters and to manage their risks. NGOs and schools also work to develop the capacity among students to protect themselves. The school also has a hotline for students and parents to communicate with the school.

Table 6 demonstrates that most teachers are involved in events, especially at the schools where the project is not a target and where the project is currently being implemented. However, less than half of the teachers were

given roles and responsibilities in the discussion (42.2%), decision-making (32.8%), or a presenter (31.0%). In total, only 6.9% of teachers experienced being speakers at the events they participated in. This was higher in non-target schools (10.0%). Teachers from non-target schools were also more likely to be involved in the discussion (67.5%) or decision making (60.0%), compared with 10.3% and 5.1%, respectively in the schools where the project is being implemented.

Table 6. Roles and responsibilities of teachers at the events participated

Attributes	**Pashed out projects**	**Current implementation**	**Non-target project**	**Overall**
	(n=37)	(n=39)	(n=40)	(n=116)
Speaker	5.4	5.1	10.0	6.9
Presenter	35.1	5.1	52.5	31.0
Participants	75.7	94.9	97.5	89.7
Decision maker	32.4	5.1	60.0	32.8
Discussant	48.6	10.3	67.5	42.2

Each year, the commune council organizes a meeting where the annual commune investment plan is prepared. Teachers, school principals, and parents are invited to indicate their priorities for community development activities. A teacher from *Ang Soklang* Primary School reported that disaster risk management is often not prioritized in the budget as it is not a severe problem in the community. However, local authorities do work with NGOs and schools to disseminate information that may help mitigate any possible disasters. However, while the school action plans in each study schools indicated support for disabled students, the school infrastructure was found

to be insufficient to meet their needs. Further, the researchers did not observe any disabled students at the school during to interview.

Figure 5. Warning signs alerting students to the risk of trees falling

More than half of the issues raised during the events by teachers were discussed with authorities, especially in the schools where the project is currently implemented (Table 7). Teachers believed that the ideas presented at events were used for improving school disaster management plans (39.7%) and shared with local authorities (32.8%). In total, about one-quarter of teachers suggested that their contribution was actioned, however, this was as low as 2.6% in the schools where the project is currently implemented. A higher proportion of teachers (61.5%) in these schools acknowledged that their ideas has been discussed, but they had not seen any action or improvement in the management plan. The teachers at non-target project schools were more optimistic that their ideas were used to enhance management plans, discuss, provide input to local authorities, and take action. The teachers at phased-out project schools also shared similar experiences to teachers at non-target project schools.

Table 7. Results of engagement of teachers at events participated

Attributes	Phased-out projects	Current implementation	Non-target project	Overall
	(n=37)	(n=39)	(n=40)	(n=116)
Improving school disaster management plan	40.5	25.6	52.5	39.7
Taking action	32.4	2.6	40.0	25.0
Giving inputs to government authorities, school principals	45.9	5.1	47.5	32.8
Issues discussed	43.2	61.5	50.0	51.7
Nothing happens	8.1	0.0	0.0	2.6

A PoE officer describes how the provincial government and NGOs worked to support safe schools through capacity building and infrastructure development. The local government and NGOs also organized various events to allow principals, teachers, and parents to discuss and share their opinions and suggestion to improve the quality of education and safe schools. Similarly, an officer at the Provincial Department of Education, Youth and Sport in Stung Treng also agrees on the importance of the involvement of principals and teachers as follows:

> 'The suggestions and concerns raised by principals and teachers are beneficial for establishing safe schools, but the provincial governments cannot respond to all their needs. In rural communities, NGOs play a significant role in contributing to building capacity, raising awareness, and improving school infrastructure.' [Personal communication, Teacher, Stung Treng].

Engagement in Safe School Programs at Primary Schools

Table 8 reveals that most teachers actively participated in school disaster management activities, including the establishment, planning, development of a warning system, slogans for risk reduction, and coordination with stakeholders. Both schools where the project has been phased-out and where the project was currently implemented tended to be more active in preparing emergency materials, developing early warning systems, slogans, and safety signs, practising simulation drills, and maintaining school materials. In schools that were not a target of the project, teachers tended to be more active in establishing committees, risk assessment, and planning. The consultative meeting concluded that the management team and teachers were crucial in establishing safe schools as they led students to conduct activities each day. The role of NGOs in building capacity in DRR at schools was also significant as it empowered principals and teachers to initiate and conduct activities to improve the school condition and the quality of education for children. A principal at *Hun Sen Svay Sronos Nos* Primary School stated:

> 'Before I accessed training in disaster risk management, I had no idea how to manage risk. Now I know how to work with teachers and student councils to establish a safe school. An NGO also helped our school to prepare simulation drills, which have increased awareness among students about disasters. Knowledge received in training by NGOs have provided us with the knowledge and skills about how to deal with disasters. I did not have any idea on how to deal with catastrophes before the training'.

Equipment provided by NGOs was beneficial for waste management, disaster risk management, and other emergencies. NGOs also prepared

washing areas and waste management equipment to support the development of a green campus.

Table 8. Engagement of teachers in school disaster management

Attribute	Phased-out projects	Current implementation	Non-target school	Overall
	(n=37)	(n=39)	(n=40)	(n=116)
Establishment of committee for disaster management	70.3	84.6	80.0	78.4
Identification of roles and responsibilities for the committee for disaster management	70.3	84.6	77.5	77.6
Assessment of risks, hazards, vulnerability, and capacity	78.4	71.8	80.0	76.7
Development of school safety plan or disaster risk reduction action plan	75.7	71.8	80.0	75.9
Preparation of emergency materials in responding to disasters	86.5	89.7	85.0	87.1
Development of an early warning system for disasters (microphone, whistle, siren, and information board)	83.8	84.6	70.0	79.3
Document development or slogans for risks deduction in school	86.5	89.7	75.0	83.6
Development of safety signs	94.6	89.7	82.5	88.8
Putting up warning signs at dangerous places	94.6	92.3	87.5	91.4
Practice and improve simulation drills in school to respond to disaster	94.6	89.7	77.5	87.1
Maintenance of school materials and documents during disasters	67.6	74.4	55.0	65.5
Prepare an education continuity plan that is inclusive, free from abuse and violence	86.5	89.7	92.5	89.7
Coordinate with community and government for networking, advocacy, and fundraising/resource mobilization	78.4	87.2	80.0	81.9

The school also helped to develop a structure for a disaster risk management program, however, most schools did not have the resources to implement these activities. Despite this, the schools were still optimistic

about the development of disaster risk reduction action planning. The consultative meeting called for additional funding to support schools to implement a safe school program as part of a national policy via the MoEYS to reduce risks from hazards faced by students at schools. As schools have clear structures, they often cannot continue NGO programs after they are completed, except when they do not require a budget.

The participation of teachers in risk education activities across each type of school was high, particularly in terms of disseminating information (91.4%) and integrating DRR into the curriculum (89.7%). The teachers at schools where the project was currently being implemented focused on these two aspects curriculum integration, information dissemination, as well as first-aid training, and disaster response (Table 9).

Figure 6. (a) An incinerator (b) A hand washing area

Meanwhile, teachers at schools where the project was not implemented focused more on capacity building in disaster risk education. At *Hun Neang Bakheng* Primary School there was a strong focus on hazard reduction. The school both incorporated DRR activities into the curriculum, while also purchasing the necessary equipment and materials to mitigate risks among

students. The integration of DRR into the curriculum requires both financial and human resources, and many schools lack sufficient resources to conduct activities without the support of the MoEYS and its associated line departments, or NGOs. In particular, schools experience difficulties in developing action plans and training new staff without external support.

Table 9. Engagement of teachers in risk reduction education

Attribute	Phased-out schools	Current implementation	Non-target schools	Overall
	(n=37)	(n=39)	(n=40)	(n=116)
Integration of DRR in the primary school curriculum	83.8	94.9	90.0	89.7
The conduct of DRR education in extracurricular activities	83.8	66.7	70.0	73.3
Capacity building for teachers on disaster risk reduction	86.5	82.1	90.0	86.2
Regularly disseminate information to students about Do and Don't to be safe during disasters	91.9	94.9	87.5	91.4
Training on first aid, prevention, and response to disasters	81.1	94.9	77.5	84.5
Coordination with the community for common key messages on safe school	83.8	87.2	87.5	86.2
The DRR materials in school are gender and culture-sensitive e.g.: use of the local language, all children can play any role in SDMC regardless of their gender	86.5	89.7	82.5	86.2

The teachers also assessed the actions and measures made by teachers to minimize hazards as high, except for efforts to prevent risks resulting from electricity, which were rated as moderate (**Table 10**). Teachers at schools

where the project has been phased out rated these efforts higher than those where the project was currently being implemented. The teachers from the different categories of schools held various perspectives about school hazards, except for the prevention of risks from falling into ponds or uncovered wells, which concerned teachers significantly.

Table 10. School activities to minimize risks from hazards

Attribute	**Phased-out project**		**Current implementation**		**None-target project**		**Overall**		**P-*value***
	(n=37)		(n=39)		(n=40)		(n=116)		
	WAI	OA	WAI	OA	WAI	OA	WAI	OA	
Actions to prevent disasters from physical infrastructures (falling objects, sharp table edge)	0.73	H	0.65	H	0.73	H	0.70	H	**0.021***
Actions to prevent risks resulting from electricity	0.69	H	0.44	M	0.61	H	0.58	M	**0.000*****
Measures to prevent risks from fire hazards	0.71	H	0.70	H	0.68	H	0.69	H	**0.000*****
Measures to prevent risk from school fence to prevent people from outside or animals to enter the campus	0.80	VH	0.52	M	0.68	H	0.66	H	0.504
Measures to prevent risks from falling into the pond, uncovered well, fragile roof.....etc.	0.65	H	0.57	M	0.69	H	0.64	H	**0.000*****
Check old trees that may cause harms	0.76	H	0.58	M	0.76	H	0.70	H	0.128

Teachers from schools where the project has been phased out rated efforts to prevent risks associated with electricity, and dangers from school

fences, highly. All schools had developed action plans to mitigate the impacts of disasters, however, they did not have the financial resources to implement the activities within them, and required NGOs to sponsor these efforts.

Each school worked with local authorities to improve school infrastructure and the school environment. Commune Councils helped schools to fill ponds with soil, or construct fences. Fences were observed to be very important in protecting children from an accident. Commune Councils also worked with police to facilitate the travel of students to and from school, with traffic accidents identified as a significant issue by many teachers. In addition, students were informed about the fall of trees, old buildings, and drug issues.

Table 11. Teachers' response and preparedness committees

Attributes	Phased-out schools	Current implementation	Non-target schools	Overall
	(n=37)	(n=39)	(n=40)	(n=116)
Early warning and information disseminating teams	91.9	84.6	67.5	81.0
Evacuation Team	94.6	84.6	67.5	81.9
Search and Rescue Team	94.6	84.6	67.5	81.9
First aid Team	94.6	84.6	75.0	84.5
Security Team	89.2	84.6	75.0	82.8

Table 11 demonstrates that schools in the study area had prepared to mitigate impacts from hazards via the establishment of response and preparedness committees. In total, five committees were established, comprising teams focus on early warning and information dissemination; evacuation; search and rescue; first aid; and security. Different types of school committees focused on different tasks, with schools where the program had been phased out, having established more committees than other schools.

Schools not targeted by the program were more focused on establishing response and preparedness committees. Both principals and teachers were aware of how to respond to hazards, especially more frequent one-off floods, traffic accidents, and water shortages.

Table 13. Available first aid materials for prevention and response to disasters

Attribute	Phased out schools	Current implementation	Non-target schools	Overall
	(n=37)	(n=39)	(n=40)	(n=116)
Scissor and nail-cutter	91.9	100.0	97.5	96.6
Forceps	67.6	100.0	97.5	88.8
Gloves	97.3	100.0	100.0	99.1
Cotton	100.0	100.0	97.5	99.1
Alcohol	100.0	100.0	100.0	100.0
Betadine	100.0	100.0	100.0	100.0
Anti-bacterial ointment	100.0	59.0	95.0	84.5
Sterilized bondages	91.9	100.0	97.5	96.6
Plasters	100.0	100.0	100.0	100.0
Balm	100.0	94.9	77.5	90.5
Triangular bondages	100.0	100.0	100.0	100.0
Face-mesh	97.3	76.9	95.0	89.7

First-aid materials were readily available at schools to help respond to disasters and were essential for both teachers and students to adhere to the plans (Table 13). These materials were less available at schools not targeted by the project than in other schools, while schools where the project was currently implemented tended to have less access to face masks. All key stakeholders were observed to work towards ensuring that each school was equipped with sufficient materials and infrastructure to manage disasters via

the treatment of minor injuries. Often these materials were sponsored by the government, local authorities, or NGOs.

Figure 7. Pillars of the safe school Program

Picture 8. First aid box at schools for DRR response

These key stakeholders also financially supported schools to respond to urgent hazards, such as severe floods. For instance, CRF provided lifejackets for students at *Veal Ksach* Primary School for use when travelling to school during flood events. Despite this, parents still hesitated to send their children to school at these times and additional awareness-raising activities were required. Another example from Takeo observed where local authorities provided masks and alcohol to reduce the impact of COVID-19. Schools also

wished to be provided with soap and other materials to maintain student hygiene.

Conclusion and Policy Implications

The findings from the 15 schools surveyed in *Stung Treng*, *Takeo*, *Kampong Cham*, and *Phnom Penh*, in addition to a review of the literature on Safe Schools Programming across Cambodia, have led to the following insights: (1) Primary schools in Cambodia are not yet entirely safe for students. Schools, where the project was currently being implemented, were highly affected by flood and epidemic diseases and moderately affected by droughts, storms, traffic accidents, and poisonous reptiles. Better school infrastructure was observed in *Phnom Penh* and *Kampong Cham* than in *Takeo* and *Stung Treng*. In general, students were not safe while travelling to and from schools on foot or by water, as traffic measures facilitated by each school were not sufficient; (2) Teachers could define a disaster well. For instance, they were able to easily identify different kinds of hazards (73.3%) and observed that the destruction of houses and farms was an example of this (66.4%).

However, 15.5% of teachers were not aware of the concept of a safe school. Regardless of this, teachers devoted attention to providing secure locations (57.8%), buildings that could withstand disasters (50.0%), and integrating DRR activities into the school curriculum (33.6%). Teachers at schools not targeted by the project were observed to have a more positive attitude toward disaster risk management programming than other schools; (3) Teachers, especially at the schools not targeted by the project, and those

where the project was currently being implemented were found to have actively participated in the Safe School Programs, including engaging in training, planning, workshops, hazard mapping exercises, and other meetings with the Commune Council; (4) Teachers indicated that they had implemented actions and measures to minimize hazards to a high degree, except those related to electricity, where efforts were rated as moderate. Teachers in schools that the project did not target or those where the project has been phased out, rated these measures higher than those where the project was currently being implemented.

DRR integration into schools occurs through the implementation of the Safe Schools Program from the national to the sub-national level. This study at 15 schools has demonstrated that this process has been useful in reducing vulnerabilities to hazards at schools. Thus, schools should continue to be supported in this endeavour as follows:

- **Improving school infrastructure**. NGOs have shifted their focus from a software to a hardware approach. This reflects the findings of this study that improved physical infrastructure is critical to building disaster resilience at schools. At the same time, the adaptive capacity of principals, teachers, and students is also dependent upon capacity building and awareness-raising. In future projects, the budget for physical infrastructure at schools should be increased.
- **Increasing cooperation with local authorities.** The study observed limited cooperation between schools and local authorities, especially the police. Commune councils may play a more active role in facilitating greater

collaboration in this context. Existing policies on Safe Villages and Safe Communes may help gain the support schools require from the police. In particular, improved collaboration may reduce hazards related to traffic accidents, school-based violations, and even rescue activities during floods.

- **Improving the capacity of teachers and principals using existing resources.** Schools need to consolidate the experiences gained from NGO programs on DRR integration and Safe School Programming to enable these concepts to the transferred to new schools. NGOs such as CRF, World Vision, and Plan International have worked to initially build capacity and raise awareness in select schools, yet, now the focus should shift to principals and teachers from these schools as focal persons to share their experiences with others.
- **Engaging support from parents and the community.** Parents are key local resources for supporting schools physically and financially. In *Stung Treng* and *Kampong Cham*, schools were observed to be built with assistance from parents. Schools should continue to work closely with parents to mobilize local resources to improve school infrastructure.

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