

FEEDBACK FROM THE FIELD

**Promotion of Disaster Education in Nepal:
The Role of Teachers as Change Agents**

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Disaster education allows community members to initiate pre-disaster measures at the individual level. The National Society for Earthquake Technology (NSET) has initiated a school safety program in selected government schools in Nepal, one of the most disaster prone countries.

This study outlines the current condition of disaster education in Nepal, identifies teachers' levels of awareness and evaluates the effect of NSET's work. A survey of 130 teachers was conducted in over 40 schools in which it was found that while a level of disaster education in Nepal is widespread, it has not been implemented systematically but depends on the awareness of individual teachers. More teachers in NSET project schools provided disaster education than in the typical government and private schools that were observed. However, the quality of education provided was found to be the same. The teaching focused particularly on the effects of disasters in which the teachers had personal experience. These topics were often covered even if they were not included in the textbooks.

The majority of teachers surveyed reported a need for curriculum development in this area. However, considering the results listed above, it can be considered that teacher training is the most important step to improve disaster education in Nepal.

Introduction

Recently, many catastrophic disasters have occurred across the world. These include the Kobe Earthquake of 1995 in Japan, the Indian Ocean Tsunami of 2004, the Pakistan Earthquake of 2005, Hurricane Katrina of 2005 in the USA, and various other water-induced disasters. Central and local governments play a significant role in preventing or reducing damage caused by natural disasters. However, it is the local communities who suffer the most severe damages. This suggests that disaster management should be the role not just of governments but also of communities.

Although local people need to take measures at the individual level, they often do not do so for various reasons; some may not

recognize the importance of taking measures and others may not take action to prevent or reduce damages even when they know the importance. The gap between intention and action is one of the crucial issues of disaster management. Disaster education is one way (albeit not the only way) in which this problem can be addressed. Schools can provide education to all students equally.

In addressing disaster management in schools, many researchers and workers in NGOs, UN agencies and other organizations have pointed out that both building type and disaster education are significant factors in developing school safety, especially in the case of earthquake disasters (see Izadkhan 2004; Dixit 2004; Wisner et al. 2004; COGSS 2006a, COGSS 2006b). Building safety is valuable for disaster reduction in the shorter term and education can play a significant role in developing a culture of disaster reduction from a long term perspective. Disaster education can be delivered in different ways by schools, NGOs or other organizations. In addition, training can be offered (mock drills, evacuation training, rescue training, etc.) and disaster topics included within the curriculum and as extra curricula activities. Much training focuses on response, and this kind of training is not sufficient for promoting pre-disaster measures and preparedness. Moreover, while disaster education delivered by organizations external to schools can be useful, it is difficult for schools to make disaster education sustainable after such an activity or project. In this study, education by schools is the focus.

The importance of disaster education at school level is recognized by the works of Radu (1993), Kuroiwa (1993), Arya (1993), Andrews et al. (1998), Frew (2002) and Shaw et al. (2004). Shaw and Kobayashi (2001) stress that schools play an important role in raising awareness among students, teachers, and parents. However, Douglas and David (2001) emphasize the role of researchers, planners and emergency managers in facilitating preparedness. In addition, UNESCO and Kyoto University, Japan have collected and published case studies of disaster reduction from all over the world. The case studies include research, projects and other activities of NGOs, researchers, governments and other disaster related institutions. Few of the case studies focus on schools and especially teachers for disaster reduction (Shaw and Rouhban 2005). This paper attempts to

fill this gap in the existing body of work.

Nepal is extremely vulnerable to natural disasters due to its fragile geology (Paudel et al. 2003). In Nepal, environmental degradation, growth of population and unregulated development cause frequent floods and landslides. In addition, Nepal is an earthquake prone country that is becoming increasingly vulnerable to earthquake risk with each passing year due, in addition to those factors already mentioned, to a construction practice that has actually deteriorated over the last century. The National Society for Earthquake Technology-Nepal (NSET-Nepal), an NGO conducting projects for earthquake disaster reduction, is conducting a School Earthquake Safety Program (SESP) in government (public) schools in Nepal. SESP consists of three parts; retrofitting or rebuilding of schools; training masons; and training and awareness raising for students, parents, and communities.

Recent work conducted by the Graduate School of Global Environmental Studies of Kyoto University has monitored and evaluated NSET-Nepal's program. The goal was to promote disaster education in school and its objectives were 1) to understand the current condition of implementing disaster education in schools; 2) to identify teachers' awareness of disaster education and needs for promoting disaster education in schools; and 3) to identify the effect of SESP on teachers. This paper details the results of this work, drawing upon the collected information from the first author's visit to NSET-Nepal and also upon the document written by Khadka (2005), from the Ministry of Home Affairs in Nepal.

The School Earthquake Safety Program (SESP)

As previously mentioned, Nepal is an earthquake prone country. The last large earthquakes occurred in 1986 and 1934. The earthquake of 1934 caused the loss of over 11,000 people. Earthquakes of this size occur approximately every 75 years (NSET-Nepal and GHI 2005). The next large earthquake could occur at any time and thus the people of Nepal need to focus on risk reduction and to take mitigation measures.

Schools are at the center of their communities and also become evacuation centers after a disaster occurs. After the Kobe Earthquake

which occurred on 17th January, 1995 in Japan, more than 300,000 affected people were evacuated to schools or public institutions at the peak period. The local government closed these evacuation centers in August 1995 but even at that late stage, more than 6,672 people were staying in 194 schools or other places (Asahi Simbun 1996).

However, school buildings are themselves vulnerable to earthquake damage, especially those in government schools in Nepal. Unlike private schools, government schools do not have the resources to recover by themselves. Therefore, NSET-Nepal's work focuses on government schools.

The SESP conducted by NSET-Nepal consists of three parts; the first is retrofitting or rebuilding the school building, the second consists of training for masons and teachers, and the final part is an awareness program for students, teachers, and the community. One of the aims of this project is community based disaster management through these three activities. The masons involved learn to use and understand suitable technologies for earthquake safety through the instruction given by NSET-Nepal. After the project, they can build safe houses or buildings. Teachers, students and the community are given information related to disaster management in the SESP. The following topics are explored in lectures:

- Disaster risks in Nepal.
- Earthquake risk in Nepal and Nepalese schools.
- Damages caused by past earthquakes.
- The importance of structural measures.
- Technology for earthquake safety.

The teacher training consists of six parts which are explicated below:

1. Overview of disaster risk management.
 - Overview of disasters in Nepal.
 - Past disaster history, loss and damage.
 - Existing disaster risk management system in Nepal.
 - Sensitizing video show/discussion.
2. Earthquake hazards and risks.
 - Earthquake hazards and risks in Nepal and the Kathmandu valley.
 - The earthquake vulnerability of schools in Nepal.

- Sources of earthquake risk in schools.
- 3. Earthquake risk mitigation/reduction measures.
 - Structural mitigation measures—retrofit/reconstruct the building.
 - Non-structural mitigation measures—fix, fasten, anchor, replace, relocate, rectify, manage, restore, reinsure.
- 4. Earthquake preparedness in schools.
 - Emergency preparedness for individual safety.
 - Emergency preparedness for collective safety.
 - Preparedness planning—before earthquake.
 - Preparedness planning—during and after earthquake.
 - Do's and don'ts during and after earthquakes.
- 5. Strategies for earthquake risk reduction.
 - Overview of School Earthquake Safety Program.
 - Video clip regarding school safety.
 - Roles of school teachers in earthquake awareness in the community.
 - Possibilities for disaster safety in school curriculum.
 - Case study visit to field—sharing experiences.
- 6. Exercise on emergency preparedness planning.
 - Introduction of emergency preparedness in schools.
 - Group work on model preparedness planning.
 - Presentation of group work.
 - Discussion and finalization of a model of preparedness planning prepared by the groups.
 - Next steps for teachers after training.

Disaster Education in Schools in Nepal

Teachers can play an important role in providing disaster education to students. Therefore, a survey of teachers was conducted to understand the current condition of disaster education in schools and the needs of teachers to further this provision. Using a questionnaire, 130 teachers of 8th, 9th and 10th grades (14-17 age group students) were interviewed. Teachers of science and environment-related subjects were specifically selected. Environment-related topics are termed H.P.E. ('Health, Population, and Environment') in the figures or tables shown here.

Table 1: Teacher Information

Subject	SESP	Government	Private	Total
Science	3	18	17	38
Environment	4	13	26	43
Social Studies	2	15	23	40
Others	1	5	3	9
Total	10	51	69	130

Explanatory note:

‘SESP’ refers to government schools where SESP was conducted.

‘Government’ refers to government schools where SESP has not been conducted.

‘Private’ refers to private schools.

‘Others’ refers to where the teacher’s subject was not one of the above three subjects or where they are in charge of several subjects.

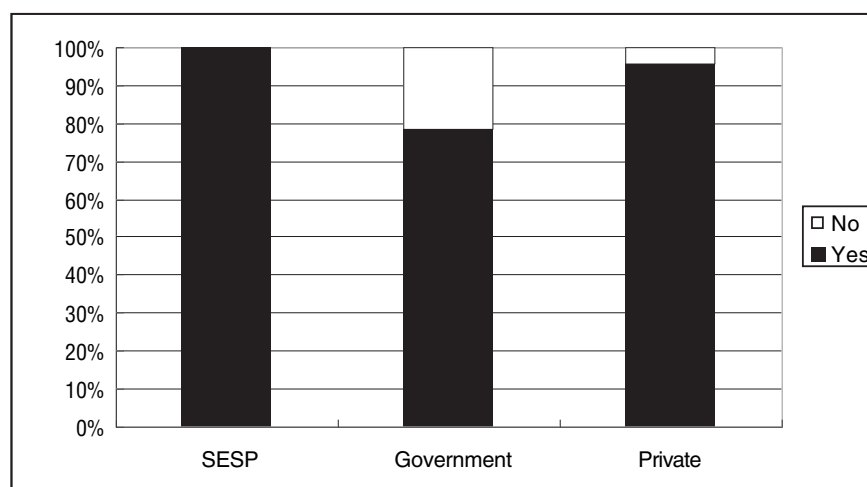
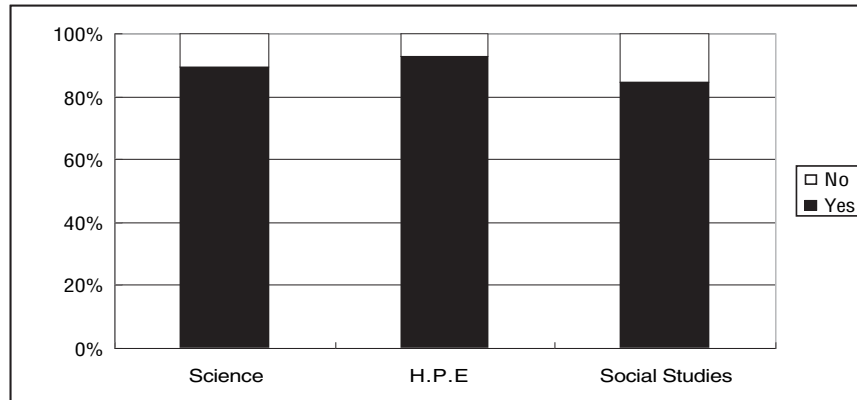
Figure 1: Current Status of Implementation of Disaster Education in Each School Type

Table 1 gives details of the teachers involved in the study: the types of schools and the subject areas in which they work.

Figures 1, 2 and 3 show the current status of implementing disaster education in schools. The research demonstrated that most teachers in Nepal are implementing some form of disaster education (Figure 1). All teachers in the SESP schools and the vast majority of teachers in private (95%) and government (80%) schools are implementing disaster education. Private schools in Nepal are able to pass on more information to students than government schools as they have more

Figure 2: Current Status of Implementation of School Disaster Education Across Subject Areas.



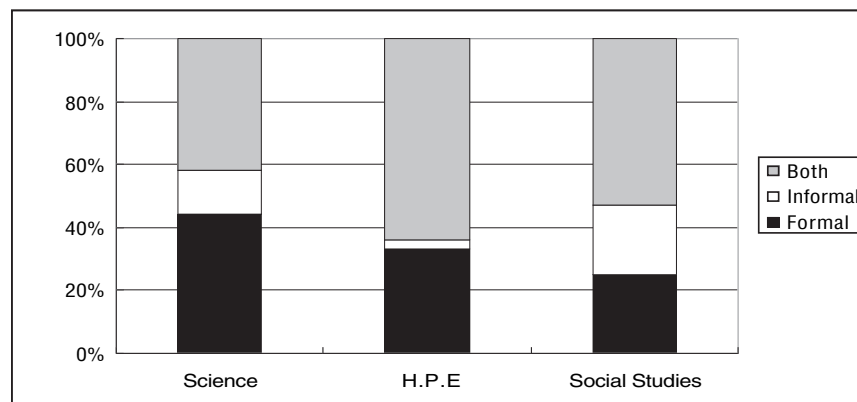
Explanatory note:

Yes: implemented.

No: not implemented.

H.P.E. refers to the subject “Health, Population, and Environment”.

Figure 3: Style of School Disaster Education.



Explanatory note:

H.P.E. refers to the subject “Health, Population, and Environment”.

time for disaster education. This is hypothesized to be the cause of the difference between government schools and private schools. That more SESP school teachers are providing disaster education than other government school teachers can be regarded as a positive impact of the SESP of NSET-Nepal.

Figure 3 shows the style of disaster education in school hours. Most teachers are implementing disaster education formally or are adopting a mixture of formal and informal measures.

In this study, curriculum education is focused upon to understand the current status of disaster education. In Nepal, curriculum education is that which is implemented based on textbooks. The areas highlighted in grey in Table 2 indicate those disasters that are covered by the textbooks.

Table 2: Disasters in Curriculum Education (percentage of teachers who have taught a corresponding disaster in a corresponding subject).

Subject	Grade	Flood	Landslide	Earthquake	Epidemic	Wind Storm	Environment and Environment Degradation
Science	8	31	31	27	4	23	31
	9	91	94	94	3	6	29
	10	26	29	35	16	0	39
H.P.E.	8	87	87	48	52	39	78
	9	82	79	45	68	47	87
	10	59	59	30	41	30	76
Social Studies	8	67	71	71	21	38	63
	9	58	53	32	26	71	76
	10	44	41	18	21	33	67

Explanatory note:

The grey zone indicates that the corresponding disaster is in the textbook of the corresponding subject and grade.

H.P.E. refers to the subject "Health, Population, and Environment".

From the grey zone marked in Table 2, it is evident that the education in Nepal focuses on flood, landslide and environment. Earthquake, epidemic and windstorm are not focused upon to the same extent. It is hypothesized that this gap is caused primarily by the relative frequencies of occurrence of disasters in Nepal. Flood, landslide and environmental degradation are disasters which occur

often and which are closely related to livelihoods. Earthquake and windstorm are disasters whose cycle of occurrence is much longer than that of flood or landslide. The anomaly here is epidemic which has a high frequency of occurrence but a low frequency of being part of disaster study, possibly due to it being perceived to be more closely related to health and sanitation issues rather than disasters per se.

The questionnaire explored which components of disasters were focused upon by teachers in their disaster education (see Table 3). “Cause and nature of disasters” and “Effects of disasters” for flood and landslide are covered in all three subject groups but other elements of the disaster cycle were not covered fully. It can be argued that disaster education in Nepal functions primarily to teach the causes and effects of floods and landslides.

Table 3: Disaster Related Topics in Curriculum Education

Subject	Topics	Flood	Landslide	Earthquake	Epidemic	Wind Storm
Science	Cause and nature of disasters	92	92	87	11	13
	Effects of disasters	87	87	82	8	13
	Lessons from past disasters	29	26	45	3	8
	Disaster risk reduction/mitigation	68	71	61	11	8
	Preparedness	24	26	26	0	0
	Response-rescue and relief	11	11	8	0	0
	Reconstruction and Rehabilitation	3	3	3	0	0
	Role of community/institution	8	8	5	3	0
H.P.E	Cause and nature of disasters	79	77	33	49	21
	Effects of disasters	67	65	35	44	21
	Lessons from past disasters	35	30	28	21	12
	Disaster risk reduction/mitigation	51	49	23	37	16
	Preparedness	21	21	21	9	7
	Response-rescue and relief	19	21	19	14	12
	Reconstruction and Rehabilitation	7	14	9	7	7
	Role of community/institution	37	40	21	28	14
Social Studies	Cause and nature of disasters	73	73	48	23	55
	Effects of disasters	58	60	38	28	50
	Lessons from past disasters	45	35	40	18	38
	Disaster risk reduction/mitigation	45	50	33	23	33
	Preparedness	25	23	18	13	23
	Response-rescue and relief	38	40	28	18	23
	Reconstruction and Rehabilitation	28	28	28	13	18
	Role of community/institution	53	48	40	25	33

Explanatory note:

The grey zone indicates that the corresponding disaster is in the textbook of the corresponding subject and grade.

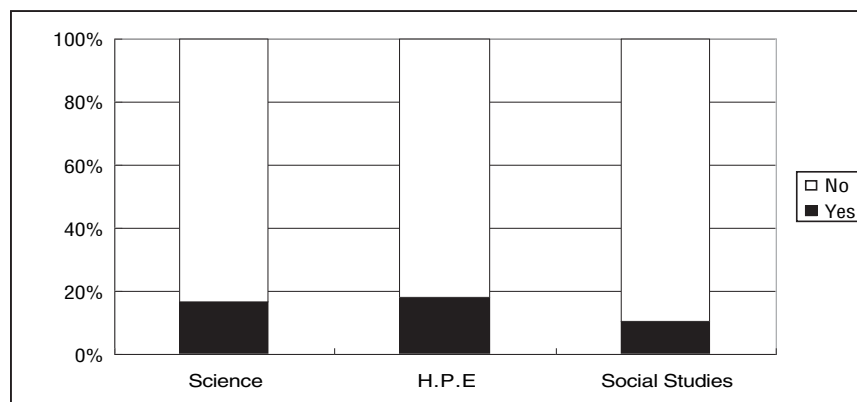
H.P.E. refers to the subject “Health, Population, and Environment”.

Overall, topics covered in the textbooks are taught by more teachers than those without textbook support. However, clearly, some teachers do teach disaster education without the use of textbooks.

In Table 3, disaster reduction for flood, landslide and earthquake are mentioned in textbooks. When they are compared with causes and effects of the above mentioned disasters, the percentage of teachers is not high. In addition, reconstruction and rehabilitation for many disasters are not covered by textbooks. When these topics are compared to other non-covered topics such as response, rescue, and relief, fewer teachers teach them as a part of disaster education.

In the survey, teachers were asked about their level of satisfaction with disaster education. Figure 4 shows responses to a question asking whether the disaster related topics of Table 3 are systematically covered in disaster education; the data reveal a high degree of dissatisfaction.

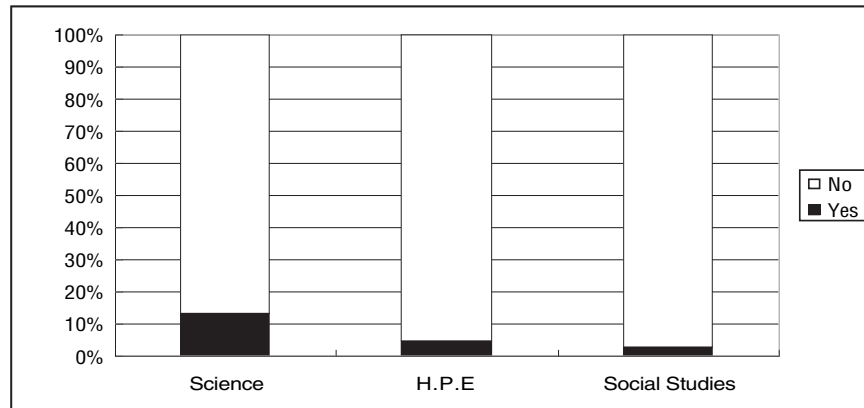
Figure 4: Satisfaction of Teachers with Degree of Systematic Delivery of Disaster Related Topics. (Teachers were asked if the disaster related topics of Table 3 are systematically covered in disaster education).



Explanatory note:

H.P.E. refers to the subject "Health, Population, and Environment".

Figure 5: Satisfaction of Teachers About the Current Formal Education System for Disasters.



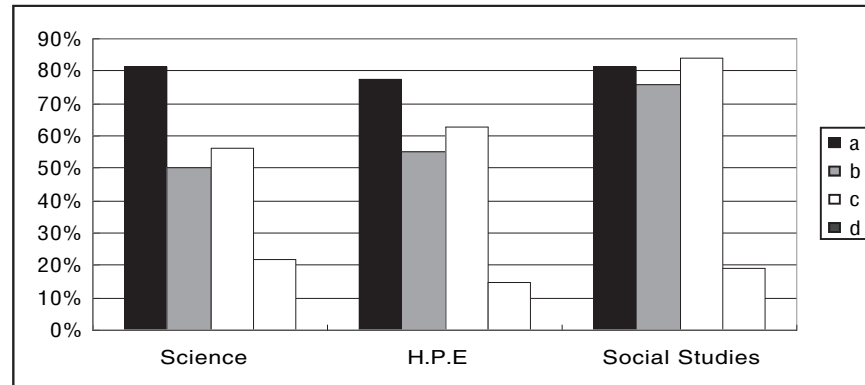
Explanatory note:

H.P.E. refers to the subject “Health, Population, and Environment”.

Figure 5 shows teachers’ satisfaction with the current formal education system for disaster education generally. Science teachers reported slightly higher levels of satisfaction (at just over 10%) than other subject teachers but there are very low levels of satisfaction reported by teachers of all types.

Figure 6 shows the needs expressed by teachers in order for them to better promote disaster education in schools. Teachers were given several options and chose multiple options. Around 80% of teachers highlighted the need for curriculum development. The majority of social studies teachers, more than in the other study areas, report a need for teacher training.

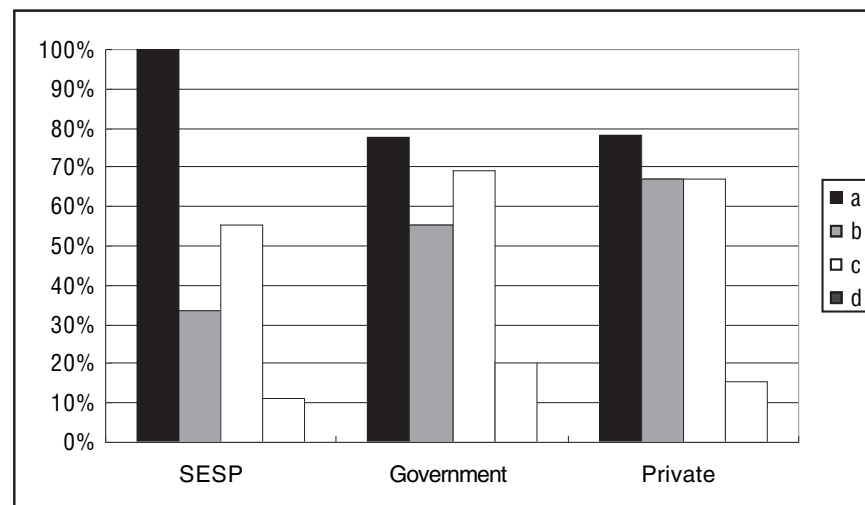
The majority of teachers in all types of school think the current curriculum is not sufficient for adequate disaster education. To promote disaster education in school, teachers particularly reported the need for curriculum development and teacher training. In SESP schools the request rate for teacher training is lower than in other schools, which is perhaps indicative of the greater level of training they received. However, the responses for SESP schools do highlight a greater need for curriculum development (see Figure 7).

Figure 6: Needs of Teachers to Promote Disaster Education

Explanatory note:

a: Curriculum development; b: Teaching materials; c: Teacher training; and d: Other (including field/exposure visits, and seminar/workshops).

H.P.E. refers to the subject "Health, Population, and Environment".

Figure 7: Needs of Teachers to Promote Disaster Education in Each School Type.

Explanatory note:

a: Curriculum development; b: Teaching materials; c: Teacher training; and d: Other (including field/exposure visits, and seminar/workshops).

H.P.E. refers to the subject "Health, Population, and Environment".

Conclusion

This small survey points to several issues concerning the current position of disaster education in Nepal.

- While some form of disaster education is quite widespread, more teachers teach those disasters mentioned in textbooks and this suggests a need to generate more textbook or other support materials to enable more of them to engage with disaster education in its widest sense.
- For topics such as reconstruction and risk reduction, fewer teachers teach them as disaster education even though some of them are mentioned in the textbooks.

Possible reasons for these findings include: a lack of information or teacher knowledge and therefore a lack of teacher confidence in delivering disaster related material; that disasters and disaster related topics are not covered systematically in either the curriculum or textbooks; and that it is sometimes difficult for teachers to understand the links between some of the topics and disasters.

Teachers are clearly dissatisfied with the current curriculum for delivering disaster education (Figure 4 and 5). Action is called for across all subjects (Figure 5) but two key needs have been identified by teachers: curriculum development and teacher training (Figures 6 and 7).

Wisner (2006) also identified these two factors as concrete examples of what nations can do to increase school safety. However, while a standardized curriculum for disaster education may be effective for giving uniform and basic disaster knowledge, it must be adapted to the specific conditions of each local area. This paper concludes that teacher training is the most important factor for promoting disaster education in schools even if curriculum development (in Nepal, curriculum development is equivalent to prescribing the text books for specific grades in the schools) is the first need identified by teachers themselves because the survey showed some disaster topics are not covered even if textbooks are available. To promote disaster education, teacher training can be conducted by either or both the NGO sector and the education ministry.

SESP provides training to teachers for school safety. All teachers in SESP schools are giving disaster education and this suggests SESP is

particularly effective in motivating teachers' awareness for promoting disaster education. In the training program of SESP, NSET-Nepal focuses on school safety which means that the main objective of the training is to save students' and teachers' lives. While teachers can understand the risks, relevant mitigation measures or preparedness through the training, teachers do not make the link with livelihoods and this suggests more training needs to be focused here.

A related questionnaire survey was conducted in Japan in 2003 (Shiwaku et al. 2004) which targeted high school students in Japan to identify the effective factors for promoting students' action for disaster reduction. Disaster education in many schools in Japan is focused on evacuation or rescue, clearly a part of school safety, but in some schools they also teach the importance of mitigation or preparedness. Maiko High School in Kobe (in one of the most affected areas of the Kobe Earthquake of 1995) is one school with a special course on disaster management. Maiko makes a major focus on the relationship between disaster and the natural and human environment through experiences of the Kobe Earthquake of 1995 (Shiwaku et al. 2004) and while students in schools across Japan understand the importance of mitigation or preparedness, students at Maiko more often take action for disaster reduction. Making connections and taking action are key to disaster risk reduction (Koshimura et al 2006) and these must be transferred to disaster education more widely. To better promote disaster education in schools, NSET-Nepal should develop a program to help teachers understand the links between disaster, the natural and the human/social environments.

Disaster education is relevant to many parts of the school curriculum and disaster related topics can be identified within any subject (Suwa 2006). An argument can be advanced that to fully benefit risk reduction and to capitalize on the links between usually discrete educational sectors, disaster education should be mainstreamed throughout general subjects and not isolated and covered in special classes. However, we do not have hard evidence for this conclusion.

Without understanding and knowledge, disaster education cannot be communicated adequately in a classroom. Schools play an important role in transferring knowledge of tradition and culture in communities (Kenneth, 2000) and teachers can play a role in

developing a culture of risk reduction through disaster education. To this end, this paper has identified teacher training as the most important area for any future focus.

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