United Nations
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Towards A Learning Culture of Safety and Resilience

Technical Guidance for Integrating Disaster Risk Reduction in the School Curriculum

PILOT VERSION

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Cover photo: CRIC 2009

DIPECHO project in Nicaragua.
Children are among the most vulnerable to disasters. Training schoolchildren on disaster risk reduction is an important part of DIPECHO projects. Through training and simulation exercises, children gain practical experience in responding to emergency situations.

Credits and full descriptions of photos included in this publication are listed from pp. 185-9.

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Table of Contents

List of Tables

List of Figures

List of Boxes

List of Discussion Tools

List of Checklists

The Guidance Tool and How to Use It

This document offers international technical guidance for integrating disaster risk reduction (DRR) into school curricula. Within its pages, there are conceptual frameworks as well as ready-to-use planning, development, discussion, monitoring and evaluation tools. It is designed primarily for use by policy makers and curriculum developers in central and sub-national administrations, NGOs and UN agencies but has also much to offer of direct relevance to school principals, teachers, teacher trainers and local education officials as well as local community members committed to fostering DRR learning.

The guidance draws on noteworthy practice in countries from around the world, described through case studies. It also assembles and adapts a range of existing national and international guidance tools and checklists.

Below is an At-a-Glance chart enabling different stakeholder groups – policy makers, curriculum developers, teacher educators, school principals, school teachers/ practitioners, local officials/stakeholders – to immediately see the degree of relevance that each sub-section of the guidance tool has for their work and role.

Each chapter begins with an overview of the chapter content. In sidebars within each chapter there are signals that alert the reader to key points and to connecting and overlapping discussion elsewhere in the guidance tool. These navigation aids should enable the document to be flexibly utilized according to the reader's interest and purpose. The approach used is also based on the insight that curriculum development is as much a systemic as a systematic exercise. Towards the end of each chapter, strategic pointers outline key lessons that different stakeholder groups should take away from the text and act upon. Each chapter closes with a short annotated list of selected tools and resources for further reading. The guidance tool itself ends with a further list of recommended resources that are largely additional to selected tools and resources.

The document is designed to provide enabling frameworks and tools to help countries and sub-national jurisdictions move the DRR curricular agenda forward. It is not prescriptive, but offers a range of pathways and entry points. It regularly emphasizes that any development needs to be shaped according to national, sub-national, local and cultural contexts.

The approach adopted primarily focuses on natural hazards in line with the Hyogo Framework for Action (HFA) while recognizing that disaster risk reduction curricula go beyond natural disasters in a number of countries. This is not, however, a hazard by hazard manual. Following HFA, the approach is multi-hazard and is grounded in the judgment that DRR learning philosophies, outcomes, processes and approaches are, with appropriate contextual adjustment, applicable to different hazard landscapes in different places.

This document is recommended to be used with its companion volume, *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries* (UNESCO/UNICEF, 2012).

Guidance at a Glance

It is hoped that readers will find the document of considerable use in its entirety but, recognizing that time is of the essence, this table offers indicative guidance to those with different roles in DRR curriculum development as to the degree of relevance of each section for their work.

Direct relevance to the role (Essential reading)

Significant bearing on role

Some bearing on role

Ch	Role / Section	Policy Maker	Curriculum Developer	Teacher Educator	Principal	School Teacher/ Practitioner	Local Official/ Stakeholder
1	1.1 Introduction						
	1.2 The Five Essential Dimensions of DRR Learning						
	1.3 Education for Sustainable Development (ESD) as Fertile Framework for DRRE						
	1.4 Bringing Together DRRE and Climate Change Education						
	1.5 DRRE as Contribution to Quality Education						
2	2.1 Infusing Disaster Risk Reduction across the Curriculum						
	2.2 A Spectrum of Approaches to Connecting DRR Learning Across the Curriculum						
	2.3 Two Additional Approaches to Embedding DRR in the Curriculum						
	2.4 Vertical Integration of DRR through the Curriculum						
3	3.1 Stages and Steps in Curriculum Development						
	3.2 The Importance of Partnership						
	3.3 Networking						

Ch	Role / Section	Policy Maker	Curriculum Developer	Teacher Educator	Principal	School Teacher/ Practitioner	Local Official/ Stakeholder
	3. 4 Baselines, Reviews and Roadmaps						
	3.5 Consensus Building and Consultative Processes						
	3.6 Curriculum Development Processes						
4	4.1 The Nature of Learning Outcomes						
	4.2 The DRR Learning Outcomes Landscape						
	4.3 Generic DRR Learning Outcomes						
	4.4 Competency-based DRR Curriculum Development						
	4.5 Developing Context- and Purpose-specific Learning Outcomes						
	4.6 Vertical Integration of Learning Outcomes						
	4.7 Assessment of Learning						
	4.8 Checklists						
5	5.1 DRR Learning Programme Development: A Practical Ten Step Approach						
	5.2 Ensuring Learning Diversity in DRR Programmes						
	5.3 Templates for DRR Learning Activity Development						
	5.4 Some DRR Learning Activity Examples						
	5.5 DRR Teachers' Guides and Students' Handbooks						
6	6.1 Facilitating Learning Activities						
	6.2 Facilitating Emotional Learning						

Ch	Role / Section	Policy Maker	Curriculum Developer	Teacher Educator	Principal	School Teacher/ Practitioner	Local Official/ Stakeholder
	6.3 Facilitating Learning outside the Classroom						
	6.4 Enlivening the Textbook						
7	7.1 Holistic, Systematized DRR Professional Development						
	7.2 Patterns of DRR Professional Development: Three Examples of Noteworthy Practice and Process						
8	8.1 Learning Communities/ Organizations for Safety and Resilience						
	8.2 Contributions to the DRR Learning Community						
	8.3 Translating School Safety and Disaster Prevention Measures into Curriculum						
9	9.1 Going to Scale						
	9.2 Mainstreaming						
	9.3 Things to Consider in the DRRE Scaling Up/ Mainstreaming Process						
	9.4 Web-based Approaches to Scaling-up DRR Curriculum						
	9.5 International/Regional Collaboration Support to Mainstreaming						
10	10.1 Why Monitor and Evaluate Curriculum Change?						
	10.2 DRR Monitoring and Evaluation Using Indicators						
	10.3 Monitoring and Evaluating DRRE						
	10.4 Nurturing A Culture of Improvement within a Culture of Safety and Resilience: Stakeholder Engagement in DRR Curriculum Monitoring and Evaluation						
	10.5 A Basis for Continually Informed, Improved and Revitalized Practice						

Foreword

The foreword will be inserted into the final version, after the piloting phase has completed.

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SECTION 1

CURRICULUM FRAMEWORKS FOR DISASTER RISK REDUCTION

Chapter 1
Disaster Risk Reduction Learning: An Important Dimension of Education for Sustainable Development

This chapter begins by briefly surveying the global disaster landscape and global action for disaster risk reduction education (DRRE) before sketching out five essential dimensions of disaster risk reduction learning. It goes on to make the case that education for sustainable development offers a coherent and fertile framework in which to locate the five dimensions. The conjunction of disaster risk reduction and climate change education is then explored and, finally, sustainability-underpinned disaster risk reduction and climate change education are proposed as a contribution, in tandem with child friendly and life skills learning, to quality education.

1.1 Introduction

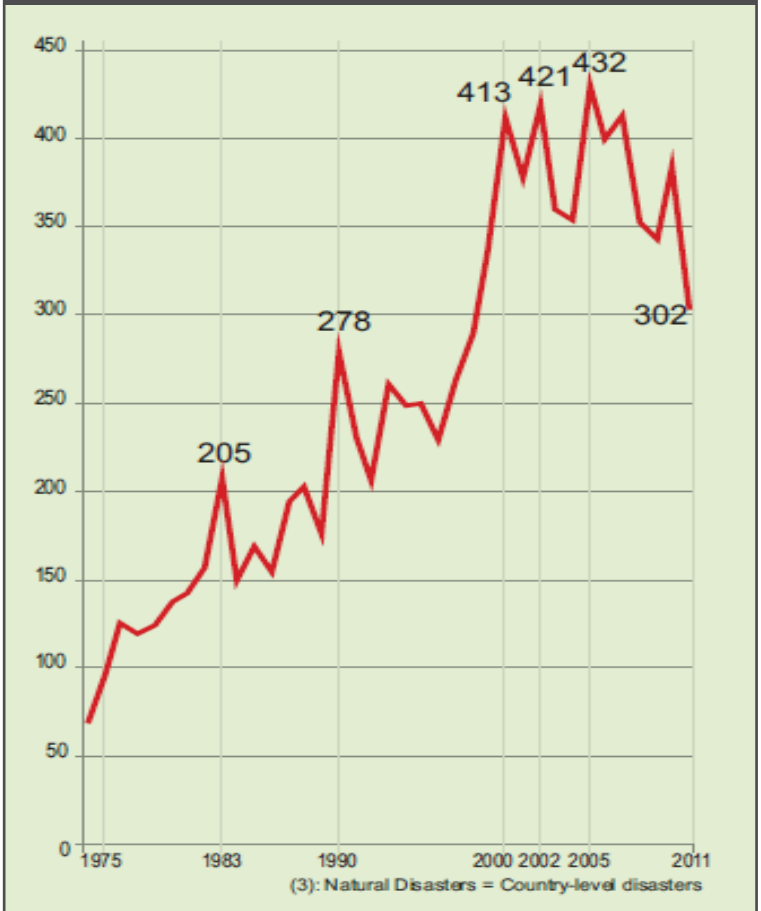
1.1.1. The Global Disaster Landscape

Human risk from disaster is on the rise globally. Over the decade of the 2000s, the average annual frequency of disasters was 384 per annum.[1] This represents a dramatic increase in the average annual frequency of disasters during the 1970s and 1980s (see Figure 1). Climatological hazards such as cyclones, hurricanes and floods, geo-seismic hazards such as earthquakes, tsunamis and volcanoes, technological hazards, and slow-onset hazards such as environmental degradation and desertification are triggering catastrophes affecting the lives and livelihoods of millions of people more often. Statistics paint a devastating picture:

- An annual average of 232 million people worldwide were affected by disasters between 2001 and 2010, the figure for 2011 being calculated at 244.7 million;
- From 2000 to 2010, economic damage as a result of disasters amounted to around US$ 1 trillion, the estimate for 2011 being US$366.1 billion, a figure surpassing the previous annual record of US$246.8 billion in 2005;
- More than 680,000 people died in earthquakes between 2000 and 2010 mainly due to poorly constructed buildings;
- Since 1980, drought and associated famine have claimed nearly 558,000 lives and affected more than 1.6 billion people, drought being the highest disaster killer in Africa;
- On yearly average, 102 million people are affected by floods; 37 million people by cyclones, hurricanes and typhoons; and nearly 366,000 people by landslides;

Policy Makers: Draw upon data in section 1.1 (pp.2-6) to place DRRE developments within the context of global trends and priorities

FIGURE 1.
Time Trends of Reported Natural Disasters 1975-2011



Source: EM-DAT/UNISDR. 2011 Disasters in Numbers.

1 Guha-Sapir, D., Vos, F., Below, R. with Ponsere S. 2012. *Annual Disaster Statistical Review 2011: The Numbers and Trends*. Brussels: CRED. http://cred.be/sites/default/files/2012.07.05.ADSR_2011.pdf

- Most of the 3.3 million deaths from disasters in the last 40 years have been in poorer nations;
- Much of the increasing world population is literally 'on the edge,' living in flood-prone river basins, on exposed coastlines and in cities located in areas of high seismic activity.[2]

Turn to Chapter 8 (pp.138-50) for discussion of linking the development of safe schools with DRR curriculum

Often falling below the threshold of media attention, tens of hundreds of small-scale natural disasters have also severely impacted the lives, wellbeing and prospects of peoples and communities around the world.[3]

Turn to 1.3.2.2 (pp.11-12) for discussion of DRR, sustainable development and the Millennium Development Goals (including universal primary education)

Women and children, two groups often excluded from disaster risk reduction decision-making and education, are amongst the most vulnerable to disaster. Save the Children reports that more than fifty per cent of all those affected by disasters worldwide are children.[4] The UNICEF and UNESCO Global Initiative on Out-of-School Children cites natural disaster as one of the key factors inhibiting school attendance of approximately 67 million school aged children, therefore slowing the pace of progress towards universal primary education.[5]

Policy Makers: Draw upon the globally agreed Hyogo Framework for Action for DRRE

2 The figures are extracted from the following: Guha-Sapir, D., Vos, F., Below, R. with Ponsere S. 2012. *Annual Disaster Statistical Review 2011: The Numbers and Trends*. Brussels: CRED. http://cred.be/sites/default/files/2012.07.05.ADSR_2011.pdf; UNISDR. 2011. Disaster Through a Different Lens: Behind Every Effect There is a Cause. Geneva: UNISDR; UNISDR. 2011. Preparing for Rio+20: Redefining Sustainable Development. http://www.unisdr.org/we/inform/publications/23344

3 UNISDR. 2011. *Global Assessment Report on Disaster Risk Reduction. Revealing Risk, Redefining Development*. http://www.preventionweb.net/english/hyogo/gar/2011/en/home/download.html

4 UNISDR. 2011. *Disaster Through a Different Lens: Behind Every Effect There is a Cause*. Geneva: UNISDR, 22; Save the Children. 2008. In the Face of Disaster: Children and Climate Change.

5 http://www.unicef.org/education/files/OOSCI_flyer_EN_lowres.pdf

The serious impacts of natural disasters on educational systems and school communities are evident around the world. 'Worldwide, approximately 1.2 billion students are enrolled in primary and secondary school; of these, 875 million school children live in high seismic risk zones and hundreds of millions more face regular flood, landslide, extreme wind and fire hazards. Although these children spend up to 50 percent of their waking hours in school facilities, all too often schools are not constructed or maintained to be disaster resilient'.[6] For example, the earthquake in Sichuan, China in 2008 caused severe structural damage to more than 6,500 school buildings and took the lives of 10,000 children, while the 2010 earthquake in Haiti caused a death toll of more than 4,000 children and 7,000 teachers in school buildings.[7] The 2010 floods in Pakistan affected 1.8 million children and more than 8,600 schools were fully or partially damaged.[8]

1.1.2 Global Action for Disaster Risk Reduction Education

Against a background of increasing incidence and scale of disaster, the Hyogo Framework for Action (HFA) 2005-2015 was adopted by 168 governments in January 2005 at the World Conference on Disaster Reduction held in Kobe, Japan. Sub-titled Building the Resilience of Nations and Communities to Disasters, HFA

6 ISDR/INEE/World Bank. 2009. *Guidance Notes on Safer School Construction*. p. 1. http://toolkit.ineesite.org/toolkit/Toolkit.php?PostID=1138

7 INEE. Rio+20: *Including Education in the Sustainability Agenda.* http://www.ineesite.org/post/blog_rio-20-including-education-in-the-sustainability-agenda/; UNICEF. 2011. *Sichuan Earthquake: Three Year Report*. Beijing: UNICEF Office for China.

8 UNICEF. 2011. *Children in Pakistan: One Year after the Floods - Turning Towards a Brighter Future. Progress Report*. Islamabad: UNICEF Pakistan Country Office.

lays out a strategic and systematic approach to reducing risk from natural hazard incorporating strategic goals, priorities for action and key activities. While each of the five priorities carries implications for school systems, schools and other learning institutions, HFA priority 3 is of most direct relevance to education. Priority 3 calls upon governments, regional and international organizations and other stakeholders including local jurisdictions and communities to 'use knowledge, innovation and education to build a culture of safety and resilience at all levels' and identifies the following school-related key activities:

- Inclusion of disaster risk reduction knowledge in relevant sections of school curricula at all levels.
- Implementation of local risk assessment and disaster preparedness programmes in schools and institutions of higher education.
- Implementation of programmes and activities in schools for learning how to minimize the effects of hazards.

BOX 1.

Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disaster

Three Strategic Goals

- The integration of disaster risk reduction in sustainable development policies and planning
- Development and strengthening of institutions, mechanisms and capacities to build resilience to hazards
- The systemic incorporation of risk reduction approaches into the implementation of emergency preparedness, responses and recovery programmes

Five Priorities for Action

- Ensure that disaster risk reduction (DRR) is a national and a local priority with a strong institutional basis for implementation
- Identify, assess and monitor disaster risk and enhance early warning
- Use knowledge, innovation and education to build a culture of safety and resilience at all levels
- Reduce the underlying risk factors
- Strengthen disaster preparedness for effective response at all levels

Four Cross-Cutting Issues

- Multi-hazard approach
- Gender perspective and cultural diversity
- Community and volunteers' participation
- Capacity building and technology transfer

Source: Taken from ISDR http://www.unisdr.org/we/inform/publications/1037

The Hyogo Framework identifies integration of DRR and sustainable development as one of three strategic goals. Turn to 1.3 (pp. 8-14) for discussion of educational links

Policy Makers: Use the 2015 Global Platform's curriculum integration deadline in your policy making and scheduling of implementation

In 2007 the UN General Assembly established a biennial Global Platform for Disaster Risk Reduction to support the implementation of the HFA, enabling governmental representatives and key stakeholders to share experiences, identify gaps and develop strategy. At its second session in 2009, the Global Platform resolved to integrate disaster risk reduction into school curricula by 2015, a commitment confirmed when the Global Platform met in third session in 2011.[9]

In combination with the 2009 and 2011 sessions of the Global Platform, governments were encouraged to submit national progress reports covering the previous two-year period on all five HFA priorities. In the 2011 progress report on school curricula, educational materials and relevant training, slightly more than half of the 70 reporting countries confirmed the inclusion of disaster risk reduction (DRR) themes and topics in the curriculum, and these were mainly at primary level.[10] The HFA Mid-term Review of 2011 presents a picture of great enthusiasm behind incorporating DRR in school curricula

9 UNISDR. 2009. Chair's Summary: Third Session of the Global Platform for DRR and World Reconstruction Conference. http://www.preventionweb.net/files/10750_GP09ChairsSummary.pdf; UNISDR. 2011. Chair's Summary: Third Session of the Global Platform for DRR and World Reconstruction Conference. http://www.preventionweb.net/files/20102_gp2011chairssummary.pdf

10 ISDR. 2011. Compilation of National Progress Reports on the implementation of Hyogo Framework for Action (2009-2011). HFA Priority 3, core indicator 3.2. http://www.preventionweb.net/english/hyogo/progress/documents/hfa-report-priority3-2(2009-2011).pdf

Turn to 1.4 (pp.14-15) for a discussion of the interface between DRRE and Climate Change Education

BOX 2.

Scope of DRR Curricula

The scope of the Hyogo Framework for Action 'encompasses disasters caused by hazards of natural origin and related environmental and technological hazards and risks'.[1] Disaster risk reduction curricula have, for the most part, been developed within these parameters but in some countries the notion of 'disaster' has come to be more widely conceived to include, for instance, civil unrest, conflict, biohazards, terrorism and pandemics.[2] In Western and Central Africa, in particular, the notion of conflict and disaster risk reduction (C/DRR) has gained ground incorporating disaster- and conflict-related education. C/DRR has been defined as 'a systematic analysis of and attempt to reduce disaster or conflict-related risks to enable the education system to provide (and learners to continue, and out of school children and youth to access) quality education for all, before, during and after emergencies.'[3] Climate change is, for the most part, not 'of natural origin' but increasingly appears within DRR curricula.[4] This guidance tool does not cover C/DRR but does integrate discussion of climate change education.

1 UNISDR. 2005. *Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters.* Geneva: ISDR. p. 1.

2 UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries*. Paris/Geneva: UNESCO/UNICEF.

3 UNESCO IIEP & UNICEF WCARO. 2011. *Integrating Conflict and Disaster Risk Reduction into Education Sector Planning*. Paris: UNESCO IIEP. p. 8.

4 UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries*. Paris/Geneva: UNESCO/UNICEF.

but also of piecemeal development taking place outside of a 'framework of strategic educational planning at national levels'. The review goes on to state, 'There are few examples that address disaster risk reduction education needs in a systematic manner'.[11]

1.2 The Five Essential Dimensions of DRR Learning

What elements comprise a systematic, coherent and implementable conception of disaster risk reduction education? Laid out below are five essential dimensions of DRR.[12] The five dimensions outlined are essential in that, collectively, they scope out what the full and systematic treatment of DRR involves while enriching the potential for DRR learning in both school and community. As we move through the dimensions, the importance of active, participatory and experiential learning becomes clear.

1.2.1 Dimension 1: Understanding the Science and Mechanisms of Natural Disasters

The first dimension concerns developing understanding of the *science and mechanisms* of natural hazards such as cyclones, tsunamis and volcanic eruptions: why they happen; how they develop; where they occur; their frequency and power; their physical impacts; trends and patterns in their occurrence. The recent global mapping of disaster risk reduction curriculum found that, in many instances, disaster-related learning was more or less confined to parts of the curriculum, such as physical and natural science and geography, where there has been traditional and long-standing textbook coverage of natural weather and geo-seismic hazard.[13] But just as science dominated early disaster-related international discourse before the social and economic consequences of disaster became the focal point of attention,[14] so disaster-related education spearheaded by science is giving way to a broader, multi-disciplinary, socially oriented approach. Understanding the science of natural hazards nonetheless remains an important dimension of DRRE. Cultivating rich understanding of mechanisms involves moving beyond the textbook and/or workbook toward engaging students in active enquiry, experimentation, project work, analysis and discussion of stimulus learning material and active engagement with DRR professionals, meteorologists, climate change researchers, community DRR activists and those with indigenous insight.

1.2.2 Dimension 2: Learning and Practicing Safety Measures and Procedures

Instruction and practice in *safety measures and procedures* in the event of hazard, at school, at home or out in the community or local environment form the second dimension of DRRE. This includes familiarization with hazard early warning signs and signals, instruction in evacuation or sheltering procedures, drills and exercises, familiarization with basic first aid and the contents of a first aid kit, health and safety

Policy Makers/ Curriculum Developers: 1.2 is vital reading for understanding the scope and sway of DRR curriculum.

Local Education Officers/ Principals/ Teachers: Read 1.2 as a springboard for thinking about whole school and pedagogical implications of DRR.

Teachers/ Teacher Trainers: Turn to Chapter 5, (especially pp.104-6 and pp.109-15) and Chapter 6, (pp. 124-37) for full discussion of active and participatory approaches to DRR learning as proposed under each dimension

11 International Strategy for Disaster Reduction. 2011. *Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disaster*. Mid-term Review. 26. http://www.preventionweb.net/files/18197_midterm.pdf

12 The dimensions are extracted from a comprehensive global mapping and analysis of DRR curricula. See: UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries*.Paris/ Geneva: UNESCO/UNICEF.

13 Ibid.

14 UNCSD Secretariat. Disaster Risk Reduction and Resilience Building, Rio 2012 Issues Briefs, no. 8. http://www.preventionweb.net/english/professional/publications/v.php?id=24076&pid:0

measures, and guidance on how to stay safe after a hazard has subsided. Safety awareness has so far tended to find a place in the student learning experience as a co- or extra-curricular element or as an addition to the textbook study of hazard in science lessons.[15] A cross-curricular approach is needed in which safety behaviors are internalized and continually improved through reinforced practice. Occasional learning that is inactive in nature, limited in its practical, action and decision-making scope, and unreflective is not best suited to fostering safety knowledge and practice.

1.2.3 Dimension 3: Understanding Risk Drivers and How Hazards Can Become Disasters

Teachers/ Principals/ Local Stakeholders: For more on child participation/ leadership of community DRR projects, consult sections 6.3, 6.4, 8.2, 8.3,10.4.3

By focusing on the science of natural hazards and/or on safety procedures in the face of hazard, learning programmes can inadvertently give learners the impression that little that can be done to combat against disaster. The third dimension of DRRE learning seeks to encourage learners to act and be proactive in mitigating risk through a thorough examination of the elements at work in the fundamental disaster risk formula:

$$\text{Disaster Risk} = \frac{\text{Natural Hazard x Vulnerability}}{\text{Capacity of Societal System}}$[16]$$

Hazards and disasters are different. A hazard is an event with the potential to cause harm. A disaster happens when the hazard exceeds people's capacity to cope, to devastating effect. Clearly, the more intense is the hazard, the greater the likelihood of disaster. But the level of disaster risk is also fundamentally influenced by prevailing conditions of vulnerability. Forms of vulnerability that drive up the likelihood of disaster risk in any context – risk drivers - can be social (e.g. illiteracy and lack of knowledge and education) or economic (e.g. poverty and inequality) or environmental (e.g. deforestation and other forms of ecosystem degradation).

A key question to regularly review with learners is whether at any level, local through global, there is such a thing as an exclusively 'natural' disaster. Having learners actively examine local conditions, drivers and processes of vulnerability through participation, even leadership, in community enquiry projects, is an essential, but as yet insufficiently addressed aspect of DRRE.

1.2.4 Dimension 4: Building Community Risk Reduction Capacity

The formula noted under 1.2.3 demonstrates that disaster risk can be reduced by increasing the capacity of a society to protect itself against hazard. The fourth dimension of DRRE learning engages learners in processes of resilience building in their own community through grassroots level initiatives such as undertaking local vulnerability assessment and mapping initiatives, identifying hazards, developing resilience action plans, and implementing those plans. The action-oriented learning dimension of DRRE offers hands-on experience of participatory citizenship education.

Resilience building embraces both *mitigation and adaptation. Mitigation*, at one level, is about reducing or limiting the potential threat from hazard. At this level, it overlaps considerably with *adaptation*, (i.e., adjusting human or natural processes to modify the effects of hazard, for example, changing an agricultural method to cope with drought). At a deeper level, mitigation concerns examining how and to what extent

15 UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries*. Paris/Geneva: UNESCO/UNICEF.

16 UNESCO/UNEP. 2011. *Climate Change Starter's Guidebook*. Paris: UNESCO. p. 63.

human activities may contribute to increasing frequency and severity of hazard, and how to effect fundamental changes in human behavior (e.g., encouraging consumer behavior changes toward sustainable consumption). In practice most DRRE has stopped short of this deeper level, limiting itself to mitigating the effects of hazard.[17]

1.2.5 Dimension 5: Building an Institutional Culture of Safety and Resilience

Disaster risk reduction in education is understood to have both structural components, such as school buildings and facilities, and non-structural elements, such as school disaster management, school policy development, disaster drills and procedures and formal, non-formal and informal learning.[18] The latter covers 'any measure not involving physical construction that uses knowledge, practice or agreement to reduce risks and impacts'.[19] The fifth and final dimension places an emphasis on blending the structural and non-structural elements so that the school becomes a DRR learning community or organization oriented towards building a culture of safety and resilience. It involves principals and teachers in looking for possibilities to give a voice to students in the curriculum, in their daily lives and in the processes of the school regarding both structural and non-structural aspects of safety and resilience building. In such a blending the school becomes a DRR learning laboratory – the campus becomes part of the curriculum.

Possible elements/activities include learner involvement in school DRR policy development, learner engagement with technical personnel on structural safety aspects of the school, learner management of school hazard bulletin boards, student run vulnerability assessments of the school as practice for their resilience building projects in the community, student presentations of in-class or in-community DRR work at school assemblies, and establishment of a school and community DRR council with student membership.

Principals/ Teachers: Turn to Chapter 8 (pp. 138-50) for discussion of how to integrate DRR curriculum with safe school management and practice

Principals/ Teachers: The idea of the school as a DRR learning community or organization is picked up in 8.1 (pp.138-42) and 10.4 (pp. 171-9).

1.3 Education for Sustainable Development (ESD) as Fertile Framework for DRRE

1.3.1 Education for Sustainable Development

The implementation of the five DRRE dimensions outlined above is based upon a way of seeing the world and education that is holistic, integrative, interdisciplinary (i.e. involving and interrelating all school subjects) and also trans-disciplinary (i.e. involving 'real-life' experience unconstrained by disciplinary considerations).

The recent global mapping study of DRR curriculum makes clear that so far fully-fledged implementation of DRRE is a rare occurrence.20 Drawing on the study, Figure 2 below offers an indicative representation of the degree to which each of the five dimensions of DRRE are currently being addressed in practice. Dimensions 3, 4 and 5, the figure indicates, are less frequently or rarely

Sub-section 1.3.1 looks at ESD and introduces the argument that an ESD framework facilitates full implementation of the five dimensions of DRRE. The discussion continues in 1.3.2.1 (p.11)

17 Kagawa, F. & Selby, D. 2012. 'Ready for the Storm: Education for Disaster Risk Reduction and Climate Change Adaptation and Mitigation', *Journal of Education for Sustainable Development*, 6 (2) (forthcoming).

18 UNISDR/ECHO/UNICEF. Undated. *Safe Schools in Safe Territories: Reflections on the Role of the Educational Community in Risk Management*. http://www.unisdr.org/we/inform/publications/8962

19 http://www.unisdr.org/we/inform/terminology See also: Wisner, B. 2006. *Let Our Children Teach Us! A Review of the Role of Education and Knowledge in Disaster Risk Reduction*. Bangalore: Books for Change. p. 32, 44.

20 UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries*. Paris/Geneva: UNESCO/UNICEF.

addressed within DRR curricula. Applying ESD insights and criteria to DRR curriculum review and development is proposed in this section as an effective means of ensuring that appropriate weight is given to all five dimensions.

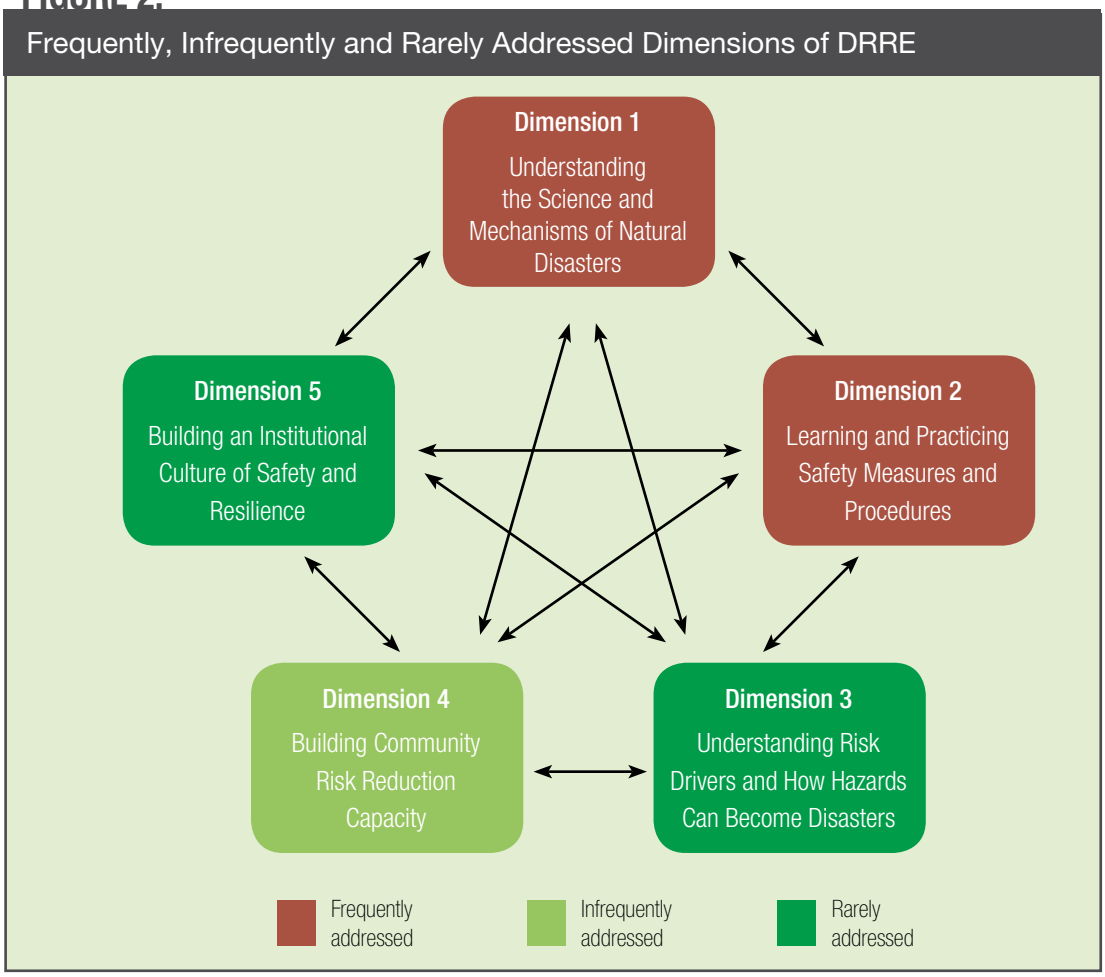
ESD offers a coherent, fertile and increasingly mainstreamed conception within which the full spectrum of DRRE learning dimensions, individually and in their interplay, can better flourish. It is an approach to quality education advocated by UN agencies and civil society organizations, and is attracting worldwide adherence as the 2005-14 UN Decade of Education for Sustainable Development (DESD) unfolds.

ESD offers a holistic framework for considering and integrating issues of environmental, economic and social (including cultural) sustainability in the name of realizing a sustainable future. It addresses the complexity and inter-connectedness of global issues. It sets learning within a framework of underlying values:

- Respect for the dignity and human rights of all;
- A commitment to social and economic justice for all;
- Respect for the human rights of future generations;
- Respect for the greater community of (other-than-human) life and protection of ecosystems;

FIGURE 2.

Frequently, Infrequently and Rarely Addressed Dimensions of DRRE



- Respect for cultural diversity and commitment to building a culture of tolerance, non-violence and peace.[21]

ESD calls for change that is informed by consideration of the past, present and future. It offers a vision of cross-curricular and interdisciplinary treatment of sustainability precepts and principles, and advocates a multi-method and participatory pedagogy that integrates critical thinking and reflection with concrete and practical engagement towards building sustainability in the community.[22]

ESD also embraces the fundamentally transformative goal of securing a better future by steering the world away from unsustainable patterns of economic growth, environmental exploitation and social injustice.[23]

21 UNESCO. 2005. United Nations Decade of Education for Sustainable Development (2005-2014): International Implementation Scheme. Paris: UNESCO. pp. 7-8.

22 Ibid. p. 17; pp. 30-31.

23 De Haan, G, Bormann, I., & Leicht, A. 2010. 'Introduction: The midway point of the UN Decade of Education for Sustainable Development: current research and practice in ESD', International Review of Education, 56, pp. 2-3, 199.

BOX 3.

Characteristics of ESD

- Based on the principles and values that underlie sustainable development;
- Deals with the well-being of all four dimensions of sustainability – environment, society, culture and economy
- Uses a variety of pedagogical techniques that promote participatory learning and higher order thinking skills
- Promotes lifelong learning
- Is locally relevant and culturally appropriate
- Is based on local needs, perceptions and conditions, but acknowledges that fulfilling local needs often has international effects and consequences
- Engages formal, non-formal and informal education
- Accommodates the evolving nature of the concept of sustainability
- Addresses content, taking into account context, global issues and local priorities
- Builds civil capacity for community-based decision making, social tolerance, environmental stewardship, and adaptable workforce, and a good quality of life
- Is interdisciplinary in that no single discipline can claim ESD for itself and all disciplines can contribute ESD.

Source: Taken from *UNESCO Education for Sustainable Development*
http://www.unesco.org/new/en/education/themes/leading-the-international-agenda/education-for-sustainable-development/education-for-sustainable-development/characteristics-of-esd/

Section 1.3.2 develops a detailed argument for linking DRRE and ESD. The core argument is located in 1.3.2.1 and 1.3.2.2. If need be, short cut the extended argument by passing straight to 1.4 (p.14)

1.3.2 Integrating DRRE within an ESD Framework

The integration of DRRE and ESD has been described as a 'winning combination' that 'will be conducive to more sustainability at global and societal levels and better disaster preparedness of communities'.[24] What mutual benefits follow from their integration?

1.3.2.1 ESD brings a broader, deeper and integrated understanding of vulnerability and resilience to DRRE

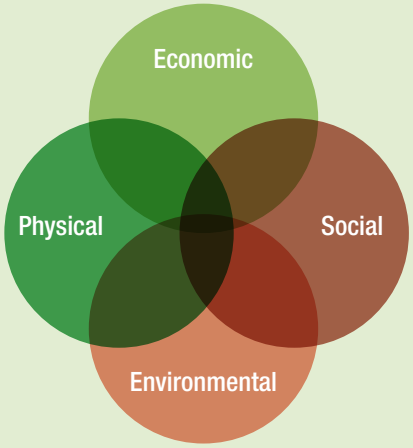
ESD's focus on both the foundations of and interactions between the three sustainability dimensions (i.e., environmental, economic and social) enables a holistic examination of disaster vulnerability and resilience issues. It can help ensure that all key vulnerability factors find a place in the curriculum and, importantly, that the interactions between them (see Figure 3), potentially leading to a 'downward spiral of vulnerability' are given proper consideration. In a similar way, the focus within ESD on elements that help to shape a sustainable future can underpin learning towards the achievement of an 'upward spiral of resilience' at national and sub-national level, including in local communities.

The concepts of sustainability and resilience are mutually supportive. A non-resilient community will, over the long term, be unsustainable. Conversely, for a community to sustain itself, it must demonstrate resilience.

To address the less frequently and rarely addressed dimensions of DRRE depicted in Figure 2, ESD can bring substance and enrichment to Dimension 3 concerning risk drivers, and Dimension 4 concerning building community resilience, mitigation and adaptation capacity. Recalling that Dimension 4 proposes reconsidering and effecting transformative shifts in human values and behaviors, and reducing the negative impact of society on the environment, examining sustainability versus unsustainability within DRRE can go some way to bridging the existing gaps.

FIGURE 3.

Interaction of Vulnerability Factors



Source: ISDR. 2004. Living with Risk: A Global View of Disaster Risk Reduction Initiatives. Geneva: ISDR. p. 41.

1.3.2.2 DRRE within an ESD framework highlights the need for curricular treatment of how disaster and sustainability are negatively correlated and disaster risk reduction and sustainability positively correlated

Every disaster represents a major setback for the achievement of sustainable development while disaster risk reduction through resilience building offers a means of preserving and enhancing sustainability gains.

24 Laboulle, O. & Richmond, M. 2011. 'Education for sustainable development and education for disaster risk reduction: a winning combination'. In UNISDR. *Risk Returns*. Leicester, UK: Tudor Rose. pp. 119-122.

Education for Sustainable Development is regarded as a major contributor to the achievement of the eight Millennium Development Goals (MDGs) agreed by all UN member states in 2000, particularly by integrating knowledge of MDG-related issues into learning programmes, developing critical thinking around MDG achievement, and developing learner action competence to take forward that achievement in their own life sphere.25 Teaching how disaster impedes the realization of the MDGs as well as how the achievement of each MDG can be supported by DRR should be a significant aspect of the MDG support function of ESD.

BOX 4.

UN Millennium Development Goals (MDGs)

Goal 1: Eradicate extreme poverty and hunger

Goal 2: Achieve universal primary education

Goal 3: Promote gender equality and empower women

Goal 4: Reduce child mortality

Goal 5: Improve maternal health

Goal 6: Combat HIV/AIDS, malaria and other diseases

Goal 7: Ensure environmental sustainability

Goal 8: Develop a global partnership for development

For further details, visit http://www.un.org/millenniumgoals/

25 UNESCO. 2009. *Education for Sustainable Development and the Millennium Development Goals. UNESCO Policy Dialogue 2*. Paris: UNESCO.

1.3.2.3 ESD helps reinforce the idea that disasters are always more than natural occurrences

By approaching the study of sustainability through an examination of the interactions between its environmental, economic and social dimensions, ESD reinforces the idea that a hazard becomes a disaster, not purely due to 'natural' causes, but as a consequence of a particular combination of vulnerabilities in the afflicted area and population. This understanding is vital in moving the DRR learner away from a sense of helplessness toward a belief that individuals and communities can proactively work to rearrange their area or region to reduce the risk they face.

1.3.2.4 ESD stretches the context and extends the horizons of DRRE

ESD underscores the need to address sustainability at various spatial levels - local, sub-national, national through global - and that systemic understanding of the dynamics between the different levels is vital to overall understanding. The ESD learner is encouraged to understand how the *local* affects the *global* and the *global* shapes (and is present in) the *local*.

A benefit of approaching DRR within the ESD framework is that the danger of an overly narrowed focus is more easily avoided and the linkages between spatial levels are more readily forged. For example, taking steps to adapt to climate change locally would be combined with learning about the global drivers of climate change and the inherent inequalities between polluters and those most affected. Local conversations need to happen alongside dialog with others globally about climate injustice.[26]

26 Lotz-Sisitka, H. 2010. 'Climate Injustice: How Should Education Respond?' in Kagawa, F. & Selby, D. (Eds.), *Education and Climate Change: Living and Learning in Interesting Times*. New York: Routledge. pp. 71-88.

Such comparative dialogs can open learners' eyes to new perspectives on the relevant local and global issues. Similarly, ESD works simultaneously with short-term, mid-term and long-term time scales, infusing the short- and mid-term with long-term vision. It is a subtle, but important and perhaps inspirational shift to conceive of resilience building initiatives not just as short-term measures to fend off disaster, but as steps toward long-term sustainability.

1.3.2.5 The interdisciplinary nature of ESD can help DRRE cross the curriculum

As touched upon earlier, disaster-related topics in the school curriculum were, until recently, largely confined to the science and physical geography curriculum where climatological and geo-seismic topics are taught. The multi-pronged nature of ESD speaks inevitably to interdisciplinary treatment in that 'no one discipline can claim ESD for its own but all disciplines can contribute to ESD'.[27] DRRE can benefit from the ESD framework by leveraging the perception of its interdisciplinary nature, and so facilitate the move toward a cross-cutting presence in the curriculum.

1.3.2.6 ESD for its part can benefit from the tangible nature of best DRRE practice

Teachers/ Teacher Trainers: Turn, especially, to Chapters 5 and 6 for full discussion of active and participatory approaches to DRR learning informed by ESD.

The shadow side of ESD's combination of holistic vision, worldwide span and long-term perspective is that it can seem abstract and far-removed for both learner and teacher. Integrating DRRE within ESD can help teachers bring learning alive by incorporating 'tangible operationalization'[28] of sustainability themes and topics. In particular, the community-based and school-based action learning proposed under DRRE *Dimensions 4 and 5* (see pp. 7-8) lend themselves to making sustainability more concrete, immediate and infused with a sense of urgency. 'Given the fact that disaster impacts are always local, DRR education has the potential to provide a concrete context for ESD activities. …By providing concrete tools for action in the case of disaster, DRR can empower learners by enhancing their sense of efficacy and making them feel like they are in control of their own lives. This feature of DRR education breaks down the abstract global issues addressed by ESD into something manageable and immediate for learners, something which they can exercise control over and can act upon.'[29] ESD has also tended to overlook the concept and practice of safety within contexts of unsustainability,[30] by not addressing this within learning programmes. DRRE *Dimension 2* can bring a tangible safety element to ESD.

1.3.2.7 ESD and DRRE pedagogical practice can be mutually reinforcing

As DRRE broadens its scope and curricular presence, there is parallel movement away from a textbook-driven, passive pedagogy towards an active, interactive and action-oriented pedagogy, with noteworthy examples of good practice increasingly in evidence.[31] In a similar

27 UNESCO/UNEP. 2011. *Climate Change Starter's Guidebook*. Paris: UNESCO. p. 56.

28 Laboulle, O. & Richmond, M. 2011. 'Education for sustainable development and education for disaster risk reduction: a winning combination'. In UNISDR. *Risk Returns*. Leicester, UK: Tudor Rose. pp. 119-122.

29 Ibid. p. 3

30 Rose, C, Rouhban, Tovmasyan, K. & Schick, O. 2009. '*Workshop 4: Education for Sustainable Development and Disaster Risk Reduction: Building Disaster-Resilient Societies*,' in UNESCO World Conference on Education for Sustainable Development, 31 March – 2 April 2009, Bonn, Germany, Proceedings. Paris/ Berlin/ Bonn: UNESCO/BMBF/German Commission of UNESCO. pp. 53-55.

31 UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries*. Paris/Geneva: UNESCO/UNICEF.

way, and over a longer period of time, ESD has proposed and witnessed a shift away from *teaching about* sustainable development (i.e., transmitting knowledge content to a relatively passive learner) and towards *learning through* and *in* sustainability (i.e. active development of learners' sustainability competencies, capacities and dispositions through immersion in participatory learning). In both fields there is still much work to do address this everyday practice. Accordingly, there are mutual benefits to be derived from shared discourse and practice, with DRRE benefitting from ESD's longer track record in developing a participatory pedagogy, and ESD benefiting from DRRE's inherent community action-oriented pedagogy.

1.4 Bringing Together DRRE and Climate Change Education

As Box 5 indicates, climate change is another key priority for the second half of DESD. Like DRRE, climate change education (CCE) is an educational response to present and anticipated increases in both the severity and frequency of hazard around the world. A report on the human impact of climate change from the Global Humanitarian Forum describes a 'silent crisis' of climate change that is already causing over 300,000 deaths, seriously affecting 325 million people and bringing about economic loses of US$125 billion every year.[32] Rising average temperatures are causing sea levels to rise and are threatening low-lying coastal areas, while bringing drought and aridity to other environments and communities where once crops grew well, and generating unpredictable storm behaviors threatening still other communities with flooding and destruction. These effects, in turn, are exacerbating poverty, hunger and disease, threatening economies, heightening inequalities, and leading to increasing population displacement. Disasters are, in many cases, the tangible outcomes of climate change's 'silent crisis'.

BOX 5.

Key Action Themes for the Second Half of the United Nations Decade of Education for Sustainable Development (DESD)

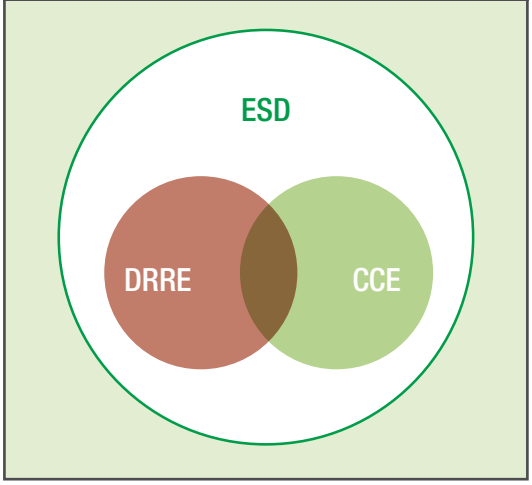
Addressing global sustainable development challenges through ESD, by focusing on the following three priorities:

- Climate change
- Biodiversity
- Disaster risk reduction and preparedness

Source: Taken from UNESCO. 2010. ***UNESCO Strategies for the Second Half of the United Nations Decade of Education for Sustainable Development***. Paris: UNESCO.

FIGURE 4.

The DRRE and CCE Interface



- DRRE and CCE have followed a broadly parallel development path:

Policy Makers/ Curriculum Developers: 1.4 argues that DRR and climate change awareness, adaptation and mitigation should be addressed as one curriculum initiative.

32 Global Humanitarian Forum. 2009. *The Anatomy of a Silent Crisis*. Geneva: Global Humanitarian Forum. p. 1.

- CCE, like DRRE, was initially seen as the curriculum domain of science and geography, CCE focusing on understanding the mechanics of greenhouse gas release and the consequent warming of the climate, DRRE focusing on the mechanics of weather-related and geo-seismic events.
- Recently both fields have adopted more of an interdisciplinary stance in which social, economic, cultural and scientific dimensions of hazard and disaster are treated across the curriculum.
- Both fields also recently turned their attention to in-community learning engagement for resilience building, adaptation and impact mitigation in the face of hazard.
- Somewhat belatedly both CCE and DRRE have recognized the importance of having learners critically engage with driving forces that exacerbate global warming and increase the threat of hazard such as growth models of development, unsustainable consumption patterns including energy usage, environmental degradation and unequal distribution of social and economic rights.

See 2.3 (pp. 32-5) for more on DRRE links with quality education

There is a strong case for convergence of DRRE and ESD because they both work with many of the same concepts and seek to mobilize communities behind reducing disaster vulnerability and effects. Curriculum development initiatives, especially in Africa, are successfully demonstrating that disaster risk reduction learning and climate change learning, when taken together, create a whole which is greater than the sum of their individual parts (see section 2.3.1). In other words, the conjunction of DRRE and CCE is enhanced through the broader thematic and conceptual framework of ESD.

1.5 DRRE as Contribution to Quality Education

1.5.1 The Nature of Quality Education

As understandings and expressions of the nature of quality education evolve, some constant elements remain. Among these are *relevance, learner-friendliness, change responsiveness and participation*. Quality education curriculum:

- Keeps abreast of change in a fast-changing world while fostering skills and competencies enabling responsiveness to change.
- Has context-, social- and culture-specific relevance to the learner, building from the learner's already rich storehouse of knowledge and lived, local experience.

Policy Makers/ Curriculum Developers: 1.5 brings together a number of key initiatives under the one heading of quality education.

BOX 6.

Quality Education

Quality is a dynamic concept that has constantly to adapt to a world in which societies are undergoing profound social and economic transformation. Encouragement for future-oriented thinking and anticipation is gaining importance. Old notions of quality are no longer enough. Despite the different contexts there are many common elements in the pursuit of quality education, which should equip all people to be fully participating members of their own communities and also citizens of the world.

Source: Taken from Ministerial Round Table on Quality Education, 2003 cited in UNESCO. Undated. *Contributing to a More Sustainable Future: Quality Education, Life Skills and Education for Sustainable Development.* Paris: UNESCO. p. 2.

- Enables the learner to be change-adept, deploying diverse interactive and participatory learning processes
- Offers safe and inclusive learner-friendly environments that recognize individual learning needs and styles and the rights of the child.
- Fosters skills, values and dispositions for community participation.[33]

Bringing DRRE and CCE together within an ESD framework presents a major opportunity for taking quality education forward. Education directed towards building resilience and sustainability is:

- Of core *relevance* to nations and communities around the world;
- Significantly *change responsive* while fostering *participation* in change processes;
- *Learner-friendly* in its focus on the immediate world of the child and its pedagogy of engagement.

Inextricably bound together with DRRE/CCE/ESD in the achievement of quality education are two further initiatives: *Life Skills Education* and *Child-Friendly Learning*.

1.5.2 Life Skills Education

Life skills are identified as skills required for personal and social competence, for exercising social responsibility, for contributing to the wider community and for lifelong adaptation to change. Life skills education is concerned with the systematic practice and learning of life skills within learning programmes. By definition, acquiring a skill involves active participation in its practical application rather than passive learning.[34]

Although there are diverse listings of what constitute life skills depending on cultural and national contexts, the following three broad categories capture the essence:

- Communication and interpersonal skills (e.g. interpersonal communication skills; empathy building; cooperation and team work; advocacy skills).
- Decision making and critical thinking skills (e.g. problem solving skills; lateral thinking skills).
- Coping and self management skills (e.g. skills for increasing personal confidence and abilities to assume control, take responsibility, make a difference, or bring about change; skills for managing feelings; skills for managing stress).[35]

Life skills education is designed to address urgent challenges which children and youth face in today's world, including disease, poverty, violence, environmental threats, and discriminations. It is already incorporated into the formal national curriculum of some 70 developing countries.[36]

Life skills are fundamental to the five dimensions of DRRE laid out in section 1.2. Skills such as critical thinking, decision making, problem solving, negotiation, conflict management, information management and change agency

33 UNESCO. Undated. *Contributing to a More Sustainable Future: Quality Education, Life Skills and Education for Sustainable Development*. Paris: UNESCO. No pagination. INEE. 2010. *INEE Minimum Standards for Education: Preparedness, Response and Recovery*. New York: INEE. p. 122.

34 Pike, G. & Selby, D. 1999. *Global Education: Making Basic Learning a Child-friendly Experience*. Amman: UNICEF MENARO. 23-8; UNESCO. Undated. *Contributing to a More Sustainable Future: Quality Education, Life Skills and Education for Sustainable Development.* Paris: UNESCO. No pagination.

35 WHO. 2001. *Skills for Life*. Geneva: WHO. p. 8.

36 UNICEF. Life Skills Based Education. http://origin-www.unicef.org/education/index_focus_lifeskills.html

and advocacy are crucial for active engagement with processes of community resilience building, disaster adaptation and mitigation. The same argument applies to CCE and ESD learning, not least because life skills – particularly skills that enable the ability to be flexible, relearn and adjust – lend themselves to a fast-changing and threatened world in which sustainability is a paramount necessity.

1.5.3 Child-Friendly Learning

The 1989 UN Convention on the Rights of the Child (CRC) has provided a framework for the development of a rights-based and child-centered, or child-friendly, approach to achieving the overall goals of quality education. Over its 53 articles the Convention considers the child holistically as rights holder and beneficiary, deserving of protection and safeguarded development, while also having a voice and the right to participate.[37]

The child survival and protection rights enshrined in CRC clearly find resonance in the safety dimension of disaster risk reduction. It is a child's right to learn how to stay safe in home, school and community.

Whether school learning happens in an imposing building, in a shack, or under a tree, there needs to be a 'culture of safety and resilience' if the learning context is to be considered child-friendly.

CRC's child participation rights have a significant bearing upon the content and process of disaster risk reduction education. The Convention lays down that children have the right to express their views on all matters affecting them, that they are entitled to freedom of expression through the media of their choice, and that they enjoy freedom of association and the right to assemble together (Articles, 12, 13, 15). Translated into the context of DRRE, it follows that children have the right to participate in decisions and efforts to protect their own safety and wellbeing in the face of actual and potential threats, and to join in reducing vulnerabilities and building resilience in their own community. It is for these reasons that child-led and child-centered DRRE is already being advocated and practiced by child-focused agencies such as UNICEF, Plan International and Save the Children, among

BOX 7.

Children's Charter: An Action Plan for Disaster Risk Reduction for Children by Children

The Children's Charter for Disaster Risk Reduction has been developed through consultations with more than 600 children in 21 countries in Africa, Asia and Latin America.

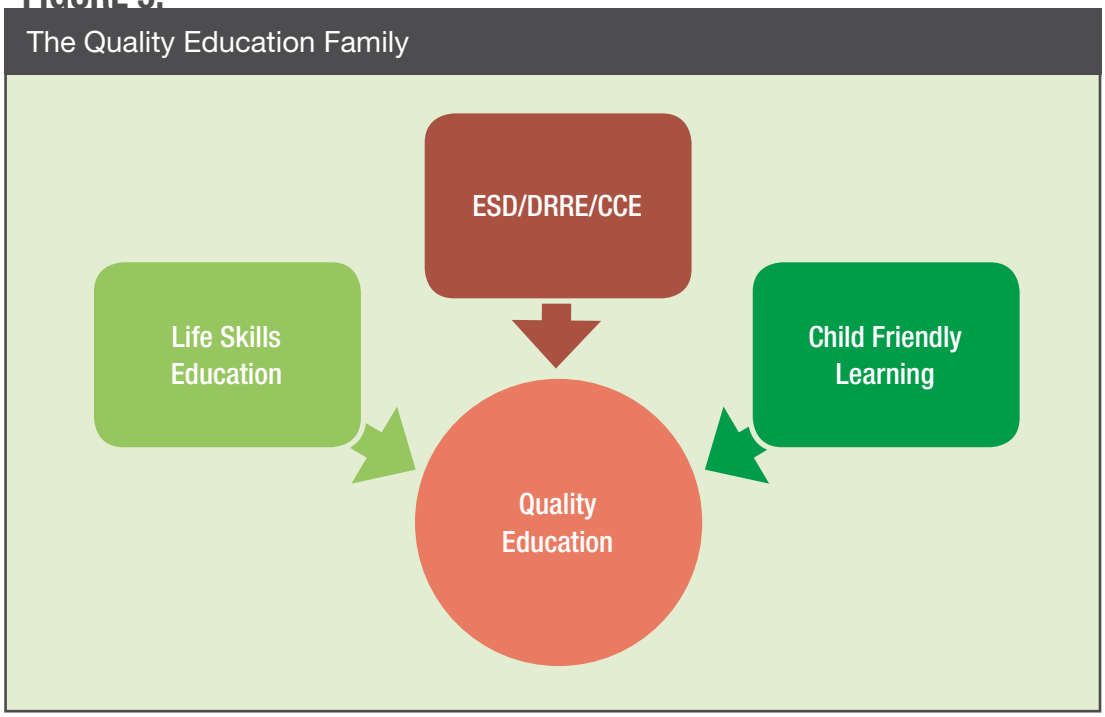
1. School must be safe and education must not be interrupted.
2. Child protection must be a priority before, during and after a disaster.
3. Children have the right to participate and to access the information they need.
4. Community infrastructure must be safe, and relief and reconstruction must help reduce future risk.
5. Disaster risk reduction must reach the most vulnerable.

Source: Taken from http://www.childreninachangingclimate.org/database/CCC/Publications/children_charter.pdf

37 http://www2.ohchr.org/english/law/crc.htm

FIGURE 5.

The Quality Education Family



others.[38] Further application of accumulated experience and insight from child-centered pedagogies to DRR curriculum reinforces the letter and spirit of CRC while also contributing to quality education in terms of content, process, learning environment and learning outcomes.

The characteristics of rights-based, child-friendly learning enhance a vision of quality learning that brings together sustainability-underpinned disaster risk reduction education and climate change education infused throughout with life skills practice.

38 http://www.unicef.org/files/DDR_final.pdf
http://plan-international.org/about-plan/resources/publications/emergencies
http://www.savethechildren.org.au/what-we-do/climate-change-and-disasters/disaster-risk-reduction

DISCUSSION TOOL 1.

Curriculum Developers: Use this tool as a baseline study exercise (see pp. 40-1, pp. 48-51) or at various points in the DRR curriculum development process

Principals/ Teacher Trainers: Use this exercise for DRR curriculum awareness training with teachers.

The Five DRR Dimensions in the Curriculum

The checklist below can be employed as a framework for curriculum review and development purposes as follows:

- Exploring current DRR provision according to the five dimensions across the whole curriculum
- Exploring current DRR provision according to the five dimensions in the curriculum of particular subjects
- Checking the weighting given to each dimension in successive drafts of curriculum during development.

Process:

1. Participants form small groups perhaps arranged by subject(s) or grade(s);
2. They are given a handout explaining the five dimensions together with copies of relevant curricula;
3. Groups copy the checklist on to a large sheet of chart paper
4. They examine the degree to which each dimension is addressed in the subject(s) or grade(s) in question;
5. Having determined the degree, they tick the appropriate box and write in bullet point notes on where and how in the curriculum the DRRE dimension is being addressed;
6. Using a marker pen of a different color, they make a bullet list of ideas on how the treatment of each dimension might be improved and/or increased by filling in all boxes to the right of the one initially completed (e.g. if they have checked 'Hardly at all' they write in suggestions on how the dimension might be 'Somewhat' or 'Strongly' addressed;
7. Each group presents their work;
8. General discussion follows reviewing findings and determining entry points and priorities for DRR curriculum development.

Five Dimensions of DRRE: Curriculum Checklist

	Hardly at all	Somewhat	Strongly
Dimension 1: Understanding Mechanisms			
Dimension 2: Becoming Safety Wise			
Dimension 3: Understanding Risk Drivers and How Hazards Can Become Disasters			
Dimension 4: Building Community Risk Reduction Capacity			
Dimension 5: Building an Institutional Culture of Safety and Resilience			

Benin
© Olivier Asselin
(see full captions pp. 185-9)

STRATEGIC POINTERS FOR CHAPTER ONE.

→ **Policy Makers/Curriculum Developers**: Use the background material presented in 1.1 for legitimizing and prioritizing the need for fast action to integrate DRR in the curriculum.

→ **Policy Makers/Curriculum Developers/Teacher Educators/ Principals/ Teachers/ Local Officials/DRRE Stakeholders**: Use the five essential dimensions of DRR learning as a yardstick in developing a holistic and comprehensive approach to DRR integration in curriculum development, teaching and learning, institutional and professional development.

→ **Policy Makers/Curriculum Developers**: Implement ESD and DRRE together as a cost-effective and time-effective strategy to reduce the demands on teachers and pressure on an overloaded curriculum.

→ **Policy Makers/Curriculum Developers**: Proceed with DRRE curriculum development, even where no ESD platform exists.

→ **Policy Makers/Curriculum Developers**: Link DRR and CCE as a theoretically sound and pragmatic move that saves time and money and avoids teachers feeling 'curriculum overload'.

→ **Policy Makers/Curriculum Developers**: If the context allows, link all the initiatives described in Section 1.5 under the one heading of quality education.

1.6 Selected Tools and Resources

- Anderson, A. 2010. *Combating Climate Change through Quality Education.* http://www.brookings.edu/research/papers/2010/09/climate-education-anderson

  This policy review offers a framework to address climate change education by mobilizing the existing education communities of practice through promotion of an education for sustainable development agenda that incorporates disaster risk reduction, quality learning as well as environmental and climate change education.

- Karpinska, Z. 2008. *Disaster Risk Reduction: Education Policy Review*. Johannesburg: ActionAid.

  This report critiques the tendency in the DRR education field to focus only on natural and technological disasters and calls for a more holistic rendition of DRR to cover disasters such as conflict and HIV/AIDS.

- OECD. 2010. *Policy Handbook on Natural Hazard Awareness and Disaster Risk reduction Education*. http://www.oecd.org/dataoecd/24/51/42221773.pdf

  This handbook offers policy guidance on natural hazard awareness and DRR education.

- UNESCO. 2010. *Education for Sustainable Development and Climate Change. Policy Dialogue 4*. UNESCO, Paris. http://unesdoc.unesco.org/images/0017/001791/179122e.pdf

  After highlighting rationales for re-orienting education to address the causes and consequences of climate change, this short document lists key concepts, contents, values and skills to be integrated into educational programmes.

- UNESCO. 2010. *UNESCO Strategy for the Second Half of the United Nations Decade of Education for Sustainable Development*. Paris: UNESCO. http://www.preventionweb.net/files/15341_unescostrategyfortheunitednationsde.pdf

  This paper highlights key regional challenges and opportunities as well as key strategic areas of action for the second half of the UN Decade of Education for Sustainable Development. DRR appears as one of the key considerations.

- UNESCO Bangkok/ UNICEF. 2011. *Disaster in Education: An Imperative for Education Policymakers*. Bangkok: UNESCO Bangkok. http://unesdoc.unesco.org/images/0021/002139/213925e.pdf

  This brochure highlights why and how Ministry of Education policy makers should mainstream DRR education in all aspects of the education sector.

- UNESCO/UNEP. 2011. *Climate Change Starter's Guidebook: An Issues Guide for Education Planners and Practitioners*.
  http://unesdoc.unesco.org/images/0021/002111/211136E.pdf

  This is a highly recommended sourcebook with a wealth of helpful information on scientific and societal aspects of climate change, climate change mitigation and adaptation and education and climate change. In the education chapter, a strong case is made for integrating climate change within education for sustainable development. Links and overlaps between climate change and disaster risk reduction education are also discussed.

- UNISDR. 2005. *Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters*. Geneva: ISDR.
  http://www.unisdr.org/we/inform/publications/1037

  The Hyogo Framework for Action adapted by 168 countries at the 2005 World Disaster Reduction conference, is a 10-year plan to make the world safer from national hazard. Priority 3 calls for building a culture of safety and resilience through DRR in the education system. This is an important policy document in providing a rationale for mainstreaming DRR in education.

- UNISDR. 2009. *ISDR Terminology on Disaster Risk Reduction*.
  http://www.unisdr.org/we/inform/terminology

  Definitions of key terminologies on Disaster Risk Reduction are available online in Arabic, Chinese, English, French, Russian and Spanish.

- Williams, P. 2006. *Achieving Education for All: Good Practice in Crisis and Post-Conflict Reconstruction*. Commonwealth Secretariat, London.

  This is a handbook for education policy makers and practitioners in Commonwealth countries. It examines the role of education in relation to conflict situations, natural disasters, and difficult situations (e.g. poverty, HIV/AIDS pandemic, malaria, TB and other diseases and political violence).

Chapter 2
Approaches to Integrating Disaster Risk Reduction in the School Curriculum

This chapter explores a spectrum of approaches to integrating disaster risk reduction in the curriculum. At one end of the spectrum is infusion into a limited number of carrier subjects where the DRR element is thinly connected (i.e., shallow); at the other is fully-fledged interdisciplinary and cohesively integrated cross-curricular provision (i.e., deep). The chapter describes two additional alternative approaches to DRR curriculum development – first, embedding of DRR in facets of quality education such as life skills and environmental education, and second, harnessing special DRR-related school and community events in aid of DRR curriculum development. Finally, the vital point is made that DRR curriculum development needs to be both a horizontal (across each grade) and vertical (through the grade levels) exercise.

Integrating disaster risk reduction into the formal school curriculum is the single most important means of developing a sustained culture of safety and resilience in a school and its community.

There is a spectrum of approaches to integrating disaster risk reduction in the curriculum. At one end of the spectrum is that of infusion of disaster-related elements into existing school subjects. At the other end lie forms of interdisciplinary curriculum provision. Other points, falling in between, combine elements of infusion and the interdisciplinary.

2.1 Infusing Disaster Risk Reduction across the Curriculum

Curriculum Developers/ Principals/ Teachers: Use 2.1 to generate ideas on how each subject can be a carrier for DRR

Infusing DRR across curriculum involves determining the key DRR-related knowledge (themes, topics and concepts), skills and dispositions that students need to acquire, and identifying the potential of each subject to carry and deliver those learning needs.

The curriculum can carry *direct* potential for disaster risk reduction learning. For example, if the mechanics of earthquakes are covered in the geography curriculum, that presents a direct opportunity for enriching the curriculum by also looking at earthquake preparedness and degrees of earthquake vulnerability and resilience in the community.

The curriculum can also carry *indirect* potential for infusing DRR, that is, it can capitalize on parts of the curriculum with no direct linkages into which hazard- and disaster-related study can be injected. For example, a unit in the visual arts curriculum on poster painting can be utilized for a hazard awareness poster campaign in the school and community or a unit in the language and literature curriculum, if not tied to a set body of poems, can be used for considering disaster-related poetry. Table 1 (next page) offers examples of how disaster risk reduction can be infused across the curriculum.

Infusion can be limited to a narrow band or stretched across a broad range of subjects. As discussed in Chapter 1, there has been a tendency to confine disaster-related curriculum to the physical and natural sciences and geography. The problem then arises that these subjects are not natural carriers of issues concerning social, economic, cultural and community dimensions of hazard and disaster. It may also be the case that teachers trained in the culture of these subjects may not feel comfortable facilitating discussion and reflection on values-related aspects of DRRE. An infusionist approach that integrates the five dimensions of DRRE as laid out in the previous chapter involves a more comprehensive approach to infusion. This might involve all subjects, or at least a sufficient cross-section of subjects to enable ample coverage of the five dimensions. Box 8 (p. 25) demonstrates how, in different countries, disaster risk reduction curriculum is being delivered primarily through various permutations of science, social science, health-related and language subjects.

TABLE 1.

Disaster Risk Reduction across the Curriculum	
Subject	Examples
Arts (Visual and Performing)	• Creating murals, collages, posters and displays on hazard and disaster themes • Composing and performing song, dance, marionette shows and plays to build community awareness of DRR • Using mime and body sculpture to convey the nature of hazards and possible human responses
Language and Literature	• Reading and discussing stories, fables, poems and news articles on disasters and hazards • Composing essays, poems and stories in response to disaster-related print and visual stimulus material • Letter writing to local newspapers and bodies on local DRR issues
Science and Technology	• Learning about mechanisms of climatological and geo-seismic natural phenomena • Model building and experimentation to understand basic principles of disaster-resistant construction • Learning about the effects of human activities on ecosystems
Biology	• Learning how a healthy ecosystem, such as forest or mangrove swamp, can protect a community from hazards such as landslides and tsunamis • Examining the role of wetlands in absorbing excessive rainwater and preventing floods downstream • Reviewing how local deforestation has increased hazards in communities
Mathematics	• Working on measurement aspects of home and school safety • Graphing natural hazard data (e.g., total number of people affected and total economic cost of cyclones in different time periods) • Extrapolating disaster trends based on recent statistics
History	• Exploring impacts of natural hazards and climate change periods on past civilizations • Studying past major national/community disasters and identifying lessons to be drawn • Researching indigenous/traditional DRR wisdom/practice and considering its present applicability
Geography	• Re-drawing national maps to show the effects of different degrees of rise in sea level on coastlines • Studying impacts of natural disasters on urban and rural communities • Looking at changes in land use as a means of resilience building and as a source of hazard
Social Science/ Studies	• Reviewing disaster vulnerability through human rights and child rights lenses • Interviewing local community members on their hazard/disaster perspectives, memories and past practices • Field visits to examine local disaster support services
Civics/Citizenship	• Meeting with locally elected officials to find out about disaster preparedness strategies and structures • Undertaking DRR advocacy projects in the local community • Engagement in community resilience-building initiatives
Health/Wellbeing Education	• Learning basic first aid • Learning safety practices and procedures to follow with the onset of a hazard • Learning about potential post-disaster health threats
Agriculture	• Studying and practicing adaptation of crop growing cultures in response to increasingly dry/wet climatic conditions • Learning about food preservation and food security • Learning about soil degradation

BOX 8.

Integrating and Infusing DRR into Existing Curriculum Subjects: Some Examples of Infusion

Cambodia, Lao PDR and The Philippines: Under the Regional Consultative Committee (RCC) on Mainstreaming Disaster Risk Reduction, these three countries implemented a Priority Implementation Partnership to mainstream DRR in the education sector. During phases one and two of the project, DRR curriculum integration took place in grade 8 Geography and Earth Studies in Cambodia, in grade 6 Natural Science and Social Science in Lao PDR, and in grade 7 Natural Science and Social Studies in the Philippines.

Fiji: DRR has been incorporated in the school curriculum at both primary and secondary grade levels across a number of subjects. For example, Health Science, primary classes 3-8, addresses the topics of sanitation, safety and first aid in emergencies, and infectious disease prevention. Social Science, primary class 8, addresses decision-making skills and topics including risk management strategies, place and environment. Geography, secondary class 6, includes topics on detecting and monitoring hazards, hazard mitigation and prevention. Biology, secondary class 6 highlights human influences on ecosystems.

Madagascar: DRR themes and topics have been introduced in grade 7 French, Science and Technology, and Mathematics in the new national curriculum launched in 2009. Environmental awareness is one of the topics in French (e.g., brush fires, recycling of waste, new sources of energy, climate change, deforestation and the threat to indigenous species). One of the themes in Science and Technology concerns the degradation of the quality of the regional environment (e.g., degradation of soil quality, rice field flooding, disappearance of local forests, mineral exploitation). In Mathematics, lessons on measurement and scale include working upon the area of forest devastation on the east coast of Madagascar and on the area of drought-induced devastation caused by climate change in the Androy region of the country. The unit also includes consulting maps on the impact of climate change on agriculture and asks learners to examine levels of carbon consumption. DRR has also been introduced in a two-month unit on the management of water in the grade 6 Science and Technology curriculum launched in 2008.

Peru: DRR has been infused into a range of primary and secondary subjects. For primary education, Geography at grades 1-6 addresses natural and anthropic phenomena, emergency preparedness and prevention among others. For secondary education, DRR appears in Geography (grades 7 and 8) and Science, Technology and Environmental Education (grades 7-11). For the latter, the development of environmental consciousness in risk management is specified as an objective.

Source: Adapted from UNESCO/UNICEF F. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries*. p. 88, 94, 104, 110, 122, 166.

Curriculum developers also need to pay attention to the amount of DRR infusion. For example, a value-added approach involving distributing disaster risk reduction knowledge across subjects by incorporating some new learning materials and activities would not require a fundamental revision of the curriculum. If the aim is to recast the curriculum by displacing some topics and re-orientating and re-conceptualizing others, a more fundamental process of curriculum renewal and re-thinking educational purpose must be set in motion. The approaches described in the next section begin with the former and progressively move towards the latter.

2.2 A Spectrum of Approaches to Connecting DRR Learning Across the Curriculum

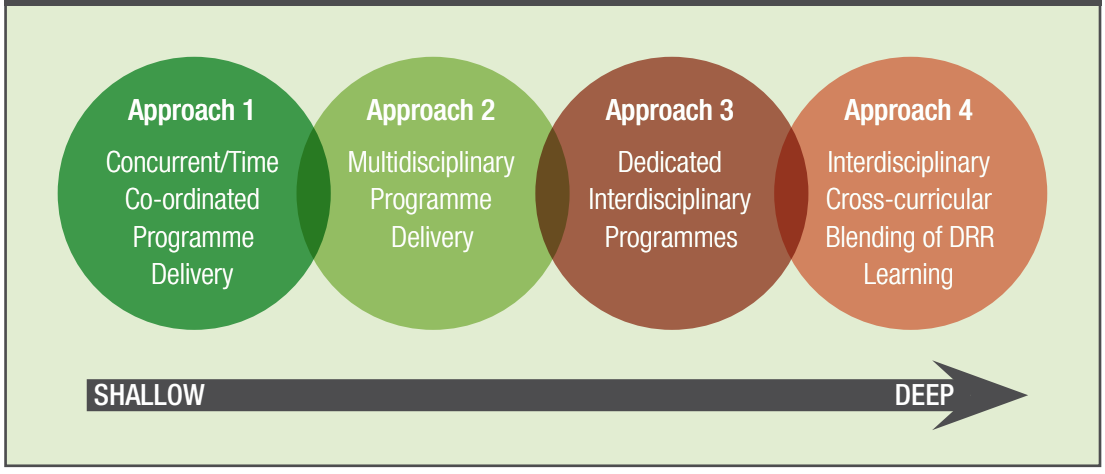
Simply infusing disaster risk reduction themes and topics at points across the curriculum is no guarantor that a school is offering the learner a coherent and systematic menu of disaster risk reduction education. A recurring problem with infusion is that it can leave aspects of hazard and disaster as treated in different subjects isolated and disconnected with no framework or mechanism enabling what is learned in one subject to build upon, inform, illuminate or reinforce what is learned in other subjects. Teachers of particular subjects can organize their DRR programme paying no attention to what is taught in other subjects, leaving it up to the student to discover any connections. Infused curriculum that is not linked falls short of reflecting the multidisciplinary 'real world' nature of disaster risk reduction. What is infused needs to be connected. In this regard, building teacher awareness of, and commitment to, connected DRR curriculum is an important aspect for teachers' professional development. Figure 6 below shows the continuum of horizontal (i.e., across one grade level) approaches to building interconnections between subjects.

2.2.1 Approach 1 – Concurrent or Time Coordinated Programme Delivery

An easily achieved first step, involving a very limited level of collaboration, is for two or more

FIGURE 6.

Shallow through Deep Horizontal Curriculum Integration of DRR



Principals/ Teacher Educators: Have teachers map how DRR is approached in their school curriculum according to the four approaches described in 2.2

subject teachers to agree to re-order the scheduling of DRR-related topics they teach so that they are taught either simultaneously or in sequenced order. In this way, learners reap the benefits of having DRR messages reinforced within an agreed time frame in two or more classrooms. In this shallow approach to cross-curricular DRR provision, links between knowledge and skills taught in each subject are not necessarily consciously and deliberately made. This approach normally requires little in the way of clearance from central government.

2.2.2 Approach 2 – Multidisciplinary Programme Delivery

A slightly deeper approach can evolve from the concurrent or time coordinated programme delivery when subject teachers to agree to teach an overarching DRR theme such as 'Reducing Disaster Risks' and incorporate the concepts, content, skills development and learning activities as appropriate to their respective subjects. Because the theme is broad, subject teachers have considerable leeway in terms of what they contribute and their focus remains on subject content, while assessing learners in ways that are appropriate to the culture of the subject.

The multidisciplinary approach tends to focus on themes during the early and middle school years and often moves toward a problem-based approach at secondary level (i.e., a particular problem in the society or community is addressed through the unique perspective of each subject).

Finding time to plan a multidisciplinary approach to DRR may be problematic for teachers and the choice of theme may feel forced in the case of some subjects. Multidisciplinary teaching tends to leave the question of whether links are made between subject DRR offerings to chance. Links may or may not be built into the process in a structured way in that subjects and teachers more or less retain their autonomy. A greater the shift away from shallow integration is achieved as more substantive and thorough links are made. Again, this approach involves no fundamental departure from existing curriculum and is 'value added' curriculum development, frequently determined at school level.

2.2.3 Approach 3 – Dedicated Interdisciplinary Programmes

Moving again to a deeper level of infusion, the third approach combines DRR content and skills derived from some, most or all subjects into a new course with a new title and new syllabus. The course can be taught by an individual teacher, or by a team of teachers working actively together or taking turns in teaching. It might continue for the whole school year or be of limited duration. Different ways of looking at disaster issues are approached in a relatively seamless way. Creating space for a dedicated interdisciplinary programme requires substantive curriculum revision and development, significant professional development of the teachers involved and a systematic writing of tailored resources. The dedicated interdisciplinary programme approach and cross-curricular subject integration approach are not mutually exclusive, and can indeed be mutually beneficial as the case of DRR curriculum in Georgia indicates (see Box 9). The Georgia case also demonstrates the need for significant leadership and intervention by central government.

2.2.4 Approach 4 - Interdisciplinary Cross-curricular Blending of DRR Learning

A fourth approach, systematic and demanding in its comprehensiveness, starts from the

BOX 9.

Georgia: The Head of Class Hour Programme and DRR Across the Curriculum

The incorporation of disaster risk reduction in the national curriculum of Georgia is a recent development that has been implemented within the framework of the April 2010 to June 2011 *Supporting Disaster Risk Reduction amongst Vulnerable Communities and Institutions in the Southern Caucasus Project* funded by the Disaster Preparedness Programme of the European Commission for Humanitarian Aid and Civil Protection (DIPECHO).

The flagship curriculum development initiative has been the mandatory Head of Class Hour programme covering grades 1-9. Under the programme, the Head of Class, the coordinator of all teachers teaching at a particular grade level, has responsibility for conducting a one-hour lesson per week throughout the school year on cross-curricular topics that the Ministry of Education considers could not be easily accommodated in existing core subjects. The Head of Class also has responsibility for organizing programme-linked activities outside school.

Disaster risk reduction figures considerably in the Head of Class Hour programme from grades 5-9. The themes and topics covered include:

- Natural hazards and global disaster trends (causes, effects, climate change and disasters, the links between development and disaster)
- The role of DRR in building a culture of safety and resilience
- Natural hazards and their prevalence in Georgia
- Role of education in DRR
- Basic DRR concepts and tools (hazard, disaster, disaster risk reduction, risk management, vulnerability, prevention, mitigation, hazard and vulnerability mapping, school emergency preparedness and response, family emergency planning)
- Natural hazards in Georgia (earthquakes, flooding/flash flooding, landslides, avalanches, wildfires, droughts, wind storms, hail, thunderstorms)
- Natural hazards at the global level (cyclones, typhoons, hurricanes), volcanic eruptions, tsunamis)
- Dealing with disaster-induced distress and trauma
- Developing the concept of volunteerism
- Parental/community involvement and awareness

The programme is organized around sixteen thematic modules, each devoted to a particular natural hazard, with most modules including activities for a range of grade levels for which the topic is held to be appropriate. For example, the Earthquake module has activities for grades 5, 6 and 7, the Climate Change module covers grades 8 and 9, and the Volcanic Eruption module is for grade 9. Multiple opportunities for parental and community involvement and fieldwork are offered. To guide Head of Class teachers in their teaching, a manual, *Teaching Disaster Risk Reduction with Interactive Methods*, is available.

Turn to Box 21 (p. 58) and p. 123 for further glimpses into DRR curriculum development in Georgia

Curriculum Developers/ Teachers/ Principals: Turn to p.123 for details of the Georgia DRR teaching manual

BOX 9. continued

The programme encompasses interactive learning in the classroom and a range of practical in-community activities such as excursions and environmental campaigns. Children participate in school hazard, risk and vulnerability mapping and developing school disaster preparedness plans, giving them opportunities to learn by doing and put newly-acquired knowledge into practice alongside parents and community members.

The Head of Class Hour programme belongs to no discipline but draws on all. Learning in the programme is reinforced through the integration of DRR learning into a number of school subjects. There are DRR-related themes and topics in: Natural Science, grades 1-6 (emergency, safety and health-related life skills); Social Science, grades 1-6 (human/nature relationships, environmental protection, sustainable development); Geography, grades 7-9 (natural and human-induced hazards, disaster events in Georgia, global geo-ecological problems); Civic Education, grades 7-9 (sustainable development for survival); Biology, Physics and Chemistry, grades 7-9 (geo-physical processes, stability of ecosystems, ecology and health, human-caused environmental change and its health impacts). Additionally, in January 2011 the Georgia Ministry of Education introduced a stand-alone Civil Protection and Safety programme for grades 4 and 8 dealing with everyday safety, security and life skills, and including disaster risk reduction and safety in emergencies.

Sources: UNICEF. 2011. *Educating Children to Reduce Disaster Risks: An Innovative Practice on Disaster Risk Reduction and Education in Georgia*; UNICEF/National Curriculum Centre (NCC). 2011. *Teaching Disaster Risk Reduction with Interactive Methods: Book for Head of Class Teachers (Grades V-IX)*. Tbilisi: UNICEF/NCC.

premise that links and overlaps between DRR themes and topics across different subject areas need to be factored into whole curriculum programming if learners are to achieve a holistic understanding of hazard and disaster. Under this approach:

- The knowledge and skills to be taught in each subject, learning materials to be used and activities to be carried out are determined, and DRR knowledge and skills already taught in each subject area that can be referenced, further developed and capitalized upon (even challenged) in other areas are agreed upon. This presupposes clear mutual understanding on the part of all teaching staff of the sequence and timetable of DRR topics across all subjects. It also presupposes that whole curriculum overview and monitoring mechanisms are in place.
- From time to time, certain subjects borrow another subject's approaches, concepts and focuses to emphasize their importance (for example, time in science lessons can be allocated to looking at the social and economic impacts of hazards; time can be allocated in social studies to revisit the science of climate change).
- Opportunities are created for occasional shared sessions in which two or more teachers of different subjects teach together applying their unique perspectives on a DRR topic or theme. DRR-related field trips and in-community projects are used as

opportunities for bringing subjects together and for emphasizing interdisciplinary (and trans-disciplinary) ways of seeing the world.

Building synergies between DRR learning across the curriculum involves creating more flexible subject boundaries and a move away from an ethos of subject territoriality on the part of teachers. The positioning of subjects within the curriculum is adjusted, demonstrating a deeper and seamless integration.

Some key understandings become evident as one examines the continuum of shallow to deep approaches to disaster risk reduction integration:

- Disaster Risk Reduction Education, like other facets of Quality Education, breaks from narrowly defined school disciplines. Subjects reinvent themselves as spaces for active and broad-based enquiry with great relevance to the learner's life and reality.
- The above shift is paralleled by a move away from didactic, content-driven teaching to child centered, constructivist learning in which the learner shapes their own ideas and understandings.
- A move towards interdisciplinary approaches requires significant and sustained professional development.
- As we move from approach to approach, it becomes increasingly the case that teachers need to see their role as one of functioning within a dynamic and collaborative DRR learning community or organization, working together to improve the quality and relevance of the education they offer.

Interdisciplinary blending of DRR across the curriculum requires significant and sustained leadership and commitment by school principals and regional and national Ministry of Education personnel.[39]

39 This section draws from the following: Burns, R.C. & Beth, S. 2002. *Dissolving the Boundaries: Planning for Curriculum Integration in Middle and Secondary Schools*. Charleston, WV: Appalachia Education Laboratory. Harden, R. 2000. The Integration Ladder: A Tool for Curriculum Planning and Evaluation. *Medical Education*, 34, 551-7; Loepp, F. 1999. Models of Curriculum Integration. *Journal of Technology Studies*, XXV, 2. Summer/Fall 1999, pp. 21-5.

Teachers/Teacher Educators: Turn to section 5.2 (pp. 92-4 and Chapter 6 (pp. 110-21) for discussion of DRR pedagogy.

Policy Makers/ Curriculum Developers/ Teacher Educators: Turn to Chapter 7 (pp.122-36) for discussion of teacher professional development

Principals/ Teachers: Turn to section 8.1 (pp.138-42) and 10.4 (pp. 171-9) for discussion of the DRR learning community

BOX 10.

Some Interdisciplinary Approaches to DRR Curriculum

Russian Federation: DRR topics and themes have been systematically brought together in a stand-alone subject called Basics of Life Security (normally taught from grades 7 to 9, but from grades 5 to 9 in some regions). Basics of Life Security addresses not only topics and themes concerning natural hazards but also technological hazards, road safety, conflicts and terrorism. Basics of Life Security also appears as a cross cutting dimension in other subjects such as Fine Arts, Technology, Physical Education, Geography and Physics.

Turkey: Eight interdisciplinary focuses in a reformed national primary curriculum were introduced in school year 2005-2006, to be addressed vertically and horizontally in the curriculum. One of these is 'disaster training and safe life'. With this, DRR now appears in a range of subjects across the primary grades.

Source: Adapted from UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries*. p. 74, 82.

Principals/ Teacher Educators: Use Tables 2 and 3 with teachers to discuss the relative strengths of approaches to DRR integration

TABLE 2.

Advantages and Disadvantages of the Four Key Approaches to DRR (Horizontal) Integration

Approach	Advantages	Disadvantages
Approach 1 Concurrent/ Time Coordinated Programme Delivery	• Easy to start through collaboration between two or more subject teachers • DRR learning messages can be reinforced within pre- arranged timeframe • No change in exisitng curriculum	• A one-off arrangement with no planned follow-up, any momentum created is not reinforced by design • Wider reinforcement of student learning missing
Approach 2 Multidisciplinary Programme Delivery	• Relatively easy to start through collaboration between a small number of subject teachers • No fundamental change in existing curriculum • Well-structured DRR links between subjects might result • Suitable for problem-based learning at secondary level	• Teachers may lack the time and commitment to prepare (and review) together • Consequently, links between subjects may be haphazard • Links made to theme in some subjects may feel forced
Approach 3 Special Subject (Dedicated Space)	• Backed by central government, there can be quick implementation, large scale piloting and rapid movement to scale • Attracts special attention, resources and status, giving a clear and strong message that DRR learning is important in the formal curriculum • 'Halo' effect among programme pioneers can build strong momentum • Complex and can require significant curriculum readjustment • Requires teachers to work together on DRR which can have spin-offs for their other work	• May lead to view that DRR is being dealt with in a prominent new part of the curriculum so wider DRR infusion not necessary • Very limited student exposure to DRR learning, if the special subject is limited to a specific grade level or an optional course • Approach can lead to an under-valuing of the cross-cutting nature of DRR learning • Significant time and resource investment in teacher capacity building, tailored learning materials and assessment methods
Approach 4 Interdisciplinary Cross-curricular Blending of DRR Learning	• Structured exposure to DRR learning across the curriculum • DRR learning in different subjects harmonized and reinforced • Approach is vital to achieve Dimension 5 of DRRE in which the school becomes a DRR learning community / organization, and build a culture of safety and resilience	• Re-examination of ethos, assumptions and boundaries of each subject demanding significant buy-in from entire staff • Necessitates whole curriculum monitoring and review • Calls for sustained commitment to professional development requiring significant time and resources

Halo effect is an effect whereby the perception of positive qualities in one thing or part gives rise to the perception of similar qualities in related things or in the whole.

2.3 Two Additional Approaches to Embedding DRR in the Curriculum

Beyond the four broad approaches outlined above are two additional approaches that merit description here: the symbiosis approach and the special events approach. Each of these two approaches can be harnessed for additional support to infuse curriculum in essentially disconnected subjects (*Approach 1*), multi-disciplinary programme delivery (*Approach 2*), dedicated inter-disciplinary programmes (*Approach 3*) or systematic, interdisciplinary cross-curricular blending (*Approach 4*).

2.3.1 The Symbiosis Approach: Embedding DRR within Various Facets of Quality Education

Another broad approach to integrating disaster risk reduction in the curriculum relies upon the shared qualities between DRRE and other facets of Quality Education such as Life Skills, Child-friendly Schools, Civic/Citizenship Education, Environmental Education and Education for Sustainable Development. Embedding disaster-related themes into one or more of these facets that are already strongly present in a national, regional or local curriculum as cross-curricular dimensions provides a pragmatic way to weave DRR into the curriculum. This has a potential two-way value-added effect. The content and competencies addressed in each facet can be enriched by DRR elements, while conversely, each facet can bring additional depth, scope, substance and diversity to understandings of disaster risk reduction education. This is especially so in the case of Education for Sustainable Development.

Refer back to 1.5 (pp.15-9) for discussion of quality education

In a number of countries, particularly in Africa, the task of developing climate change curriculum has taken on increasing urgency and has become a vehicle for DRR integration. In Benin, a 2008 to 2011 climate change curriculum change project for lower secondary level addressed issues of vulnerability and capacity building related to climate change. In Nigeria, in 2012, climate change and DRR curriculum integration at both the primary and secondary level began. Malawi has begun integrating issues of climate change into school curricula with the government expressing commitment to integrate DRR into school curricula as part of the process.[40]

Refer back to 1.3 (pp. 8-14) for the linkages between DRR and Education for Sustainable Development

Box 11 below offers examples of the symbiosis of DRR with different cross-curricula quality education carriers. The examples show that

40 UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries*. Paris/Geneva: UNESCO/UNICEF.

BOX 11.

Symbiosis Approaches to DRR Curriculum: Examples

Life Skills Education in Myanmar: Life Skills is the principal DRR carrier across the primary and lower secondary grade levels. After the 2008 Cyclone Nargis, integration of DRR components in the Life Skills curriculum started. The process included a needs assessment involving head teachers, teachers, students and communities followed by lesson development, field-testing and modifications of the lessons by head teachers, teachers and students. DRR is integrated within a strand called 'Environment and Sanitation' within Life Skills. For example, grade 5 includes a unit on Caution in Emergencies (primarily covering floods, tsunami, earthquakes and forest fires); grade 6 has a unit titled

BOX 11. continued

Emergency! It's Flooding!; grade 7 addresses Disaster Preparedness (including disaster family plan, emergency kit, evacuation map); grade 8 has a topic covering earthquakes, landslides and safety in the event of fire.

Sources: ASEAN/ISDR. 2011. *Disaster Resilience Starts with the Young: Mainstreaming Disaster Risk Reduction in the School Curriculum.* Jakarta: ASEAN Secretariat; Khun Dee, ADPC (personal communication, 27 June 2012).

Education for Sustainable Development in the Cook Islands: The Cook Islands is one of 35 countries participating in the Sandwatch project (www.sandwatch.org), one of the UNESCO good practice projects. The project aims at addressing problems and conflicts around beach environments by enabling children, youth and community members to work together to better manage coastal environments. It also aims at building ecosystem resilience so as to contribute to climate change adaptation. The Sandwatch project was first introduced to the country (Rarotonga Island) through a teacher workshop in 2003, and it has gradually expanded to a number of schools on other islands. The Curriculum Unit of the Ministry of Education has been coordinating the project. In 2006, curriculum integration efforts were made (this was not a part of the normal MoE curriculum review process). The Curriculum Unit identified curriculum opportunities where the project best fit:

- Science: Living World (Aim 4, research and investigate local ecosystems and understand the relationship between the living and non living features of the ecosystem)
- Social Science: People, Place and Environment (Aim 2, people and the environment interact and influence each other).

The Curriculum Unit provided special teacher training on each island. Teachers are encouraged to integrate Sandwatch project components into their teaching plan very flexibly, going beyond science and social science. Grades 7 to 10 were mainly targeted but some schools involved grade 6 while others schools had year 4 and 5 students join the senior classes. Students have been involved in various activities such as the planting of new palm trees to reduce sand erosion and monthly measurement of beaches to identify any changes. Examining the history of beaches and biodiversity in the coastal areas as well as interviewing the local community on the impact of new development around beach areas are also part of the project.

Sources: UNESCO. 2009. *Second Collection of Global Practices Education for Sustainable Development.* Paris: UNESCO; Jane Tauranii, Cook Islands Ministry of Education (personal communication, 16 June 2012)

Education for Sustainable Development in France: ESD does not constitute a new discipline in the French curriculum but is held to be an approach integral to each discipline and disciplinary field as well as a means for cross cutting disciplinary unification. It is seen as 'integrating certain dimensions of health, risk and citizenship education and, more generally, solidarity in development,' enabling students to measure the consequences of their environmental actions. A 'Desire to Act' programme has been developed at collège and lycée level to support young people's thirst for engagement in actions of solidarity, citizenship and sustainable development.

Source: Taken from UNESCO/ UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries.* Paris/Geneva: UNESCO/UNICEF. p. 136.

Environment Education in Costa Rica: In 2000 the Education Council approved environmental education as a 'transversal theme' in education with disaster risk prevention and mitigation as one of its main components. Although DRR topics and themes appear in various subjects and grade levels, disaster prevention is being introduced in grades 1-3 Science and grades 4-9 Social Studies, in particular. For example, grade 1 Science activities include developing prevention measures for risk situations in dry or wet seasons. Grade 4 Social Studies includes group activities to elaborate a risk management plan linked to earthquakes.

Source: Adapted from UNESCO/ UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries.* Paris/Geneva: UNESCO/UNICEF. p. 152.

Namibia
© John Isaac
(see full captions pp. 185-9)

different facets of quality education can be used to embed DRR in a dedicated subject (e.g., the Life Skills curriculum in Myanmar), infusing DRR in an interconnected way across a range of standard subjects (e.g., ESD in the Cook Islands; Environmental Education in Costa Rica) or as a whole-curriculum unifier (e.g., ESD in France).

2.3.2 Using Special Events to Catalyze DRR Curriculum Development

Co- or extra- curricular approaches to disaster risk reduction feature frequently in reporting on DRR school developments, including assemblies, after-school clubs and activities, exhibits, special one-day events, competitions and safety drills.

Although the term 'co-curricular' implies something running alongside and reinforcing the curriculum, most co-curricular events seem to be disconnected from formal learning within the curriculum. In some cases, they seem to stand in as substitutes for curricular treatment of hazard and disaster. 'One worries about the potentially diversionary nature of de-coupled co-curricular approaches while understanding the "low hanging apple" attractiveness of the co-curricular route in the face of a crowded and unyielding curriculum. As the fields of environmental education and education for sustainable development have frequently witnessed, the co- or extra-curricular initiative can serve as diversion and distraction from negotiating the steep, often jagged slopes of curriculum change'.41

That said, it is entirely feasible to build synergies between the co-curricular and the curricular. One-day DRR school special events involving the whole school and local community – frequently held on the International Day for Disaster Reduction during the second week in October each year – have great potential in this regard.

Figure 7 (next page) provides an example of how a special DRR day can feed from and into the curriculum. In advance of the special day, learners revisit local disaster-related topics and prepare activities and displays drawing upon their subject knowledge and skills. Following the special day, there is a curriculum follow-up and retrospect on the special day's activities and outcomes including reflection on, and both analysis and synthesis of, experiences and data collected.

Principals/ Teachers: Use Figure 7 (next page) to plan your own integration of a DRR special event into the curriculum (thinking of grade levels involved)

Again, the special event approach can be harnessed in support of any of the four approaches described in 2.2.

41 UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries.* Paris/Geneva: UNESCO/UNICEF. p. 20.

FIGURE 7.

Special Event Based Curriculum Development: An Example from an Earthquake Zone

Curriculum Preparation

Science	Social Science	Mathematics	Language	Arts
Learning about (or re-visiting) the science of earthquakes	Preparing earthquake safety quizzes and surveys for DRR Day	Examining statistical data on earthquakes locally and nationally by making graphs and charts for display	Writing stories and poems on a topic of earthquake safety for presenting on DRR Day	Preparing earthquake safety posters for display on DRR Day

Special Event: DRR Day in an Earthquake Zone
(A whole school earthquake drill; awareness raising demonstrations, talks, quizzes, surveys and displays)

Curriculum Follow-up: Retrospect, Analysis and Synthesis

Science	Social Science	Mathematics	Language	Arts
Conducting self-directed research on earthquakes using the Internet, newspapers and magazines	Considering school/ community action plans based on experiences and discussions during DRR Day	Analyzing social science DRR Day earthquake survey results (e.g., frequencies and percentages of responses)	Writing up and presenting DRR Day interviews with community members (e.g., regarding their experiences of earthquakes)	Creating and performing short earthquake safety dramas to demonstrate best practices in drill safety and response skills

TABLE 3.

Summary: Advantages and Disadvantages of Additional Approaches to DRR Curriculum Integration

Approach	Advantages	Disadvantages
The Symbiosis Approach	• Relatively easy matter to weave further threads into existing cross-curricular components and to support with minimal additional professional development • Symbiosis of DRR with, for example, ESD and/or Life Skills can bring extra depth and substance to DRR learning	• Some danger of losing the intrinsic purposes and imperatives of DRRE by folding DRR learning into an already established quality education curriculum initiative
The 'Special Event' Approach	• Showcases DRR through a 'special event' can bring added momentum to DRR curriculum and whole-school development enriching both through community partnerships. • Offers a pragmatic solution when 'overloaded teachers' feel they cannot introduce DRR learning into an 'overcrowded curriculum'. • Offers additional space where students can apply DRR learning in practice.	• Danger of 'special event' appearing as less-demanding, one-off gesture as opposed to meaningful curriculum development revision • Danger of sidelining or disrupting substantive DRR curriculum development, especially if special event is a one-off event superficially linked to curriculum, teaching and learning development

2.4 Vertical Integration of DRR through the Curriculum

Integration of disaster risk reduction in the curriculum is both a horizontal (across each grade level) and vertical (through the grade levels) exercise. If it is held to be vital that a body of disaster-related knowledge, skills and dispositions needs to be developed in the child, then it is not just a matter of determining curriculum location but also curriculum progression. Curriculum developers and planners must identify how each particular theme, topic or concept can be taught effectively, with learning reinforced and enriched at different stages of development. This insight underpins the notion of the *spiral curriculum*, the cumulative reinforcement, deepening and refinement of knowledge, conceptual understanding, skills and dispositions through the grade levels. As a curriculum develops basic ideas, content and skills, it should revisit them 'repeatedly, building upon them until the student has grasped the full formal apparatus that goes with them'.[42]

Reaching a particular learning by the end of formal schooling involves determining the requirements to be included in the curriculum at different development stages so that learners achieve the desired outcome. Figure 8 shows that the spiral may be one of returning to the same ideas – in this case around the concept of vulnerability – at different spatial levels, from a local to a global focus. The example also shows that the spiral could involve adding layers of conceptual complexity to a topic and revisiting it with a view to refine earlier understandings.

Approaches to vertical integration will be returned to in the discussion of learning outcomes in 4.6 (pp. 78-9)

42 Bruner, J. 1960. *The Process of Education*. Cambridge, Mass: Harvard University Press. p. 13.

FIGURE 8.

An Example of Vertical Integration of the Concept of Vulnerabilty

Ages 4-7	• Safe and dangerous spots at school and community • Danger from storm winds, flood waters and ground shake • Basic safety habits to avoid dangers
Ages 7-11	• School/community mapping on safe and dangerous spots • Past natural disaster impacts in local communities • Threats to local food sources
Ages 11-14	• Past natural disasters nationally/regionally • Concept of vulnerability • Enviornmental degradation and pollution as vulnerability driver
Ages 14-18	• Dynamics between economic, social, environmental and physical vulnerabilities • Interrelationships between hazards, vulnerabilities and capacity • Gender and disaster • Poverty and disaster

STRATEGIC POINTERS FOR CHAPTER TWO.

→ **Policy Makers/Curriculum Developers**: Take into account both horizontal and vertical integration of DRR in your planning and development work

→ **Policy Makers/Curriculum Developers**: Aim to infuse DRR across all subjects in the curriculum

→ **Curriculum Developers/ Principals**: Think about which of the four key approaches described in this chapter would be the best to use as an entry point in your context and which you might subsequently employ in developing DRR curriculum integration.

→ **Principals/Teachers**: Establish synergies between co-curricular and curricular learning

→ **Policy Makers/Curriculum Developers/Principals**: Create synergies between DRR curriculum development and curriculum initiatives aimed at quality education, including Education for Sustainable Development, Life Skills and the Child-friendly School.

2.5 Selected Tools and Resources

- UNESCO/UNICEF. 2012. Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries.
  http://unesdoc.unesco.org/images/0021/002170/217036e.pdf

  Section 3, 'Disaster Risk Reduction in the Curriculum' and Section 4, 'Approaches to Integrating Disaster Risk Reduction in the Curriculum' are particularly relevant to this chapter.

- UNESCO Bangkok. 2007. Natural Disaster Preparedness and Education for Sustainable Development. Bangkok: UNESCO Bangkok.
  http://unesdoc.unesco.org/images/0015/001504/150454e.pdf

  Contains reports from four countries and two collaborating organizations involved in the regional Education Materials for Education for Natural Disaster Preparedness in Asia-Pacific in the Context of Education for Sustainable Development project. The project involved communication and dissemination of information to inform education and policy for natural disaster preparedness and the production of locally relevant materials on natural disaster prevention integrating the principles of ESD.

- UNISDR. 2007. Towards a Culture of Prevention: Disaster Risk Reduction Begins at School: Good Practices and Lesson Learned. Geneva: UNISDR.
  http://unesdoc.unesco.org/images/0018/001898/189857e.pdf

  This collection includes some 38 examples of good practice in DRR education globally and is divided in three sections: raising awareness within school communities; building a culture of prevention; making school buildings safer.

Lao
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(see full captions pp. 185-9)

- UNISDR. 2011. Compilation of National Progress Reports on the implementation of the Hyogo Framework for Action (2009-2011): HEA Priority 3, Core Indicator 3.2. http://www.preventionweb.net/english/hyogo/progress/documents/hfa-report-priority3-2(2009-2011).pdf

  This report summarizes progress on HFA Priority 3. Core Indicator 3.2 (i.e., school curricula, education material and relevant training including disaster risk reduction and recovery concepts and practices) from the final national HFA progress reports (2009-2011) of 86 countries.

- Wisner, B. 2006. Let Our Children Teach Us! A Review of the Role of Education and Knowledge in Disaster Risk Reduction. Bangalore: Books for Change. http://www.unisdr.org/2005/task-force/working%20groups/knowledge-education/docs/Let-our-Children-Teach-Us.pdf

  This paper includes good practices in DRR educational innovation, including teaching and learning in primary, secondary and tertiary education, protection of school infrastructure, training courses, informal education, and knowledge management. Gaps and opportunities in the field are identified.

SECTION 2

IDEAS INTO ACTION: PREPARING FOR AND PROCESSING CHANGE

Chapter 3
Planning and Progressing DRR Curriculum Development

This chapter lays out the key stages and steps involved in DRR curriculum development before focusing on the initial planning and preparation stage (future chapters taking up the further stages). Collaborative partnerships and networking; baseline studies, curriculum reviews and developmental roadmaps; consensus building and consultative processes are described and illustrated with several short country case studies. The chapter closes by reviewing the stages and steps of curriculum development from a perspective of first, a regional curriculum development initiative and, then, a national curriculum development initiative.

3.1 Stages and Steps in Curriculum Development

Curriculum development is not a straightforward process. Presenting the process in neatly delineated, linear stages conveys a sense of order rarely evident in reality, given the range and multiplicity of stakeholders involved, and their respective levels of engagement. For example, tensions may exist between those involved in curriculum development and those responsible for assessment; those responsible for finances may slow down approval of what is planned or seek to influence the process; a small number of dynamic champions of change may push ahead with curriculum development leaving those tasked with preparing the ground and legitimizing the development to catch up; enthusiasts may take the first tentative implementation steps before learning outcomes are fully determined; field pilot tests may bring to the surface learning outcomes not anticipated by the curriculum developers in their planning and preparation; in situations where decentralization, even localization, of control and responsibility for curriculum is taking place, but where central government retains a monitoring and potential interventionist role, the process can become even more complicated.

Articulation of general key steps and stages remains, nonetheless, useful not least by laying down a checklist of things to be done. In the particular context of DRR curriculum development where those not trained as educators, such as National Disaster Management Office (NDMO) officers, are asked to engage as partners, a checklist can be a helpful guide to the process. Recognizing that multiple partners of varying educational experience will be involved in DRR curriculum development, including those who are responsible for newly decentralized curriculum, the stages and steps are laid out below.

(Non-specialist) Curriculum Developers: Use the stages and steps in 3.1 as a guide to your work with educational colleagues

3.1.1 Stage 1: Initial Planning and Ground Preparation

- Determining the need for curriculum development and building broad-based general consensus around the need.
- Unifying stakeholders around the general need.
- Conducting a 'state of the art' investigation of the existing curriculum, its operation and delivery through a curriculum review, baseline study or needs assessment.
- Building consensus around specific needs revealed through the 'state of the art' investigation.
- Determining the focus (curriculum and grade location) for curriculum development.
- Establishing a schedule, with milestones and deadlines, for the curriculum development process.
- Setting up a curriculum development team, determining the roles and responsibilities of team members, and establishing the modus operandi for collaboration, teamwork and meetings.

Remember that the stages and steps of curriculum development are, in reality, rarely tidy!

Policy Makers/ Curriculum Developers: Turn to 3.4 (pp. 48-51) for discussion of baseline and similar studies

Curriculum Developers: Turn to 3.5 (pp. 51-5) for discussion of consensus building/ consultative processes

3.1.2 Stage 2: Preparing the Curriculum

- Determining learning outcomes (knowledge, skills, attitudes and behaviors) to be realized through the new curriculum.
- Selecting and sequencing curriculum content that will help realize the outcomes determined.
- Translating the selected content into age-appropriate learning materials.

Curriculum Developers: Chapter 4 (pp. 60-84) discusses learning outcomes

- Developing learning activities with supporting stimulus materials designed to realize the outcomes determined.
- Reviewing and analyzing existing curriculum materials and activities and evaluating them for possible inclusion in the curriculum programme (i.e., to avoid 'reinventing the wheel').
- Soliciting feedback from stakeholders, including panels of experienced teachers on the curriculum materials, and redrafting where appropriate.

3.1.3 Stage 3: Implementing the Curriculum

Curriculum Developers/ Teacher Educators: Turn to Chapter 7 (pp. 122-136) for discussion of teacher professional development

- Identifying schools and teachers for pilot delivery of the new curriculum.
- Training the pilot teachers to teach the new curriculum.
- Undertaking, monitoring and evaluating the pilot implementation.
- Revising the curriculum materials and activities and training programme in the light of the pilot evaluation.
- Undertaking further rounds of teacher training and pilot testing (with a widening population of schools and teachers).
- Conducting widespread training of teachers (following their participation in 'training of trainers' events).
- Incorporating the new materials and activities into pre-service teacher training.
- Securing formal acceptance of the curriculum by national, regional or local jurisdictions.

Policy Makers/ Curriculum Developers: Turn to Chapter 10 (pp. 163-81) for discussion of monitoring and evaluation

3.1.4 Stage 4: Monitoring, Evaluating and Refreshing the Curriculum

- Developing data collection strategies for periodic evaluation of the impact and quality of the new curriculum, its effectiveness in realizing anticipated learning outcomes, and to identify any unanticipated effects and impacts (positive or negative).
- Writing monitoring and evaluation reports.
- Establishing mechanisms for evaluation-informed periodic curriculum revision.

In this chapter, DRR-specific curriculum development will be considered mainly at Stage 1 but also as an overall process. Succeeding chapters will look in more detail at developing learning outcomes, designing learning activities and materials, pedagogy, teacher professional development, the whole school picture, movement of DRR curriculum to scale, and monitoring, reviewing and evaluating curriculum change.

3.2 The Importance of Partnership

Disaster risk reduction takes the world of education and curriculum into new and unfamiliar territory. Entering this new territory calls for alliance and partnership. Experience shows that DRR curriculum integration and mainstreaming works best when the ministry or bureau responsible for national disaster and emergency management provides scientific and technical insights on hazard and disaster risk reduction, while the ministry responsible for education, and/or its curriculum arm, provides curricular and pedagogical experience and expertise. This fundamental arrangement has been further enhanced through the involvement of other ministries and representatives of UN agencies and non-governmental organizations working in the field of disaster risk reduction or emergencies. The presence of disaster, emergency and climate change expertise and curriculum development expertise from higher education or research centers can also significantly enrich the process and outcomes of partnership.

BOX 12.

Hyogo Framework for Action, Indicator 3.2: How to do it? UNISDR Recommended Steps

1. Establish a taskforce and various committees to focus on the different levels of education, including universities
2. Assess the current knowledge of disasters and disaster reduction at all age levels through surveys. Analyze existing curricula to determine whether disaster risk issues are appropriately addressed
3. Promote the inclusion of disaster risk reduction topics in existing subjects beyond science and geography alone, such as reading, art, history, sociology, engineering, environmental management, hydrology, planning and public health
4. Collect education material and analyze it in order to develop guidelines for educators on how best to incorporate disaster-related information into relevant areas of their curricula
5. Provide training for teachers and school officials regarding disaster risk education
6. Encourage universities to develop degree programmes specific to disaster management and risk reduction issues
7. Encourage the use of electronic and distance learning to further expand access to disaster risk reduction education
8. Encourage the development of applied scientific, socio-economic and technical research to advance understanding and application of disaster risk reduction in development practices
9. Create opportunities for dialogue among researchers, policy makers and practitioners.

Source: Taken from UNISDR. 2007. *Words into Action: A Guide to Implement the Hyogo Framework*. pp. 64-65.

Hyogo Framework for Action, Indicator 3.2: 'Include disaster risk reduction in the education system and the research community.'

BOX 13.

DRR Curriculum Development: Getting Started

Education authorities eager to incorporate disaster risk reduction and climate change education into their curricula often begin with the question "what is it, anyway?" In order to answer this question in a very practical way that every learner, teacher and their families can relate to, it is very helpful to start with those things that everyone agrees can and should be undertaken at the household and family level, to reduce disaster risks.

The International Federation of Red Cross and Red Crescent Societies (IFRC) has compiled a template of the most universally found messages providing guidance to households in the areas of: assessment and planning, physical and environmental protection, and developing response capacity. Where a full agreed upon set of key messages does not exist, this is available to serve as a starting point for the national or sub-national disaster management organization and key DRR/CCA education stakeholders to select, localize and come to consensus on the key messages that everyone citizen should be familiar with. These personal and measurable behaviors can and should be explicitly linked to community risk reduction and broader policy advocacy processes that citizens often feel are beyond their control.

Source: Marla Petal. See further details of key messages from the following: International Federation of Red Cross and Red Crescent Societies (IFRC). 2012. *Public Awareness and Public Education for Disaster Risk Reduction: Key Messages* (Validation Project Version June 2012). IFRC: Geneva.

Policy Makers/ Curriculum Developers: Partnership at all levels (national, sub-national, local) is crucial to success in DRR curriculum development

Partnership is essential throughout the curriculum planning and development process. To underpin the process, a high level agreement reinforced by memoranda of understanding and other agreements between key stakeholders is essential. As the detailed development work advances through the work of a technical working group, expert group or curriculum development group, ongoing and intensive partner engagement and collaboration are needed. At key moments in development and dissemination high-level personnel representing all partners need to visibly demonstrate their support and engagement.

BOX 14.

The Philippines: A Technical Working Group (TWG) for Mainstreaming DRR in the Education Sector

The Philippines, like most of the Association of Southeast Asian Nations (ASEAN), has had a multi-sectorial group working for DRR curriculum development. Taking up a priority implementation project (PIP) of the Mainstreaming DRR in the Education Sector project, a project TWG was formed by the Department of Education (DepEd) and National Disaster Coordinating Council-Office of Civil Defense (NDCC-OCD). At the beginning of phase two of the project, the composition of the TWG was reviewed and expanded. The list below indicates the lists of TWG members for the two phases.

TWG members (Phase One: January 2007 to April 2008)	• DepEd • Bureau of Secondary Education, DepEd • Department of Finance • National Economic Development Authority • NDCC-OCD • Public Safety and Emergency Management Office • UNDP Philippines • Asian Disaster Preparedness Centre (ADPC)
TWG members (Phase Two: September 2008 to December 2009)	• DepEd Office of the Undersecretary for Teachers' Welfare • Bureau of Secondary and Elementary Education, DepEd • Bureau of Alternative Learning System, DepEd • Physical Facilities and Schools Engineering Division, DepEd • Basic Education Support and Reform Agenda Secretariat, DepEd • Department of Finance, DepEd • National Economy Development Authority • NDCC-OCD • Philippine Institute of Volcanology and Seismology, Department of Science and Technology (DOST) • Philippine Atmospheric, Geophysical and Astronomical Services, DOST • National Mapping and Resources Information Authority, Department of Environment and Natural Resources (DENR) • Mines and Geoscience Bureau, DENR • Office of the Presidential Advisor on Climate Change • Department of Public Works and Highways • Philippine Information Agency • ADPC

Philippines
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(see full captions pp. 185-9)

BOX 14. continued

Specific roles/actions and responsibilities of the TWG and its members are summarized as follows.

Roles/ Actions	Responsibilities
Forming TWG	DepEd and NDCC-OCD
Chairing a TWG	DepEd
Analyzing national curriculum for all grades and identifying opportunities for DRR topics	TWG
Developing new DRR modules and curriculum materials	TWG
Reviewing and selecting existing information, education and communication materials developed by governmental agencies and NGOs as supplementary teaching aids	TWG
Training of teachers and trainers	TWG
Monitoring DRR module implementation in the classroom and revising the modules	DepEd (Curriculum specialists), NDCC-OCD focal point and other TWG members
Approving new DRR documents for national use	Instructional Materials Council-Secretariat (IMCS), DepEd
Organizing and facilitating national advocacy workshops	TWG
Discussion with the Education Working Group in the Philippines (the main governmental coordination mechanism for country's development agenda)	TWG

Sources: ASEAN-ISDR. 2011. *Disaster Resilience Starts with the Young*. Jakarta: ASEAN Secretariat. 9; DepEd/NDCC-OCD/UNDP/ADPC/ European Commission Humanitarian Aid Development. Undated. *Mainstreaming Disaster Risk Reduction in the Education Sector in the Philippines*; ADPC.2007. *Integrating Disaster Risk Reduction into School Curriculum*. RCC Guideline 6.1.

Policy Makers/ Curriculum Developers: Refer back to pp. 8-19 for discussion of linking DRRE to ESD and other 'educations' in the name of quality education

Box 15 lists the stakeholders that should be involved in DRR curriculum development. Not explicitly referenced in this list are stakeholders that bring practical experience and expertise in education for sustainable development to the curriculum development process, which would enable DRR curriculum to be enriched through the application of sustainability precepts and principles. Also not mentioned are stakeholders that can link disaster risk reduction learning to climate change learning, such as climate researchers and meteorologists, or others involved in climate change education. Life skills and child-friendly learning expertise are important in linking DRR curriculum development to the broader notion of quality education, as discussed in Chapter 2.

Box 16 outlines the importance of multi-level partnerships for DRR curriculum development.

BOX 15.

DRR Curriculum Development Stakeholders

- Educators and professionals from the educational sector
- Ministry of education representatives and higher education policy makers
- Disaster and risk management experts
- Academics and research community representatives
- Parent and teacher associations
- Children and youth
- Private sector, public sector and communities
- Non-governmental and community-based organizations

Source: Taken from ISDR. 2007. *Words into Action: A Guide to Implement the Hyogo Framework*. p. 65.

While national partnerships are key, so are partnerships of regional stakeholders, especially where control of education and curriculum has been devolved. Equally, with DRR's strong emphasis on learner community engagement (e.g., through vulnerability mapping and resilience building, hazard adaptation and mitigation, and safety procedures) there is a strong case for establishing local and community partnerships from the very outset of the curriculum development process. Pilot testing of curriculum and associated teacher professional development may be undertaken at a regional level while incorporating context-specific and indigenous experience into curriculum via local collaborations. Commitment to child-friendly learning would involve engaging children and youth in discussions on learning needs within local forums.

3.3 Networking

Networking mechanisms represent another form of partnership. They are not usually planned in the early stages of a national DRR curriculum development process but rather emerge as key non-governmental players recognize the need for greater coordination of efforts to influence and effect change. Box 16 describes this scenario through the case of the Indonesian Consortium for Disaster Education.

A variant on the networking consortium approach is the Education Cluster. At the global level the 'cluster approach' was adopted by the Inter-Agency Standing Committee (IASC) to address gaps in humanitarian response and coordinate technical capacity. The cluster model has been replicated at country level with 38 national Education Clusters active as of March 2011.[43] In many cases these Clusters, originally

43 http://oneresponse.info/GlobalClusters/Education/Pages/Country%20Implementation.aspx

formed for emergency humanitarian response, have re-oriented themselves so as to provide education coordination dedicated to promoting comprehensive school safety, safe facilities, school disaster management and disaster risk reduction and climate change adaptation education. In Vanuatu, for example, an Education in Emergency Cluster was established in 2007, led by the Ministry of Education with co-leadership from UNICEF and Save the Children. What began as a coordination mechanism for education in emergencies, the Cluster has transformed itself into an ongoing education sector coordination mechanism. It maintains an 'essential link' with the National Disaster Management Office (NDMO) at both national and regional levels, conducts participatory and community-based needs assessments, and gives attention to priority cross-cutting issues such as human rights and environmental protection. Its work plan includes integration of DRR into formal curriculum in consultation with the Curriculum Development Unit (CDU) of the Ministry of Education, CDU being represented in the cluster. The Ministry of Education as such is also represented, as are the NDMO, UNICEF, Save the Children and other non-governmental organizations. The Cluster, meeting periodically to share and review developments, maintains a documentary clearinghouse of DRR curricular materials.[44]

44 Vanuatu Ministry of Education. Undated. *Memorandum of Understanding: Education Cluster*. Port Vila: Ministry of Education.

BOX 16.

Indonesia: Consortium for Disaster Education

Established in 2006, the mission of the Indonesian Consortium for Disaster Education (CDE) is 'to support the development of sustainable policy and DRR education practices at national and local levels through formal, non formal as well as informal approaches by improving the capacity, coordination, and synergy among parties and making the commitment for DRR education'. As a networking organization, the Consortium provides:

- An information and document exchange that enables partners to share latest developments and documentation, avoiding duplication of effort
- A platform for holding joint capacity building sessions both for members and identified groups
- Mutual support in the development and piloting of learning materials
- A 'one voice' channel of advocacy to central and local government

The consortium includes 62 member organizations that are active in school-based disaster risk reduction, with representation of UN agencies, the Red Cross and other disaster- and emergency-related non-governmental organizations, universities and government.

By combining their differently focused efforts, CDE members have been able to delineate and advise schools on a framework and process for school-based disaster preparedness.

Source: Adapted from Consortium for Disaster Education Indonesia. 2011. *A Framework of School-Based Disaster Preparedness*. Jakarta: Consortium for Disaster Education. n.p

BOX 17.

Global Networks and Partnerships

In addition to the IASC Education Cluster discussed above, there are a number of global networks and partnerships for DRR education initiatives.

- Children in a Changing Climate

  http://www.childreninachangingclimate.org/home.htm

  A coalition of leading child-focused research, development and humanitarian organizations that shares knowledge, coordinates activities and works with children as agents of change on the challenges of climate change.

- Coalition for Global School Safety and Disaster Prevention Education (COGSS & DPE

  http://cogssdpe.ning.com/

  A coalition aiming at supporting knowledge sharing for school safety as well as quality and audience-targeted disaster prevention education to build a culture of safety.

- Global Facility for Disaster Reduction and Recovery (GFDRR)

  http://www.gfdrr.org/gfdrr/

  A partnership of 41 countries and 8 international organizations aiming at mainstreaming DRR and climate change adaptation in country development strategies by supporting a country-led and managed implementation of the Hyogo Framework for Action.

- Inter-Agency Network for Education in Emergencies (INEE)

  http://www.ineesite.org/

  An open global network of representatives from NGOs, UN agencies, donor agencies, governments, academic institutions, schools and affected populations working together to ensure for all the right to quality and safe education in emergencies and post-crisis recovery.

- One Million Safe Schools and Hospitals Campaign

  http://safe-schools-hospitals.net/en/Home.aspx

  A campaign encouraging individuals, families, communities, governments, businesses or any other organization to make a pledge to make educational institutions or health facilities safer from disasters.

- Partnership for Environment and Disaster Risk Reduction

  http://www.pedrr.net

  A partnership of 14 UN and non-UN organizations to promote ecosystem-based disaster risk reduction around the globe.

- Thematic Platform for Knowledge and Education (TPKE)

  http://www.unisdr.org/2005/task-force/working%20groups/knowledge-education/knowledge-education.htm

  TPKE is one of the thematic platforms created by UNISDR to support the implementation of HFA. TPKE aims to strengthen networks, create new partnerships, identify focus areas and collectively advance HFA through knowledge and education.

Viet Nam
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(see full captions pp. 185-9)

3.4 Baselines, Reviews and Roadmaps

During the preparatory stages of the curriculum development process, an examination of the 'state of the art' of existing DRR curriculum and curriculum-related policy is a key element for a number of reasons:

- If a baseline study, curriculum review or needs assessment is not undertaken, there is a risk that what is developed, however promising, is insufficiently calibrated to meet the needs of learners and teachers and fill gaps in curriculum provision.
- The study, review or assessment establishes a benchmark against which subsequent developments can be measured and evaluated.
- A report identifying strengths, weaknesses, blind spots, gaps in provision and unfulfilled needs as perceived by students, teachers, trainers and curriculum developers can shift consensus amongst key stakeholders from one of passive good intention to one of active commitment.
- A study, review or assessment enables broader awareness of existing education authority guidance on school disaster management, emergency procedures and school drills that the curriculum can reinforce, and of the education authorities' full curriculum renewal cycle for each subject.

Undertaking a baseline study or curriculum review is a task that often falls to members of a DRR curriculum development team but is sometimes handed over to independent consultants, as described in Box 18 (next page. A consultant can bring an independent, interrogative and freshly critical perspective to the task, in many cases having no history of involvement in the DRR curriculum landscape under review. On the other hand, if hired from outside, a consultant may be less familiar with the relevant contexts, including the culture of schooling.

While overlapping in many regards, the curriculum review and baseline study differ somewhat in scope and methodology. A curriculum review is a largely documentary-focused and desk-based process for reviewing curriculum policy and curriculum. Interviews, questionnaires and workshop sessions are sometimes used in addition to elicit views on actual and potential DRR-related curriculum content and materials. A baseline study likewise involves documentary review of curriculum policy and curriculum but often employs a broader range of empirical research approaches to analyze pedagogy, teacher education provision, student needs and perceptions, community perspectives and the potential of curriculum development mechanisms to enable change, and institutions and networks ranging from the national through local level.

BOX 18.

'State of the Art' Studies and Reviews of DRR Curriculum Potential: Some Examples

Ghana: Baseline Study to Assess Disaster Risk Reduction in School Curriculum in Ghana

Purpose: The main purpose of the study was to 'assess DRR in school curricula in Ghana towards mainstreaming DRR… at the primary, junior high and senior high school levels'.

Methodology: The study was conducted from April to July 2011 in three phases:

Phase 1. Secondary document analysis (including a review of international experience of DRR mainstreaming; information on school curricula and syllabuses, information on built environment and related programmes).

Phase 2. Data gathering at workshops held in five different regions using (1) moderated completion of questionnaires and (2) discussion of key issues for each target group. Selected representative participants from the following groups attended workshops: Regional, Municipal and District Directors of Education; Circuit Supervisors of Education; Members of School Management Committees and Parent-Teacher Associations; teachers and pupils/students in primary, junior high and senior high schools.

Phase 3. Data analysis and presentation of results, conclusions, recommendations and action plans in the report at a Stakeholder Review Workshop in August 2011 for validation. There were 33 participants including personnel from Ministry of Education, National Disaster Management Organization (NDMO) and universities.

Next Steps Proposed: In order to mainstream DRR in school curricula, the report ends with an action plan covering the following aspects of education in Ghana: policy, capacity building, school built environment, co-curricular activities, non-formal education, the role of key stakeholders, funding, human resources, integration of schools into national disaster coordination mechanism and advocacy.

Source: Buatsi, P. 2011. *Assessing Disaster Risk Reduction in School Curricula in Ghana. Submitted to National Disaster Management Organization* (Ghana) and UNDP.

Vanuatu: Baseline Study of Disaster Risk Reduction Curriculum

Purpose: This study reviews strengths, needs and gaps in current curriculum provision and delivery of disaster risk reduction (DRR) and Climate Change Education (CCE) in Vanuatu primary schools, and provides recommendations to guide development of a DRR curriculum pilot (approach and entry point) for Save the Children Australia.

Methodology: The baseline study process was conducted in March and April 2012 in three stages:

BOX 18. continued

Stage 1. Desk-based secondary documentary analysis (including review of country specific policies, strategies, school curriculum materials).

Stage 2. Data collection through: (1) semi-structured focus group interviews with key stakeholders (student and teacher focus groups at ten designated pilot schools; Ministry of Education Curriculum Development Unit (CDU) curriculum writers; Education in Emergency Cluster members, National Disaster Management Office personnel) and semi-structured individual interviews with CDU Principal Education Officer and the Principal of Vanuatu Institute for Teacher Education; (2) Questionnaire surveys of teachers and students at the ten pilot schools.

Stage 3. Following the writing of the study and recommendations, a key stakeholder meeting was held at the Ministry of Education in April 2012 involving some 30 participants from the Ministry, NDMO, NGOs and project pilot schools.

Next Steps Proposed: Grade and subject entry points for a DRR/CCE pilot project with recommendations for themes and content, pedagogies, teacher professional development, a national structure for collaboration, and project evaluation mechanisms and instruments.

Source: Kagawa, F. & Selby, D. 2012. *Disaster Risk Reduction Education in Vanuatu: A Baseline Study for Save the Children Australia.* Submitted to Save the Children Australia.

Nepal: Curriculum Review toward Incorporating Disaster Mitigation Materials in the School Curriculum

Purpose: To review school curriculum from a DRR perspective and make suggestions for school curriculum, textbook and teacher guidebook development, and, having identified gaps, to recommend incorporation and implementation of new DRR education materials.

Methodology: There were four parts to the review process:

Part 1: Mapping of national school curriculum and analysis of textbooks and teacher guides.

Part 2: Mapping of coverage of DRR in curriculum of Asian and other countries.

Part 3: Questionnaire on curriculum and curriculum materials to officers of the Curriculum Development Centre (CDC) of the Ministry of Education.

Part 4: Two stakeholder workshops to identify potential areas for curriculum development.

Next Steps Proposed: Having identified the limited inclusion of DRR in school curriculum in Nepal, it was proposed that there should be at least a 10% weighting for DRR education in the curriculum with integration into relevant subjects, backed by supplementary reading materials and a teacher training course.

Source: Centre for Policy Research and Consultancy. 2007. *Disaster Sensitivity of School Curriculum, Textbooks and Teacher Training Packages: A Final Report for Incorporating Disaster Mitigation Materials in the School Curriculum.* Kathmandu: CPReC.

In countries where a radical revision of curriculum is already underway, curriculum reviews or baseline studies of existing but soon out-of-date disaster-related provision are an unnecessary exercise. Instead, a more forward-looking mechanism that maps out DRR potential within the new national curriculum framework tends to be employed. For example, in Lesotho, a new national curriculum – replacing the standard academic model with a skills-clusters ('curriculum aspects') and broad 'learning area' model – is being incrementally implemented from January 2012. In October 2009, UNDP and the National Disaster Management Authority (NDMA) of Lesotho hosted a two-day workshop on curriculum mainstreaming of disaster risk reduction for members of the National Curriculum Development Centre (NCDC), the body responsible for planning the new curriculum. By the end of the workshop, participants had developed a detailed roadmap for integrating DRR into the new national curriculum for all grades of basic education (grades 1-10). At the close the roadmap was presented to the Director of NCDC, the Chief Executive, NDMA, and the UNDP Deputy Resident Representative, who all committed their respective institutions to supporting integration of DRR according to what had been mapped. The outcome is the integration of DRR in the new national curriculum through eight modules, each of which is being linked to specific skills development and learning areas. Pilot tests of the new curriculum in grades 1-3 began in January 2012.[45]

Curriculum Developers: Approach the organizations listed Box 17 (pp. 52-3) for subject-related curriculum development contacts and resources; also read the resources listed on pp. 66-8

More frequently, curriculum revision will be addressed through a multi-year cycle, subject-by-subject. Those undertaking curriculum baseline studies or reviews need to understand this cycle and, in their proposals and recommendations, factor in long-term support for all subject curriculum development efforts according to respective subject cycles. While necessitating longer-term commitment, the trend towards increasing international cooperation in sharing curriculum development resources makes things easier.

45 UNESCO/UNICEF 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries.* Paris/Geneva: UNESCO/UNICEF. pp. 118-21.

3.5 Consensus Building and Consultative Processes

Initial readiness on the part of stakeholders to meet together to discuss integration of disaster risk reduction in the curriculum is itself an indication that some degree of consensus exists. Building the needed consensus to develop curriculum and bring it to scale is achieved through negotiated stakeholder agreement on values, aims and objectives, curriculum content, pedagogical development, programmes and modes of professional development as well as on processes of curriculum writing, monitoring and evaluation, reporting, advocacy and dissemination.

Some of the consensus will be achieved while those involved in the curriculum development process digest, debate and discuss the findings and analysis of a curriculum review or baseline study. There is, however, a case for incorporating a series of exercises into the process that enable key stakeholders with hands-on responsibility in the process to reach deep understanding and consensus around their task.

Three examples of consensus building processes are detailed below. Discussion Tool 2 describes a highly structured consensus- and collegiality-building programme providing a pathway into curriculum development. Discussion Tools 3 and 4 are exercises that can be employed to reach a shared understanding of aspects of the curriculum development task.

DISCUSSION TOOL 2.

A Consensus-building Tool: The We-agree Workshop

The 'We-agree Workshop' is a tool for use during the formative stages of DRR curriculum development to achieve an optimal level of technical working group cohesion.

Session 1: Getting to Know Each Other.

Participants draw and share and discuss self-drawn roadmaps of their professional life journeys up to joining the DRR curriculum development initiative, focusing on experience and expertise they collectively bring to the task.

Session 2: Values and Visions.

Participants all write their own set of cards, each expressing a different value or vision for DRR. The cards are pooled, organized, clustered and commented upon on chart paper and discussed with a goal of arriving at a mutually agreed vision.

Session 3: Problems and Constraints.

Participants all write cards, each identifying a hindrance or obstacle that might stand in the way of successful curriculum development. Cards are shared one by one to trigger discussion and agreement on how to pre-empt, circumvent or solve the problem.

Session 4: Smooth Ways of Working.

In pairs, small groups and then as a whole group, participants share opinions on what behaviors make for positive and productive ways of working together and what behaviors tend to disrupt collaboration. The group arrives at an agreed list of collaboration styles they will employ.

Session 5: Mapping the Curriculum Development Process.

Working within the broad curriculum development framework and schedule they have been given, participants agree on detailed scheduling, roles and responsibilities.

Note: This is an abridged, hybridized version of a number of global education consensus building workshop tools, namely: Kinghorn, J.R. & Shaw, W.P. 1977. *Handbook for Global Education: A Working Manual*. Charles F Kettering Foundation; Richardson, R, Flood, M & Fisher, S. Undated. *Debate and Decision: Schools in a World of Change*. London: World Studies Project.

DISCUSSION TOOL 3.

A Consensus Building and Planning Tool: Force Field Analysis

Force Field Analysis is a helpful planning tool for policy makers and practitioners at all levels in the process of integrating DRR into curriculum that helps to facilitate discussion, debate and dialog.

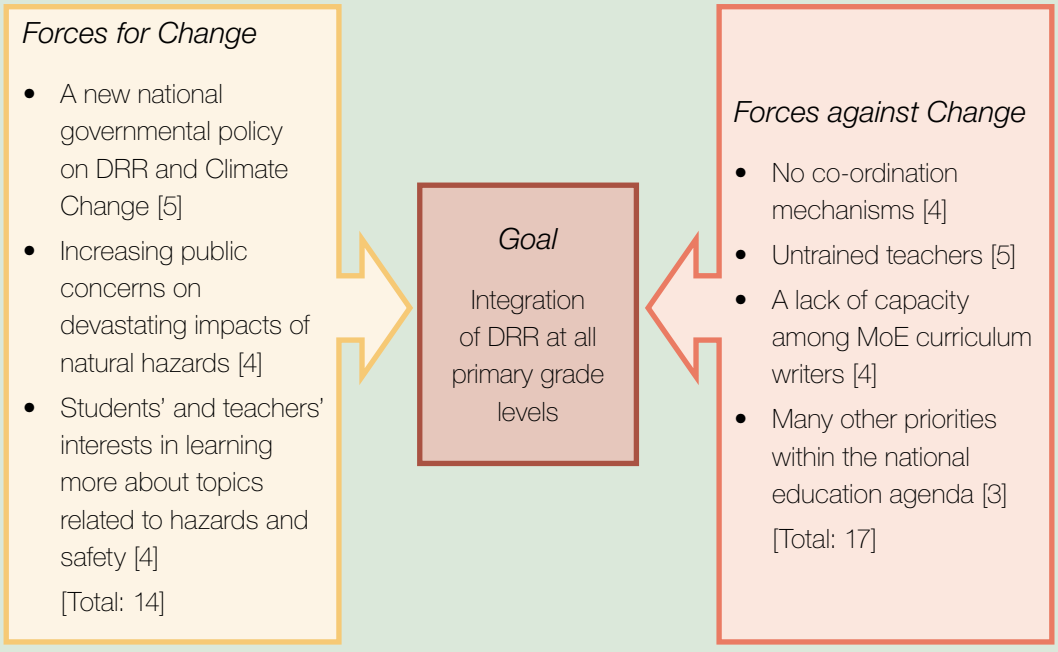
Procedure

1. Form a small group of six to eight persons and decide the area of DRR curriculum change to be discussed. Write it down in a box in the center of a sheet of chart paper (as in the example below). This focal point of the discussion might be a desired DRR curriculum policy goal (at national, regional or local/ school level) or a DRR curriculum objective.

2. Brainstorm to create a list of the forces driving change to the left side of the box and forces working against or restraining change to the right.

3. Examine and sort out all the driving and restraining forces according to common themes and their magnitude, rating them from 1 (weak) to 5 (strong). Some guidance on rating can be found in the example below.

4. Discuss and identify ways forward to reduce the restraining forces and to capitalize on the driving forces.



Source: Hovland, I. 2005. *Successful Communication: A Toolkit for Researchers and Civil Society Organizations.*

DISCUSSION TOOL 4.

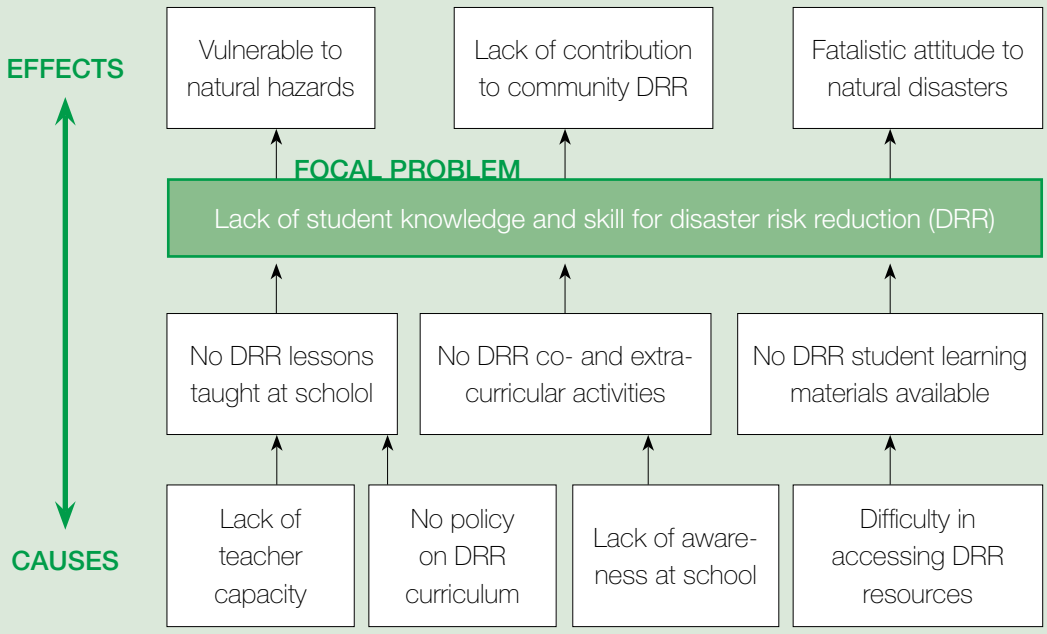
DRR Curriculum Planning Tools: Problem Tree Analysis and Objective Tree Analysis

Problem tree analysis and objective tree analysis, commonly used as planning tools among development agencies, are equally applicable to DRR curriculum planning. A problem tree assists stakeholders in mapping out and clarifying causes and effects around a focal issue. An objective tree draws from the problem tree exercise to transform the problems identified into objectives and future solutions. Discussion, debate and dialogue among participating stakeholders are the heart of both exercises. Concerns and decisions emerging from the exercises can be the focus of further discussion and elaboration.

Procedure

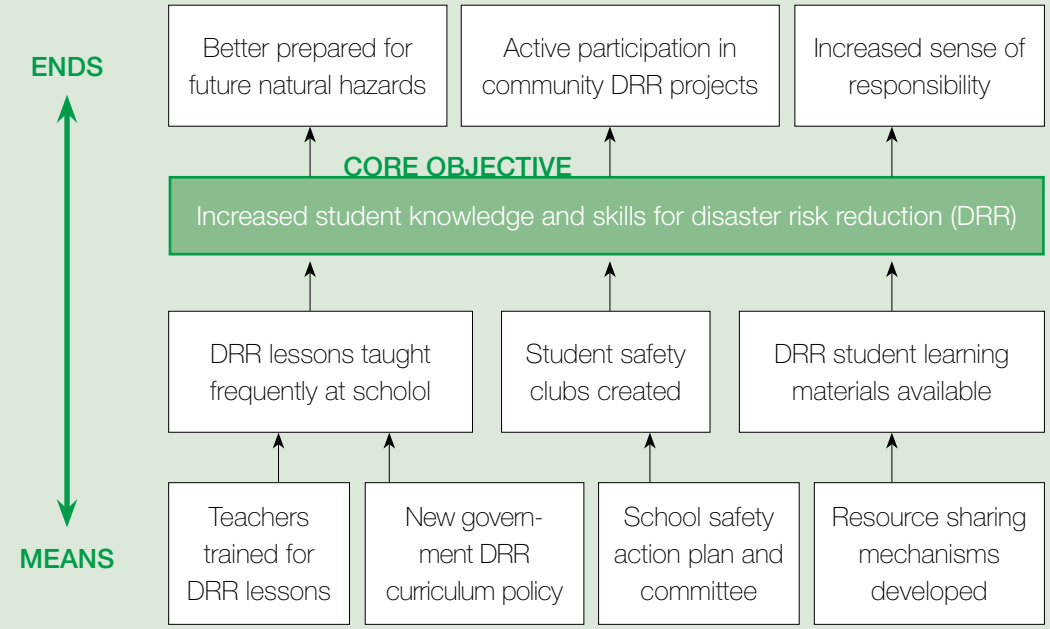
- Working in a small group, identify a core or focal problem relating to DRR curriculum development. Write it down in the middle of a sheet of chart paper.
- Identify the causes and effects of the focal problem (these become the roots) and then identify consequences of the focal problem (these become the branches). Add to the chart following the kind of layout set out below.
- Once the problem tree has been completed, create an objective tree by converting each problem into desired improvement.

1) Problem Tree Analysis



DISCUSSION TOOL 4. continued

2) Objective Tree Analysis



Sources: Hovland, I. 2005. *Successful Communication: A Toolkit for Researchers and Civil Society Organizations*; UNESCO IIEP/UNICEF WCARO. 2011. *Integrating Conflict and Disaster Risk Reduction into Education Sector Planning.*

3.6 Curriculum Development Processes

The Asian Regional Consultative Committee (RCC) on Disaster Management highlights four key approaches to mainstreaming disaster risk reduction in school curricula. In order to summarize and further concretize the stages and steps discussed earlier in this chapter, the four key approaches are set out in Box 19.

Policy Makers/ Curriculum Developers: For linking DRR to key aspects of quality education, including ESD, refer back to 1.5.1. (pp.15-6)

BOX 19.

Four Key Approaches to Mainstreaming DRR in School Curricula

Key Approach 1: Plan in advance of the National Curriculum Development Cycle

- In every country curriculum revision is conducted on a 3 to 5 year cycle, the revision requiring a minimum of one year at any grade level. This infers a need to agreement in principle on the integration of disaster risk reduction well in advance of the year of revision to allow for all stages and steps of the curriculum development process to be undertaken in a measured way. Ideally, agreement in principle should also be reached early enough for cost implications of the proposed curriculum revision to be factored into future budgeting.

Key Approach 2: Establish Partnership between the Ministry of Education and National Disaster Management Office (or equivalent)

- While other collaborations are also important, a working relationship between the two branches of government are vital, with the Ministry of Education leading and NDMO providing technical and advocacy support.

Key Approach 3: Adopt a Consultative Process

- Collaboration should be widened to include other relevant ministries, key national and international agencies, non-governmental agencies and research institutes.

Key Approach 4: Link with other Education Sector Programmes and Processes

- Opportunities to link with and feed DRR into other national, provincial or district-based educational initiatives should be leveraged.

Source: Asian Disaster Preparedness Center (ADPC)/Regional Consultative Committee on Disaster Management (RCC). 2007. *Integrating Disaster Risk Reduction into School Curriculum.* RCC Guideline 6.1. 3-7.

The RCC also suggests a six-step approach to curriculum development, very much overlapping with the stages and steps described in this chapter, but viewing the process from a governmental perspective, outlined in Box 20 (next page). Box 21 (p. 58) illustrates a successful, government-supported process of disaster risk reduction curriculum integration undertaken in Georgia in anticipation of mainstreaming for the 2011/12 school year.

BOX 20.

Six-Step Approach to Curriculum Development

Step 1: Initiation of a Dialog between the NDMO and the national agency responsible for curriculum development linked to the Ministry of Education

- NDMO hosts a workshop for MOE officials to introduce DRR and build consensus.
- Outcome would be a formal Memorandum of Understanding setting out the objectives, scope and expected outcomes of a DRR curriculum partnership.

Step 2: Formation of a Working Group and Advisory Group

- Technical Working Group established with membership of the MOE curriculum agency, NDMO and technical agencies
- Advisory Group established, chaired by a senior figure in the MOE and with senior representation from all ministries and agencies concerned to guide the process and oversee the Technical Working Group (the ongoing functions of the Advisory Group would include: reviewing the work plan, analyzing successes and failures, adjusting targets in the light of lessons learned.)

Step 3: Kick-off Meeting

- A joint meeting of the Technical Working Group and Advisory Group.
- Purposes of meeting would be to: develop a detailed work plan, assign responsibilities, propose target dates.

Step 4: Development and Testing of the Draft Curriculum (Technical Working Group)

- Review of existing curricula and determining grade level and subject locations for DRR integration.
- Development of new subject or module to integrate in different subjects.
- Development of teachers' manual and training teachers from selected pilot schools as well as education officials responsible for those schools.
- Pilot testing the subject/cross-curricular module, synchronizing the pilot with the school calendar and allowing a sufficient span of time to receive teacher feedback.
- Revising the draft curriculum in the light of feedback.

Step 5: Liaison with the National Curriculum Review Committee

- Technical Working Group works closely with national curriculum review committee to enable infusion of DRR learning during next curriculum revision.

Step 6: Integration of DRR into the National Curriculum

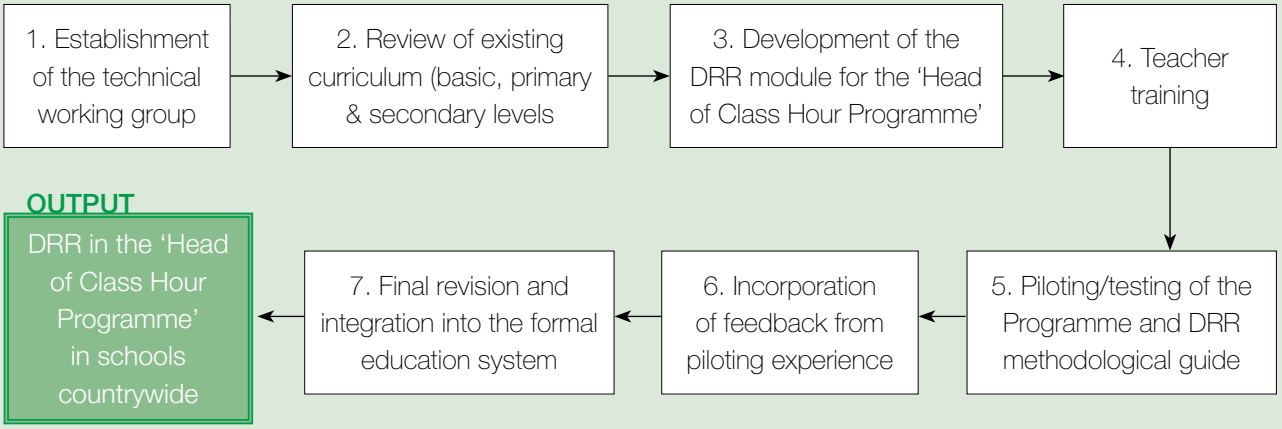
- Final approval of Advisory Group sought and attained.
- Budgetary provision ensured.
- Multi-level consultations and dissemination.

Source: Asian Disaster Preparedness Center (ADPC)/Regional Consultative Committee on Disaster Management (RCC). 2007. *Integrating Disaster Risk Reduction into School Curriculum*. RCC Guideline 6.1. 8-12.

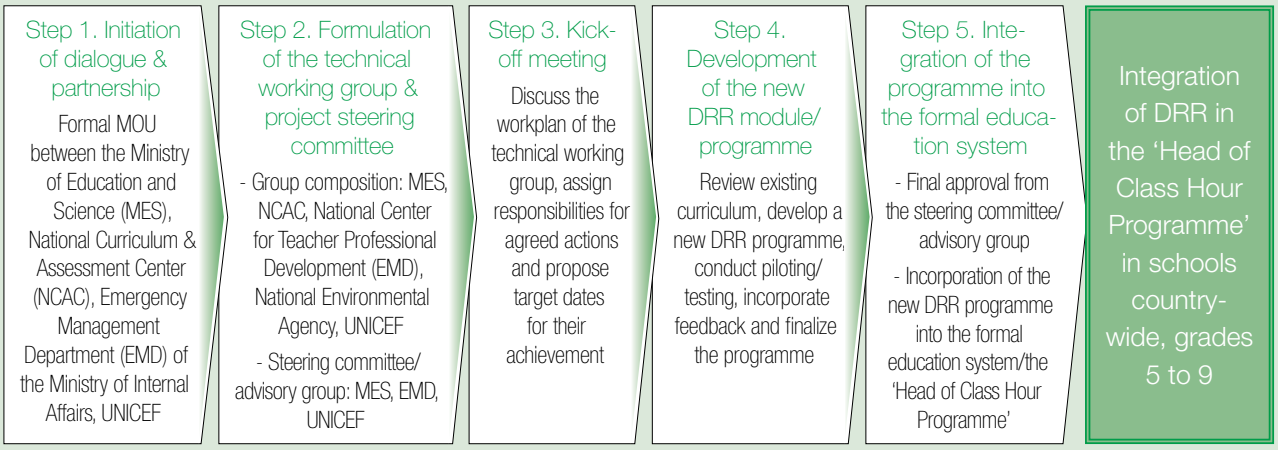
BOX 21.

Georgia: The Head of Class Hour Curriculum Development Process

The integration of disaster-risk reduction themes and topics into the Head of Class Hour programme for grades 5 to 9 in Georgia, described on pp.30-32, is an example of remarkably rapid and effective DRR curriculum development. Within a period of one year from initial conceptualization, a curriculum review was undertaken, the module developed, two rounds of pilot testing of the programme and methodological guide conducted, and the programme and materials adjusted in the light of the pilot experience. The programme was launched in schools nationwide at the start of the 2011/12 school year. The stages for mainstreaming the DRR curriculum can be mapped out as follows:



The programme was developed within the framework of the April 2010 to June 2011 *Supporting Disaster Risk Reduction amongst Vulnerable Communities and Institutions in the Southern Caucasus Project* funded by the European Commission for Humanitarian Aid and Civil Protection. Key steps were:



Important aspects in the success of the curriculum development process were:

- The integration, through partnership, of national-level curriculum and pedagogical expertise with disaster-related know-how.
- A process of consensus building between national agencies and institutions in the fields of DRR and education.
- The timing of the initiative was in step with national curriculum development processes.

'Incorporation of DRR in the "Head of Class Hour Programme" has been a window of opportunity for reaching the largest number of students and filling in the existing gaps in the National Curriculum in the most cost effective and sustainable manner.'

Source: Taken and adapted from European Commission/UNICEF. 2011. *Conducting Revision of Education Curriculum for Disaster Risk Reduction in Georgia.* Presentation of Experiences and Good Practices for the Istanbul Knowledge Management Workshop, 15 March 2011. 11,12,16,18.

STRATEGIC POINTERS FOR CHAPTER THREE.

→ **Policy Makers/Curriculum Developers**: At all levels - national, regional and local – ensure and maintain a link with the National Disaster Management Office (NDMO) in the DRR curriculum integration process.

→ **Policy Makers/Curriculum Developers**: Ensure that a wide range of other partners are brought into the curriculum development process including, circumstances allowing, those versed in education for sustainable development, climate change education, life skills education and child-friendly schooling.

→ **Policy Makers/Curriculum Developers**: Encourage and give importance to the development of national and sub-national networks dedicated to implementing and advocating DRR education.

→ **Policy Makers/Curriculum Developers**: Ensure that a quality DRR baseline study, curriculum review and/or needs assessment is undertaken early in the process using participatory and community-based consultation processes to enhance stakeholder consensus and engagement.

→ **Curriculum Developers**: If radical national curriculum change is underway, look for DRR potential within the new curriculum and determine a roadmap for its inclusion.

→ **Curriculum Developers**: Take time to deepen consensus around the curriculum to be developed and the detailed process to be followed in developing and implementing curriculum, using tools such as those described in this chapter.

→ **Curriculum Developers**: Wherever possible, plan in advance of the national curriculum cycle to ensure that DRR curriculum development takes place in step with the cycle and that costs for moving curriculum development to scale are factored into budgeting.

→ **Policy Makers/Curriculum Developers**: Plan to embed DRR curriculum development initiatives into other national, sub-national and local education initiatives.

3.7 Selected Tools and Resources

- Asian Disaster Preparedness Center (ADPC)/Regional Consultative Committee on Disaster Management (RCC). 2007. *Integrating Disaster Risk Reduction into School Curriculum*. RCC Guideline 6.1. http://www.rccdm.net/index.php?option=com_docman&task=doc_view&Itemid=215&gid=25

  After a brief exploration of reasons for teaching DRR in school and brief discussion of DRR integration in the school curriculum, four key approaches to mainstreaming DRR in curriculum are reviewed as well as six implementation steps. Several case study examples are given.

- Global Education Cluster. Undated. *Disaster Risk Reduction in Education in Emergencies: A Guidance Note for Education Clusters and Sector Coordination Groups*. UNICEF/Plan/ Save the Children. http://haiti.humanitarianresponse.info/Portals/0/Education%20Cluster/DRR/Full_report_96.pdf

  This paper offers guidance on strategy, practical steps and examples of good practice before and during an emergency at national, sub-national and school/community levels.

- Hovland, O. 2005. *Successful Communication: A Toolkit for Researchers and Civil Society Organizations*. London: ODI. http://www.odi.org.uk/resources/docs/192.pdf

  Twenty-three tools are presented under four categories (planning tools, packaging tools, targeting tools, monitoring tools) are highly applicable to DRR education curriculum development context.

- International Federation of Red Cross and Red Crescent Societies (IFRC). 2011. *Public Awareness and Public Education for Disaster Risk Reduction: A Guide*. IFRC: Geneva. http://www.ifrc.org/Global/Publications/disasters/reducing_risks/302200-Public-awareness-DDR-guide-EN.pdf

  By synthesizing a range of DRR approaches used by the IFRC movement, this guide focuses on the following: campaigns, participatory learning, informal education and formal-school based interventions.

- International Federation of Red Cross and Red Crescent Societies (IFRC). 2012. *Public Education and Public Awareness for Disaster Risk Reduction: Key Messages*. (Validation Project Version June 2012) Geneva: IFRC.

  This publication provides a template of key messages for multi-hazard family and household disaster prevention, as well as for the following specific hazards: cyclones, drought, earthquakes, floods, pandemics and wildfires. Guidance is included for a process towards consensus-based adaptation and localization.

- INEE. 2010. *Guidance Notes on Teaching and Learning*. New York: INEE Coordinator of Network Projects and Communications. http://toolkit.ineesite.org/toolkit/INEEcms/uploads/1004/Guidance_Notes_on_Teaching_and_Learning_EN.pdf

  This is designed to accompany and supplement the INEE Minimum Standards for Education: Preparedness, Response, Recovery. Guidance notes are given in the following four areas: curricula; training, professional development, and support; instruction and learning processes; assessment of learning outcomes. DRR is included as one of the thematic issues.

- UNESCO IIEP & UNICEF WCARO. 2011. *Integrating Conflict and Disaster Risk Reduction into Education Sector Planning*. Paris: UNESCO IIEP. http://www.iiep.unesco.org/fileadmin/user_upload/News_And_Events/pdf/2011/IIEP_Guidancesnotes_EiE_en.pdf

  This guide aims at assisting Ministry of Education officials in integrating conflict and disaster risk reduction (C/DRR) into an education sector plan, including guidance on: education sector diagnosis, policy and programme development, monitoring and evaluation, costing and finance.

- UNISDR. 2007. *Words into Action: A Guide for Implementing the Hyogo Framework*. Geneva: UNISDR. http://www.unisdr.org/files/594_10382.pdf

  This guide aims at providing useful advice on strategies for implementing the Hyogo Framework for Action. Section 3.2 addresses building a culture of safety and resilience through the educational system and research community.

Chapter 4
Formulating DRR Learning Outcomes and Competencies

This chapter begins by introducing the learning outcomes approach to curriculum development. It summarizes the current global 'state of the art' of DRR learning outcome development before providing a comprehensive list of generic DRR learning outcomes. It then examines processes for contextualization and horizontal and vertical integration of generic outcomes and explores the use of a generic outcomes approach as well as the competency-based approach to DRR curriculum mapping and development. Finally, the chapter explores how best to align learner assessment and learning outcomes.

4.1 The Nature of Learning Outcomes

Learning comprises a complex mix of knowledge, understanding and skills which, drawn upon in particular clusters, endow the learner with particular set of capacities and capabilities. Learning also embodies the cultivation of values and attitudes that, along with our personal traits, help form our dispositions, inclining us to harness our knowledge, understanding and skills in particular ways and to particular ends.

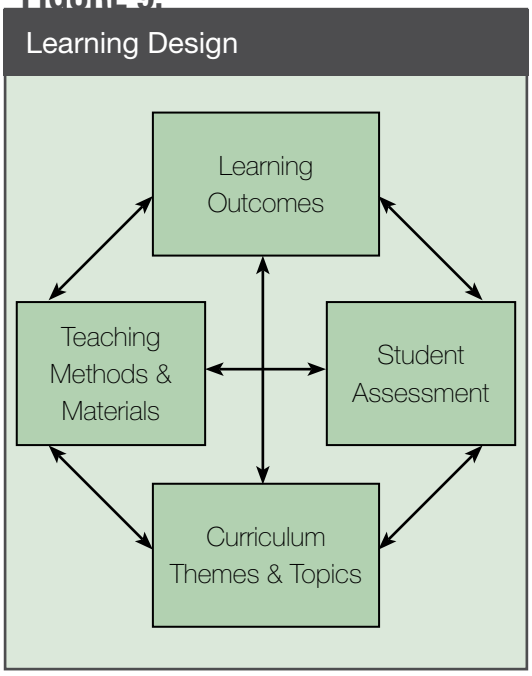
Some initial explanations:

- A learning outcome is what results from a consciously structured process of learning. Statements of learning outcomes in curriculum documents are lists of what knowledge, understanding, skills and/or dispositions learners are intended to gain from a particular learning programme.
- Curriculum documents often begin with a list of aims. Aims are broad, aspirational statements that convey the intended overall purpose of a course. Unless broken down into specific learning outcomes, they are not easily translatable into concrete action steps in the learning process or into measurable yardsticks for assessment.
- Learning outcomes themselves should be sequenced through the grade levels so that an outcome achieved earlier in a learner's development paves the way for learning directed towards subsequent, more sophisticated outcomes.

Policy Makers/ Curriculum Developers: Turn to Chapter 10 (pp. 163-81) for a full discussion of DRR curriculum evaluation

The chosen learning outcomes in turn inform syllabus content, design of learning and teaching activities, the style and ethos of the learning and teaching process, the conduct of learning facilitation, as well as forms, styles and purposes of learner assessment. But, as Figure 9 indicates, this is not a linear arrangement. The chosen curriculum themes and topics, teaching/ learning methods and forms of assessment all interact with each other, and this influences the ultimate learning outcomes. As the detailed content of a programme is determined and materials and activities developed, overlooked learning outcomes will surface. Further, the delivery of a learning programme may result in unintended learning outcomes. If these are desirable, they can be added to the learning outcomes list and more consciously structured into the programme. If undesirable, remedial programme revision may be called for. Key elements in programme evaluation concern the appropriateness of designated learning outcomes, the degree of alignment between

FIGURE 9.



Kazakhstan
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(see full captions pp. 185-9)

programme elements and learning outcomes, the degree of efficacy in realizing intended learning outcomes and in identifying and handling unintended learning outcomes.

Under the learning outcomes approach, what the curriculum developer is being asked to do is forge a 'constructive alignment' or finely-tuned arrangement between learning outcomes on the one hand, and all elements of course design, delivery and assessment on the other.46

There are dangers in an overly rigid adherence to a learning outcomes approach to planning, development, delivery, assessment and evaluation. However, curriculum planners and evaluators need to bear in mind that real life is not as orderly as the approach assumes, and that real life involves disorderly forward movement, surprises, chaotic twists and turns, the unexpected and the unpredictable.

4.2 The DRR Learning Outcomes Landscape

A recent global mapping study of disaster risk reduction curricula found no comprehensive listing of DRR-related learning outcomes. Most lists in evidence are linked to subject-based courses with hazard- and disaster-related learning outcomes based on the language of the carrier subject and written to primarily satisfy subject, rather than DRR, learning requirements.[47]

Curriculum Developers/ Teachers: Go to 4.7 (pp. 80-2) for discussion of DRR-related student learning assessment

Amongst the learning outcome lists available, knowledge-based learning outcomes dominate, and only occasionally do knowledge outcomes appear in conjunction with outcomes directed towards conceptual understanding. DRR skills-based learning outcomes are evident but tend to be limited to practical safety-oriented skills rather than offering the full range of life skills that would arise from thoroughly addressing the five essential dimensions of DRRE. Learning outcomes geared toward the cultivation of attitudes and dispositions are rarely encountered. The overall impression is that learning outcomes are generally limited to what is strictly and easily measurable, as influenced by the prevailing assessment culture. Outcomes requiring the use of qualitative assessment modalities are generally avoided.

Refer back to 1.2 (pp. 6-8) for the five essential dimensions of DRR

Turn to 4.7 (pp. 80-2) for guidance on mixing quantitative and qualitative modes of assessment

46 Biggs, J. 2003. *Aligning Teaching and Assessment to Curriculum Objectives*. Imaginative Curriculum Project, LTSN Generic Centre.

47 UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries*. Paris/ Geneva: UNESCO/UNICEF. p. 45.

BOX 22.

DRR Learning Outcomes in School Curriculum: Some Noteworthy Examples

Russia

There has been some systematic development of broadly framed DRR learning outcomes in Russia. For example, a key carrier subject for DRR education, Basics of Life Security, has knowledge, skills and attitudinal learning outcomes for secondary level:

Knowledge:

- Holistic comprehension of the world, based on advanced knowledge of risks
- Understanding of the need to protect the environment in order to protect the health of the community and personal integrity of individuals
- Knowledge of specific issues: different types of disasters; consequences of disasters on the security of the individual, the community, and the country; governmental systems in place to protect the population against disasters; methods of organizing the population in reacting to disasters; first aid in critical situations; rights and duties of citizens in hazardous situations

Skills:

- Independent determination of own goals in DRR and ability to identify ways to achieve them in real life
- Increased capacity to protect oneself, the community, and the country from life-threatening events
- Development of physical and mental qualities relevant to protecting the lives of oneself, the community or the country in situations of disasters

Attitudes:

- Cognizance and responsiveness in making relevant choices in disaster situations
- Openness to reducing human activities that can negatively impact on the security of oneself, the community, or the country
- Engagement in the promotion of a culture of safety
- Openness to promote all necessary norms for the reinforcement of safety in the event of disasters

Cambodia

Each of the nineteen lessons in the Teacher's Manual on Mainstreaming Disaster Risk Reduction Concept for Geography and Earth Science, Grade 8, includes a list of learning objectives for ten-minute teaching interventions linked to grade 8 Geography and Earth Science subjects. The learning objectives enumerated from which learning outcomes can be derived primarily concern acquiring disaster-related geographical and scientific knowledge. For example:

- 'The students will be able to describe about the causes of flood and drought.'
- 'The student will be able to identify the types of flood hazards in Cambodia.'
- 'The students will be able to describe about earthquake and volcanic eruption phenomenon.'

BOX 22. continued

There are some dispositional learning objectives. For example:

- 'The student will be cautious and ready for flood preparedness.'
- 'The students will be interested in preventing and be aware of taking care of themselves during flood.'
- 'The student will be interested in contributing to natural disaster preparedness.'

Across the lessons, DRR-related skills learning outcomes are lacking.

Madagascar

Some broad DRR-specific competencies have been identified for different grade levels. For example:

- Participating in the protection of the environment of the school (grades 1 & 2)
- Knowing of measures to take to reduce the impact of a cyclone (grade 3)
- Acting as agents of change to convey key messages and actions to the community and parents (grades 4 & 5)
- Exchanging ideas with the local community, identifying patterns leading to local environmental degradation (grade 6)
- Discussing and co-planning with the community to raise environmental awareness using the local language (grade not known)

France

In the Ministry of National Education's teachers' guide for 2012, learning outcomes are specified under the three headings of 'anticipate, act and learn' ('anticiper, agir, apprendre') for all grade levels with sections on risks in daily life, risks on the road, health risks and major risks. The 'major risk' section includes the following learning outcomes:

- Understanding and evaluating major natural and technological hazards and knowing of mechanisms for managing crisis and hazard
- Knowing how to conduct oneself in the light of each major hazard, knowing how to adapt to situations, as well as how to contribute to safety and security
- Reflecting on management and behaviors in situations of crisis and being able to transfer learning to different hazards

Outcomes are spread across grade levels. For example, the overarching learning outcome of 'knowing and evaluating risks' (under the 'anticipate' heading) translates into:

- 'Discover the existence of major risks' and 'discover the means of protection' (2 to 7 year olds)
- 'Know the principal natural and technological risks' (8 to 12 year olds)
- 'Analyze different natural and technological risks,' 'be informed of risks in the near environment,' and 'know the different help services' (13 to 15 year olds)
- 'Classify risks according their manifestation and effects,' 'know of accessible and available risk documents and inventories,' and 'know of mechanisms for crisis management and help' (16 years old and over)

Source: Adapted from UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries*. p. 74, 88, 122, 134.

Georgia
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(see full captions pp. 185-9)

Curriculum Developers: Go to 4.6 (pp. 78-9) for discussion of DRR vertical curriculum integration

Just as the scoping and sequencing of DRR curriculum content remains a work in progress, so does the scoping and sequencing of learning outcomes. There is, as yet, no comprehensive elaboration of how learning outcomes can be vertically structured and no attempt to elaborate the weighting that different subjects might be given in any particular grade – nor cumulatively through the grades – toward realizing disaster risk reduction learning outcomes.

4.3 Generic DRR Learning Outcomes

Only recently has the first comprehensive articulation of DRR learning outcomes been published.[48] Box 23 (pp. 65-70) lists ten clusters of knowledge and understanding outcomes, seven clusters of skills outcomes and seven clusters of attitudinal and dispositional outcomes. It aims to elaborate 'what a graduate from a through-the-grades and across-the-curriculum exposure to disaster risk reduction should optimally know and understand, have the capacity to do and have internalized as a set of values and attitudes.'[49]

Refer back to 1.2 (pp. 6-8) for the five essential dimensions of DRR learning

The outcomes are described as 'generic' in two senses. First, with appropriate adjustment, they can be applied to learning and teaching about any hazard. Second, with appropriate cultural and contextual modification, they have application and relevance to disaster risk reduction curriculum development in different national, regional and local contexts.[50]

The connection between specific learning outcomes and the five essential dimensions of DRR learning is complex. Certain learning outcomes solely and substantively connect to one of the five dimensions. Other learning outcomes have a substantive connection to more than one dimension with some limited or indirect connection to the remainder. Some skills and most attitudes/dispositions outcomes have generalized relevance to all dimensions. Substantive linkages to one or more of DRRE essential dimensions 1-5 are noted in brackets in the list below while learning outcomes with generalized relevance to all dimensions are left unmarked.

48 UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries*. Paris/Geneva: UNESCO/UNICEF.

49 Ibid. p. 51.

50 Ibid. p. 45.

BOX 23.

DRR Learning Outcomes [with connections to the five essential dimensions of DRR learning indicated]

KNOWLEDGE AND UNDERSTANDING

Knowledge of self and others

- Learners understand their personal roles and responsibilities in times of hazard and disaster [2,5]
- Learners know their personal needs, concerns, hopes, aspirations, fears and preferred futures concerning hazards, disasters and disaster risk reduction [3,4]
- Learners have an understanding, grounded in practice, of personal attributes and competencies they can each call upon in times of hazard and disaster [2,5]
- Learners know of the special contribution that women in the community can make before, during and after a hazard has struck, the special roles they can play in social organization, and their special needs [4]

Knowledge of hazards and disasters

- Learners know of the causes and effects of various hazards and disasters (e.g. earthquakes, drought, floods, tsunamis, landslides, volcanic activity) [1]
- Learners know of past local disasters [1,3,4]
- Learners know of local bioregional hazards and potential sources of disaster [1,3,4]
- Learners know of local areas and populations that are vulnerable to disaster [1,3,4]
- Learners know of the seasonality of particular hazards [1,3,4]
- Learners have a knowledge of local, national and global hazard and disaster trends [1,3,4]

Understanding of key disaster risk reduction concepts and practices

- Learners understand key disaster risk reduction concepts (e.g. hazard, disaster, emergency, risk, risk reduction, vulnerability, resilience), their application to specific hazard circumstances, and their concrete applications in the local community [2,3,4]
- Learners understand that disaster risk multiplies with the intensity of the hazard and the level of environmental and social vulnerability but that it can be reduced according to society's capacity to cope (see equation, p.7) [3,4]
- Learners understand the idea of a 'culture of safety' and how it applies to everyday personal and community life [2,4,5]
- Learners understand the economies of disaster risk reduction and the cost-effectiveness of disaster prevention [3,4]
- Learners have a practical understanding of key DRR practices (e.g. hazard mapping and monitoring, early warning, evacuation, forecasting) [2,4]

Knowledge of basic safety measures

- Learners know of precautionary, safety and self-protection measures to be taken before, during and after a disaster by their family, at community level, and at school [2]
- Learners know of warning systems in place to alert people to impending hazard [2]
- Learners know of first aid procedures [2]

Knowledge of disaster management mechanisms and practices

- Learners know of local, regional, national and international disaster response infrastructures and mechanisms [2,4,5]
- Learners know the roles and responsibilities of local, regional and national government, as well as of private and civil society sectors, before, during and after times of disaster [2,4,5]
- Learners know of locally-valued indigenous disaster risk reduction and disaster coping behaviors and mechanisms [4]

BOX 23. continued

Knowledge of the environment and of the environmental/human society interrelationship

- Learners understand the idea of an ecosystem, how humans are actors within ecosystems, and that the consequences of environmentally unfriendly behaviors will work through the system to harm humans [3]
- Learners understand the specifics of how human behaviors and practices can harm the environment [3]
- Learners know of environmental issues impacting on their community; their causes, effects and amelioration [1,3]
- Learners know of examples, local through global, of how damage to the environment aggravates the incidence and severity of hazards [3]
- Learners understand the meanings and principles of conservation and know of practical conservation measures in their locality [3,4]
- Learners understand the concept of sustainable development and know of concrete and practical ways of living sustainably (including sustainable usage of land and natural resources) [3,4]
- Learners understand the inverse relationship between sustainable development and disaster [3,4]

Knowledge of climate change

- Learners understand the difference between 'weather' and 'climate' [1]
- Learners understand the dynamics of climate change [1,3]
- Learners understand that climate change is primarily human-induced and can identify patterns of behavior, practices and lifestyles that are causing the climate to change [1,3]
- Learners understand that climate change is exacerbating the incidence and severity of disasters [1,3]
- Learners know how to apply climate change learning to their own lives and to patterns of behavior in their community [4,5]

Knowledge of differential and disproportionate impacts of hazards on people

- Learners understand how and why disasters are more devastating for some communities while others are left relatively unscathed [3]
- Learners understand the concept of climate injustice, (i.e., that climate change is falling disproportionally on those least responsible, and know and understand proposals for 'climate justice') [3]
- Learners understand that children are often especially affected by disaster [3,5]
- Learners understand that disasters have differential impacts according to gender and socio-cultural status [3]

Knowledge of the conflict/disaster risk reduction interface

- Learners understand that personal or direct violence and structural or indirect violence (i.e. violence built into social structures and mores) can both cause and exacerbate disaster [3]
- Learners understand that climate change and other looming and imminent hazards can trigger violent conflict, and know of mechanisms and processes, interpersonal through international, for managing conflict and pre-empting violence [3,4]

Knowledge of human rights/child rights aspects of disasters

- Learners know of internationally agreed human and child rights and their implications for and applications in disaster scenarios [4,5]
- Learners know of rights likely to be curtailed and undermined by disasters, including the rights lost through disaster- and environmentally-induced migration [3]
- Learners know how to apply a rights and responsibilities perspective to disaster risk reduction and mitigation measures and procedures [4]

BOX 23. continued

SKILLS

Skills of information management

- Learners have the ability to gather, receive, express and present information on disaster risk reduction
- Learners have the ability to classify, organize and sequence gathered information on disaster risk reduction
- Learners have the ability to determine and gauge the quality, likely accuracy, appropriateness, provenance, soundness and priority level of information received on disasters
- Learners have the ability to research and devise hazard maps and conduct vulnerability assessment [4,5]

Skills of discernment and critical thinking

- Learners have the ability to discern and interpret signs and signals of impending hazard [2]
- Learners have the ability to assess the level of danger presented by impending hazards [2]
- Learners have the ability to think creatively and divergently and move outside their established frameworks of reference in response to changing environments and emerging and evolving threats [2,4]
- Learners have the ability to think creatively and laterally so they can identify and facilitate opportunity within crisis [4,5]
- Learners possess the skills to pre-empt and circumvent threat and hazard through effective information management, out of the box thinking and intuition [4,5]
- Learners have the ability to make ethical judgments about present and looming disaster situations [4.5]
- Learners have the ability to decode, deconstruct and learn from spoken, written and visual media information about hazards and disaster

Skills of coping, self-protection and self-management

- Learners have the practical skills set required to enable them to take all necessary measures for personal safety and self-protection before, during and after a disaster [2,5]
- Learners have the skills set required to collaboratively undertake hazard mapping and vulnerability assessment exercises [4,5]
- Learners possess first aid and other health-related skills [2]

Skills of communication and interpersonal interaction

- Learners have the ability to communicate warnings of impending hazard clearly and effectively [2,4]
- Learners have the ability to communicate what they have learned about hazards and disasters to families and members of the school and local community [2,4,5]
- Learners can communicate messages about risk, risk management options and environmental protection to family and community members, and can receive and understand messages through careful, active listening [2,4,5]
- Learners have the ability to engage in dialogue and discussion with peers, teachers, family and community members about hazards, disasters and disaster risk reduction, expressing opinions, feelings and preferences firmly but constructively and respectfully [2,4,5]
- Learners have the ability to effectively communicate about disasters and disaster risk reduction with people from different socio-cultural backgrounds [4,5]
- Learners have the ability to build and maintain the trust required from family, school and community enabling them to play a part in disaster risk reduction [2,4,5]
- Learners have the ability to work collaboratively and cooperatively with others towards reaching disaster risk reduction goals [2,4,5]

BOX 23. continued

- Learners have the skills to negotiate to mutual satisfaction and manage conflict productively as they work towards disaster risk reduction [4,5]
- Learners have the ability to communicate disaster risk reduction messages using appropriate and creative modes of communication (e.g. brochures, arts, music, song, theatre, puppetry, posters, poems, social media, radio, film) [4,5]

Social/emotional Skills

- Learners have the ability to work through and express their emotional responses to threat and disaster openly and effectively [4,5]
- Learners have to ability to listen to, receive and empathize with the emotions felt and expressed by others [4,5]
- Learners have the ability to empathize with those threatened by hazard and harmed by disaster [4,5]

Skills of action

- Learners have the ability to make informed action decisions based on available data, observation, intuition, dialogue and discussion [2,4,5]
- Learners have the ability to work alone and/or with others in school and community contexts to effect change towards sound disaster risk reduction practices and behaviors [2,4,5]
- Learners have the ability to campaign for sounder disaster risk reduction measures using electronic and traditional media, drama performance, art, petitioning, lobbying and engaging in public forums where ideas are shaped and shared and decisions are made [4,5]
- Learners have the necessary skills set to implement precautionary and safety measures against hazard in the classroom, school, home and community [2,4,5]
- Learners have the necessary skills set to be able to assist victims and the vulnerable in case of disaster (e.g. first aid skills, rescue skills) [2]
- Learners have the skills set necessary for participating in early warning and evacuation drills [2,5]
- Learners have the skills set necessary for emergency response in times of hazard (e.g. light search, swimming, evacuation and creating an emergency shelter) [2]

Systemic Skills

- Learners have the ability to perceive relationally and identify interrelationships and interactions within ecosystems and between nature and human society, between eco-systemic wellbeing (or its absence) and community wellbeing and development (or their absence) [3,4]
- Learners have the ability to identify patterns, commonalities and relationships between different hazards and risks as well as different prevention and response mechanisms [3,4,5]

BOX 23. continued

ATTITUDES/DISPOSITIONS

Altruism/valuing

- Learners recognize the intrinsic value of nature and wish to help protect their natural environment
- Learners recognize the intrinsic value of human life and of their community and wish to help protect all from harm
- Learners show a willingness to be involved in voluntary community activity
- Learners value and want to protect the special place where they live
- Learners value the global community of humankind and planet Earth

Respect

- Learners respect the diversity of perspective and opinion on disaster risk reduction in their community
- Learners respect the special contribution that all can make to disaster risk reduction
- Learners respect the rights of others in their concern for disaster risk reduction

Compassion, care and empathy

- Learners feel compassion for those threatened or affected by disaster
- Learners commit to an ethic of mutual help in times of hazard and disaster [2,4,5]
- Learners approach disaster risk reduction from an ethic of caring for future generations

Confidence and caution

- Learners appreciate the need to follow safety rules and procedures on any occasion [2,5]
- Learners apply a precautionary principle and risk awareness in their daily decision making and behaviors [2,5]
- Learners feel confident, empowered and resilient enough to cope with disasters

Responsibility

- Learners embrace a sense of responsibility to help protect themselves, their peers, their family and community from hazard and disaster
- Learners embrace a 'responsibility of distance' to those living far away who live with the threat of disaster

Commitment to fairness, justice and solidarity

- Learners commit to fairness and justice as the basis upon which relationships between individuals, groups and societies should be organized [3]
- Learners commit to a stance of solidarity with those who are affected by natural disasters in their own and other societies

Harmony with the environment

- Learners embrace an ethic of care, kindness and respectfulness towards living things
- Learners acknowledge the specialness, beauty and fragility of nature and embrace an ethic of environmental protection and conservation

Source: Adapted from Selby. D. & Kagawa, F. 2012. Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries. 46-51.

Policy Makers/ Curriculum Developers: Turn back to 1.2 (pp. 6-8) for discussion of DRRE and ESD

For discussion of the DRR learning community, organization, go to 8.1 (pp. 138-42) and 10.4 (pp. 171-9

The selection of learning outcomes in any particular context will largely be determined by the prevailing view of the nature and scope of DRRE and of the depth and breadth of DRR curriculum integration felt to be feasible. Those conceiving DRRE as limited to understanding natural hazards and building safety awareness will tend to opt for outcomes marked '1' and '2' together with some generalized outcomes. Those committed to a conception of DRRE framed and informed by education for sustainable development (ESD) will additionally give prominence to outcomes marked '3','4' and '5' while integrating the full range of generalized outcomes. Those interested in establishing a DRR learning community or organization will also tend to work across the comprehensive range of learning outcomes listed above.

4.4 Competency-based DRR Curriculum Development

Curriculum Developers/ Principals/ Teacher Trainers/ Teachers: Turn to 5.2 (pp. 92-4) and Chapter 6 for discussion of participatory learning and to 4.7 (pp. 79-82) for discussion of DRR assessment

Another approach to DRR curriculum development originated with the idea of building students' competencies. A competency has been defined as: 'the ability to mobilize an integrated resource set (acquired knowledge, capacities, skills, etc.) to achieve a goal such as completing a complex task or solving a problem'.[51]

Curriculum Developers: Go to 4.6 (pp. 78-9) for discussion of DRR vertical curriculum integration

Competency-based curriculum planning reorients learning to meet workforce needs as defined by employers and professions. The approach asks what students need to know and be able to do in varying and complex workforce and real life situations. For each situation 'different bundles of skills, knowledge and attitudes' need to be drawn up, the challenge being to 'determine which competencies can be bundled together to provide the optimal grouping for performing tasks'.[52] In this case, curriculum is developed by identifying the types of situations in which students are likely to find themselves and need to handle competently in their post-schooling lives. From this, appropriate competency bundles are determined,[53] which then shape the content of learning programmes, the processes of teaching and learning, and the types of assessment.

Using competence as an organizing principle for curriculum development has been described as a 'way to bring real life back into the classroom'.[54] Implementing this approach requires active and participatory learning approaches that provide practice in using and applying competencies. Also essential is the use of a complex portfolio of diverse forms of assessment appropriate to testing the range of competencies in question. As with the learning outcomes approach, the vertically staged development of competencies is a challenge.

A weakness of the competency approach lies in its focus on competencies called for in existing and/or foreseen situations. There are concerns that teachers and students come to understand a competency only in relation to the identified situation and not as being transversal or transferable in other situations. The possibility also exists that the student may become accepting of, and competent within, existing contexts, including those marked by

51 UNESCO IBE. Leading and Facilitating Curriculum Change: A Resource Pack for Capacity Development. http://www.ibe.unesco.org/Curriculum/Rpack/des_structure.htm

52 http://www.ceph.org/pdf/Competencies_TA.pdf

53 UNESCO IBE. Competency-based Approaches. http://www.ibe.unesco.org/en/communities/community-of-practice-cop/competency-based-approaches.html

54 Jonnaert, P., Masciotra, D., Barrette, j., Morel, D., Mane, Y. 2007. From Competence in the Curriculum to Competence in Action. Prospects, vo.37, no.2. p. 191.

Russia
© UNICEF/Anastasia Dutova
(see full captions pp. 185-9)

unsustainable modes of development, and will be unable to analyze and act to change those contexts. Caution is therefore recommended here because fields such as disaster risk reduction education, climate change education and education for sustainable development require students to, among other things, identify how human activity has exacerbated hazard and threat, and develop the capacities to participate in processes of fundamental change.

Nonetheless, a competency-based approach to DRR curriculum development is a viable option. Integrating DRR into the curriculum can follow the path of identifying hazard and disaster situations and challenges that students are likely to face, determining competency bundles for each situation and developing learning and assessment programmes based on the competencies identified. A process for employing the learning outcomes list in the previous section as part of a competency-based approach is described under Discussion Tool 5 in the next section.

4.5 Developing Context- and Purpose-specific Learning Outcomes

The generic learning outcome clusters and specific learning outcomes listed in section 4.3 were arrived at by examining global DRR curriculum practice and cross-referencing these with DRR goals within a holistic ESD perspective. The result is not a final product, but a contribution to ongoing research, development, debate and exchange, rather than a final, definitive statement. DRRE curriculum developers should arrive at a list of learning outcomes appropriate to their context and task. In this regard, the generic list can provide a starting point for discussion and development.

The following pages provide a series of exercises (Discussion Tools 5, 6, 7, 8) in which the list can be employed in the related tasks of developing curriculum and formulating and/or refining context-specific learning outcomes.

Vital for the global enrichment of DRR is the sharing through available channels (see Box 17 on p. 47) of the products of the exercises described here

DISCUSSION TOOL 5.

Developing Competency-based Curriculum

Main Target Groups for Exercise

National curriculum development team; [at local level] community members, principals, teachers, members of disaster and climate change related organizations; teachers in pre-service or in-service training.

Purpose

To develop competency-based DRR curriculum.

Procedure

1. Have participants work in groups to consider and list national, sub-national and/or local hazard and potential disaster situations for which students need to be equipped.
2. Give each group a situation to consider in terms of competencies, asking what knowledge, skills and attitudes a graduate from the school system would need to possess to be able to cope with and be proactive in the situation.
3. Have groups go through the list of learning outcomes (Box 23) looking for knowledge, skills and attitudinal outcomes that should be added to their competency bundle, refining the wording of the outcome as necessary.
4. Ask groups to report back and encourage a creative critiquing of each other's work.
5. Have groups work together again to think about the topics, themes, learning and assessment approaches that should be developed for delivering the competency.
6. Ask groups to present and again creatively critique each other's work

Note: The outcomes of the work can be used as a basis for in-depth curriculum development.

DISCUSSION TOOL 6.

Developing Subject-based DRR Curriculum Learning Outcomes

Main Target Groups for Exercise

Curriculum specialists and developers of one or more subjects, teacher educators, teachers, technical working group members for DRR or DRR with CCE/ESD curriculum development.

Purpose

To develop subject-specific DRR learning outcome lists.

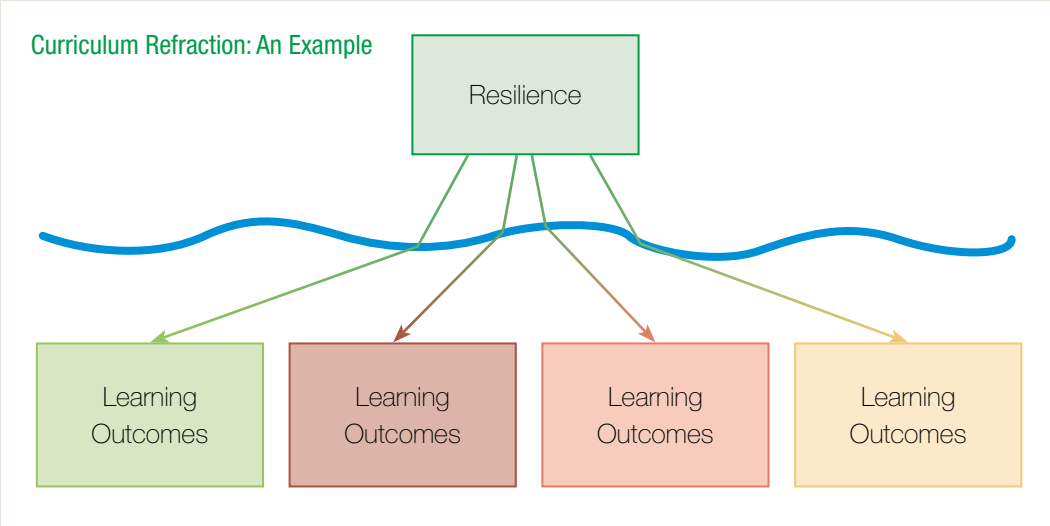
Procedure

Return to 2.1 (pp.25-8) to refresh understandings of DRR infusion

1. Reflect on the notion of curriculum infusion (i.e. that DRR knowledge, skills and attitudes/dispositions can be infused into subject curricula).
2. Introduce the idea of refraction, the change in direction of light waves as they enter another medium (e.g., the perceived bend in a straight stick when seen entering the surface of a pool of water).

DISCUSSION TOOL 6. continued

3. Then raise the notion of curriculum refraction (i.e. that a cross-curricular DRR theme and generic DRR learning outcome applied to a particular subject may well be conceived and formulated differently within that milieu).



4. Have participants work in small subject specialist groups to consider in broad terms if and how each of the learning outcomes listed in the summary Learning Outcome Clusters table (see below) could be accommodated in the subject in question; also, where within the subject curriculum contributions towards realizing the outcomes might be located (i.e. at different grade levels and/or within specific subject units/topics).
5. Have participants pool and share ideas in a general discussion.
6. Distribute the full list of generic learning outcomes (section 2.4 above).
7. Returning to their small groups, ask participants to elaborate specific learning outcomes under each outcome cluster heading that they think the subject in question could address, writing each specific outcome in the standard terminology of the subject.
8. Conclude with general discussion with the aim of drawing up a list (or lists) of subject-aligned DRR learning outcomes.

Knowledge and Understanding	Skills	Attitudes/ Dispositions
• Knowledge of self and others • Knowledge of hazards and disasters • Understanding of key disaster risk reduction concepts and practices • Knowledge of basic safety measures	• Skills of information management • Skills of discernment and critical thinking • Skills of coping, self-protection and self-management • Skills of communication and interpersonal interaction	• Altruism/valuing • Respect • Compassion, care and empathy • Confidence and caution • Responsibility • Commitment to fairness, justice and solidarity

DISCUSSION TOOL 6. continued

Knowledge and Understanding	Skills	Attitudes/ Dispositions
• Knowledge of disaster management mechanisms and practices • Knowledge of the environment and of the environmental/ human society interrelationship • Knowledge of climate change • Knowledge of differential and disproportionate impacts of hazards on people • Knowledge of the conflict/ disaster risk reduction interface • Knowledge of human rights/ child rights aspects of disasters	• Social/emotional skills • Skills of action • Systemic skills	• Harmony with the environment

DISCUSSION TOOL 7.

Paving the Way for Blended Cross-curricular DRR Provision

Curriculum Developers/ Principals/ Teachers: For consideration of blended cross-curricular provision, return to 2.2.4 (pp. 27-30)

Main Target Groups for Exercise

Curriculum specialists and developers, teacher educators, teachers and principals (the exercise lends itself to whole-school learning outcomes mapping and development), technical working members for DRR or DRR with CCE/ESD curriculum development.

Purpose

Primary- or secondary-level curriculum developers and/or teachers representing different subjects meet to discuss integrated whole-curriculum delivery of DRR learning outcomes.

Procedure

Stage 1: Exploring Subject Learning Outcome Potential

1. Have those involved meet in subject groups with copies of the Learning Outcome Clusters table (Discussion Tool 6, above) and one or more copies of the subject curriculum, texts and other teaching/learning materials.
2. Ask groups to discuss the potential in the subject for realizing each of the learning outcomes and the degree to which that potential is currently being exploited, writing down key points and ideas on chart paper.
3. Follow with reports in whole group session on the discussions, group by group, participants referring to the chart paper notes.
4. Hold a discussion with the whole group on links identified between actual and potential learning outcome coverage across the subjects.

DISCUSSION TOOL 7. continued

Stage 2: Mapping Whole Curriculum Learning Outcomes

1. Back in their groups, have participants identify specific learning outcomes falling within each learning outcome cluster to which they think the subject in question can contribute, writing a list for each cluster on a separate sheet.
2. Have the whole group contribute to a large DRR Knowledge Learning Outcomes Map for the whole curriculum with subjects represented along the horizontal axis and grade levels arranged on the vertical axis.
   - First, have participants write in actual and potential subject contributions to DRR knowledge outcome clusters, grade level by grade level, on the map (directly above where the subject appears on the horizontal axis).
   - Second, ask the whole group to consider learners' actual and potential exposure to each knowledge outcome at each grade level and through the grades (linking points of exposure with a continuous line can be helpful).
3. Repeat step 6 (probably in two additional sessions) creating a DRR Skills Learning Outcomes Map and a DRR Attitudes/Dispositions Learning Outcomes Map.
4. Retain the sheets produced during step 5 for purposes of ongoing curriculum development, making them available for consultation during Stage 3.

Stage 3: Scoping and Sequencing Learning Outcomes

1. Have a team organize and group all inputs and ideas in a document and distribute for study in advance of undertaking step 12
2. Hold one or more DRR Scoping and Sequencing sessions to consider questions such as:
   - What potentially rich areas for realizing DRR learning outcomes have emerged from the mapping of the curriculum?
   - How might the scheduling of topics across subjects be reconfigured to optimize the impact of the curriculum on DRR learning?
   - Should subjects be earmarked as primary and reinforcing carriers of DRR learning outcomes? If so, how would that be arranged and managed?
   - How might teachers of different subjects collaborate so as to optimize the realization of DRR learning outcomes?
   - What changes in texts and other learning materials are needed to better achieve DRR learning outcomes?
   - What changes are needed in the style and places of teaching and learning to better realize DRR learning outcomes?
   - Has the process revealed professional development needs?
   - What structures and mechanisms can be put in place for monitoring DRR learning outcome delivery across the curriculum with a view to establishing a process of continuous improvement?

Principals: Discussion Tool 7 can play a significant part in cultivating teachers' vision of the school as a DRR learning organization (see 1.2.5 on p. 8, 8.1 on pp. 138-42, 10.4 on pp. 171-9

DISCUSSION TOOL 8.

Localizing DRR Learning Outcomes

Main Target Groups for Exercise

Curriculum specialists and developers and teacher educators working at local level; school teachers and principals; members of local communities including those experienced in, and working with, traditional and indigenous disaster risk reduction knowledge and practices; local disaster risk reduction, climate change and sustainability specialists

Purpose

Some countries include a 'local content curriculum' element while other countries allow flexibility in adjusting centrally developed curriculum to local contexts and needs.[1] Yet other countries have developed policies for the infusion of indigenous practices and worldviews in the curriculum.[2]This exercise suggests a simple process for looking at generic DRR learning outcomes through local and indigenous perspectives.

Procedure

1. Assemble teachers and educators, community members, those with local hazard, climate change and sustainability expertise, and those with knowledge of indigenous/traditional disaster risk reduction practices.
2. Review with participants the Learning Outcome Clusters table (Discussion Tool 6, above) or the generic outcomes list (section 4.3) and ask them to meet in groups to discuss three issues: (a) the general appropriateness of outcomes for the locality and local culture; (b) how the outcomes could be reworded to make them more locally relevant and culturally appropriate; (c) learning outcomes they think are missing, but which should be included to ensure locally and culturally attuned curriculum.
3. Have groups report back and discuss each issue, addressing differences between indigenous and scientific perspectives as they emerge.
4. Create an agreed list of learning outcomes for local DRR learning.
5. Share the list across the community, elicit feedback and meet to review comments, amending the learning outcomes as felt necessary.
6. Use the learning outcomes determined by the process to frame the development of local content DRR curriculum.

1 UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries*. Paris/Geneva: UNESCO/UNICEF.

2 See, for example, Ministry of Education, Republic of Vanuatu. *Vanuatu National Curriculum Statement*. Port Vila: Ministry of Education. pp. 1-13.

4.6 Vertical Integration of Learning Outcomes

As Discussion Tool 7 (pp. 75-6) reiterates, full DRR curriculum integration involves horizontal integration of learning outcomes across the curriculum as well as vertical integration through the grade levels. It was noted earlier that a spiral curriculum of concepts, ideas, themes and topics is important for cumulative reinforcement of DRR learning. The task of building a spiral curriculum can be considerably helped by first determining a vertical progression of learning outcomes. Learning outcomes through the grades should be carefully structured in such a way that, cumulatively, they enable the maturing learner to handle ever-increasing complexity and sophistication.

Expressions of learning outcomes in earlier grades should be viewed as steps of achievement towards realizing a range of final learning goals that, taken together, equip the learner for lifelong learning. The notion of curriculum foreshadowing comes into play here (i.e., the idea that the learner should internalize a simpler idea or concept at one development stage so as to more easily internalize a more complex idea or concept at a subsequent stage of development). In the same way, the sphere to which learning is devoted and/or in which learning engagement occurs becomes broader and deeper through the grades, evident in increasingly complex learning outcomes. For example, hazard safety in the home in the early grades might translate into understanding global patterns of hazard preparedness in the senior grades. The same applies to skills learning progression so that skills are calibrated to match the physical, cognitive and emotional maturation of the individual.

Curriculum Developers: Revisit initial guidance on vertical integration in 2.4 (pp. 36-7).

Using a limited selection of generic knowledge, skills and attitudinal/dispositional learning outcomes, Table 4 presents examples of learning outcome progression across four age groups.

An important exercise for those planning DRR curriculum development would be to complete blank copies of Table 4 for their priority generic learning outcomes.

TABLE 4.

Indicative Examples of Learning Outcomes Progression	
Knowledge	
Generic Learning Outcome: Knowledge of hazards and disasters Learners know of past local disasters	
Ages 4-7	Learners understand when and where natural hazards/ disasters took place previously in their community
Ages 7-11	Learners have a basic understanding of causes and effects of previous natural hazards/disasters in their community
Ages 11-14	Learners understand patterns/trends of past local disasters in terms of locations, durations, season and impacts
Ages 14-18	Learners understand impacts of past local disasters from socio-economic, gender, human/child rights perspectives

TABLE 4. continued

Skills	
Generic Learning Outcome: Skills of communication and interpersonal interaction **Learners have the ability to communicate disaster risk reduction messages using appropriate and creative modes of communication (e.g. brochures, arts, music, song, theatre, puppetry, posters, poems, social media, radio, film)**	
Ages 4-7	Learners are able to express basic DRR messages learned at school in drawings and posters for class/school displays
Ages 7-11	Learners are able to create DRR posters and brochures on specific natural hazards most relevant to their own community for display and distribution in the community
Ages 11-14	Learners are able to pass on DRR messages using performing arts (such as puppetry or theatre) to younger children
Ages 14-18	Learners are able to plan, prepare and implement DRR campaigns using multiple communication modes of their choice (including social media, radio, film) for a wider audience
Generic Learning Outcome: Skills of action **Learners have the necessary skills to be able to assist victims and the vulnerable in case of disaster (e.g. first aid skills, rescue skills)**	
Ages 4-7	Learners can undertake simple support tasks under the close guidance of adults
Ages 7-11	Learners are able to employ basic first aid skills in assisting with minor injuries
Ages 11-14	Learners are able to look after younger children in a crisis situation
Ages 14-18	Learners are able to support rescue efforts in a non-frontline role
Attitudes/Dispositions	
Generic Learning Outcome: Responsibility **Learners embrace a sense of responsibility to help protect themselves, their peers, their family and community from hazard and disaster**	
Ages 4-7	Learners are aware of the importance of being prepared for potential hazards/disasters Learners have positive self-worth and confidence to be responsible
Ages 7-11	Learners show empathy to others around them who are in need Learners become aware of their responsibility to care for each other in times of hazard
Ages 11-14	Learners show willingness to take action to keep themselves and others close to them safe from potential hazards
Ages 14-18	Learners demonstrate firm commitment to taking action to keep their community safe from potential hazards
Generic Learning Outcome: Confidence and Caution **Learners appreciate the need to follow safety rules and procedures on any occasion**	
Ages 4-7	Learners are mindful of the importance of following safety rules and procedures
Ages 7-11	Learners are confident in practicing safety procedures
Ages 11-14	Learners commit to promoting and modeling good safety practice
Ages 14-18	Learners are committed to helping younger children follow safety rules and procedures

Source: Elaborated, with further examples, from UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries.* Paris/Geneva: UNESCO/UNICEF. p. 52.

4.7 Assessment of Learning

What is assessed and what is not assessed clearly indicates learning priorities. To be effective, a well-structured, cohesively integrated framework of DRR learning outcomes must be clearly reinforced through the appropriate assessment of students' learning. However, so far, DRR student assessment is the least considered and least developed aspect of DRR curriculum innovation.[55] For DRR to become fully infused in curriculum, 'constructive alignment' needs to be achieved between learning outcomes, on the one hand, and purposes, forms and structures of learner assessment, on the other.

There are primarily two types of student assessment: summative and formative. Summative assessment takes place at the end of school year or at predetermined milestones during the school year as a formal process. It aims at finding out what students have and have not learned relative to intended learning outcomes, with the results featured in some form of formal reporting. Formative assessment is an integral, ongoing component in the learning process. Its purpose is to highlight what is being learned and what is not so that timely programmatic and pedagogical adjustments and improvements can be made. In other words, summative assessment is assessment of learning and formative assessment is assessment for learning.

A range of assessment tools can be employed for both summative and formative assessments. While all tools can be used for both purposes, some tools lend themselves more easily to one type of assessment than the other. For example, essay writing has been traditionally employed as a tool towards summative assessment especially in senior grades, while student self- and peer-assessment is more generally employed for formative purposes.

55 UNESCO/UNICEF. 2012. Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries. Paris/Geneva: UNESCO/UNICEF.

BOX 24.

Examples of Student Assessment Tools

- Written (including computer based) exams/tests/quizzes
- Oral questions/quizzes
- (As part of written and/or oral questions) multiple choice questions; true-false questions; ranking exercises (e.g. ranking statements according to given criteria); scales (e.g. five-point Likert scales)
- Essays/papers
- Journals/diaries
- Analysis of case study or fictional scenarios
- Exhibitions
- Projects
- Interviews (individual/group focus group)
- Portfolios
- Observations
- Self-/peer assessment
- Oral presentation/demonstration (including plays, skits, role plays, miming, singing, speeches, debates, storytelling)
- Simulations
- Artifacts (e.g. drawing, student notebooks)

Sources: INEE. 2010. *Guidance Notes on Teaching and Learning.* New York: INEE; WHO. 2003. Skills for Health. Geneva: WHO.

When asking any basic question about student learning, it is important to gather information from different sources (teachers, students themselves, peers, third parties including parents) and to use different methods to obtain more holistic feedback on changes that have occurred in students as a result of curriculum interventions.[56]

Assessment of DRR learning outcomes calls for the employment of a diverse range of assessment tools. Some tools, such as written examinations and essay writing, are more fitted for assessing knowledge and understanding learning outcomes. Practical skills outcomes, however, speak to assessment through observation of learners in interaction with peers or demonstrating a skill while in a real life or simulated situation. Assessment using such tools as teacher and peer assessment of learner contributions to discussion groups, drama, role-play, and other forms of presentation offers opportunities to assess learners' ability to draw upon both acquired knowledge and skills while also revealing much about their attitudes and dispositions.

All in all, the range of DRR learning outcomes suggests that a portfolio approach to assessment is optimal. Portfolio assessment involves the gathering of a portfolio of work from, and data about, each student using multiple assessment approaches. This enables the learner to be assessed through several perspectives while being sensitive to the fact that learners perform differently across different assessment methods. The approach also allows for a balanced approach to assessment that can be used for summative and formative purposes.

56 Fountain, S. & Gillespie, A. 2003. *Assessment Strategies for Skills-Based Health Education with a Focus on HIV/AIDS and related issues (Draft)*. New York: UNICEF.

BOX 25.

Use of a Variety of Assessment Tools and Methods at Regular Intervals

Assessment tools and methods that reflect the agreed learning outcomes and their indicators should be used at regular intervals to measure individual progress. A non-exhaustive list of assessment tools for various learning outcomes includes:

- **Knowledge**: closed-ended questions (e.g., true-false or multiple choice questions), open-ended questions (e.g., essays, sentence completion), analysis of a case study or fictional scenario, time lines, picture sorting, role-plays and simulations
- **Attitudes**: closed-ended questions, open-ended questions, analysis of a case study or fictional scenario, role plays and simulations, and scales (e.g. Likert scales)
- **Skills**: closed-ended questions, analysis of a case study or fictional scenario, role-play and simulations, checklists, diaries and journals
- **Behavioral intent**: closed-ended questions, analysis of a case study or fictional scenario, role-plays and simulations, checklists, diaries and journals and 'intent to behave' statements

Source: Taken from INEE. 2010. *Guidance Notes on Teaching and Learning*. New York: INEE. 42.

It is also important that DRR assessment modalities reflect the child participation dimensions of the Convention on the Rights of the Child, for example, through the incorporation of student self- and peer-assessment. Students are not passive objects of assessment, but rather subjects in a participatory assessment process.

It has to be acknowledged that, in many countries, assessment is confined to a centrally orchestrated national examination system. Such a system cannot assess student acquisition of the multi-various learning outcomes called for by DRRE. The move to integrate DRR into school curricula thus aligns itself with the move to effect reform of learner assessment.

BOX 26.

Child-centred (or Learner-centred) Learning and Teaching Assessment Modalities

Child-centred learning and teaching includes relevant, specific and measurable learning outcomes. It is based on students' needs and assets and uses of active and participatory learning and assessment methods that mimic situations students might face in real life. In schools, it is referred to as child-centred learning and refers to instruction and learning processes that are designed around the experiences, skills, knowledge and interests of the children.

Source: Taken from INEE. 2010. *Guidance Notes on Teaching and Learning*. New York. p. 52.

Refer back to 1.5.3 (pp. 17-18) for child-friendly learning

BOX 27.

Child-centered Learning Assessment Modalities

Kazakhstan: The Teacher's Manual on the Issue of Disaster Risk Reduction suggests both summative and formative modes of assessment of DRR learning. The Manual indicates a number of innovative uses of self- and peer-assessment methods. Peer assessment modalities include peer interviewing, peer appraisal of essays, group observation of each other's role play, peer assessment of project outcomes, peer teaching.

Malawi: Malawi's new primary curriculum is outcome-based with a strong emphasis on learner-centered pedagogies. Introducing elements of formative assessment is one of the critical changes made in the curriculum. Primary syllabuses systematically suggest diverse assessments modes using a scope and sequence chart. Examples of continuous assessment include: drawings, miming, teacher observations, oral questions, self-assessment, singing, storytelling, written reports and texts. Although Malawi is only on the threshold of employing DRR as a guiding concept for curriculum development, formative assessment mechanisms together with other curriculum windows of opportunity present fertile ground for effective DRR curriculum development.

Source: Adapted from UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries*. Paris/Geneva: UNESCO/UNICEF.

4.8 Checklists

CHECKLIST 1.

DRR Learning Outcomes

- ☐ Is a comprehensively articulated list of DRR learning outcomes available for the both primary and secondary curriculum as a whole?
- ☐ Are fully articulated subject- and grade-specific lists of DRR learning outcomes available?
- ☐ Do the lists give equal weighting to knowledge and understanding, skills and attitudinal/dispositional learning outcomes?
- ☐ Are DRR knowledge and understanding, skills, and attitudinal and dispositional learning outcomes systematically broadened and deepened grade by grade?
- ☐ Are learning outcome lists periodically evaluated and revised in the light of accumulating experience?
- ☐ Does the range of learning and teaching approaches employed fit its purpose of diffusing the agreed learning outcomes?
- ☐ Have clear and direct linkages between learning outcomes and forms and styles of assessment been established?
- ☐ Are DRR learning outcomes linked together with CCE and ESD learning outcomes?

CHECKLIST 2.

DRR Student Assessment

- ☐ Is there summative assessment of students' DRR learning?
- ☐ Is there also ongoing formative assessment of their DRR learning?
- ☐ Is portfolio assessment of student DRR learning in place, drawing upon and bringing together a range of assessment modalities?
- ☐ Is assessment, taken as a whole, balanced, incorporating both summative and formative elements and diverse assessment modes?
- ☐ Is assessment designed to illuminate student DRR learning in a holistic and comprehensive way?
- ☐ Is equal assessment space given to DRR-related skills and attitudinal development regarding the acquisition of knowledge and understanding?
- ☐ Is assessment an interesting and welcomed aspect of student learning?
- ☐ Does the teacher feed learning from assessment into lesson revision and classroom facilitation?
- ☐ Is DRR student assessment linked together with CCE and ESD learning assessment?
- ☐ Are learner assessment tools constructively aligned with the range of DRR learning outcomes?

Source: Elaborated from UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries.* Paris/Geneva: UNESCO/UNICEF. pp. 195-96.

STRATEGIC POINTERS FOR CHAPTER FOUR.

- → **Curriculum Developers (national, sub-national, local)**: Work to ensure constructive alignment between DRR learning outcomes, curriculum themes/topics, learning and teaching approaches and student assessment.
- → **Curriculum Developers (national, sub-national, local**): Aim to adopt or develop a sufficient range of learning outcomes to address all five essential dimensions of DRR learning.
- → **Curriculum Developers (national, sub-national, local)**: Remember that vertical integration of DRR curriculum is just as important as horizontal integration.
- → **Curriculum Developers (national, sub-national, local)**: Use one or more of the competency or learning outcome development tasks described in this chapter to develop an appropriate list of competencies/outcomes for the jurisdiction in question (a broader stakeholder representation results in a richer outcome and a bigger buy-in).
- → **Principals**: Use one or more of the competency/learning outcome tasks described in this chapter as a means of engaging teachers in developing the school as a DRR learning community/organization.
- → **Curriculum Developers/Principals/Teachers**: Ensure that a diverse range of tools are used in assessing DRR learning.
- → **Curriculum Developers/Principals/Teachers**: Ensure that assessment of student DRR learning is used for both summative and formative purposes.
- → **Curriculum Developers/Principals/Teachers**: Incorporate student participation in DRR assessment processes as much as possible.

4.9 Selected Tools and Resources

- UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries*. Paris/Geneva: UNESCO/UNICEF.

  Section 6, 'Disaster Risk Reduction Learning' and Section 8, 'Disaster Risk Reduction Education: Learning Outcomes' are particularly relevant for this chapter.

- Sinclair, M. 2004. *Learning to Live Together: Building Skills, Values and Attitudes for the Twenty-First Century*. Geneva: UNESCO IBE.

  Values, knowledge, attitude and skills goals for 'learning to live together' offer valuable insights for DRR curriculum development. Some 11 programme case studies and lessons learned are included.

Chapter 5
Developing DRR Learning Programmes, Activities and Materials

This chapter begins by defining ten practical steps to be taken when developing DRR learning programmes, activities and materials. Following this, it demonstrates the importance of achieving a diversity of learning approaches and styles before providing templates for writing lessons and learning activities. Three sample learning activities are then described. The chapter closes by addressing the question of what to include in a teachers' guide or manual and briefly discusses student activity books.

Curriculum Developers: The ten steps in 5.1 all focus on programme topic and learning activities/materials development. As the sidebars below indicate, the steps connect into a broader process of DRR curriculum integration. They overlap stages 1 and 2 of curriculum development (see 3.1, pp. 40-1) while needing to dovetail with stages 3 and 4.

Curriculum Developers: Prior to Step 1 conduct a baseline study, curriculum review and/or needs analysis (see 3.4, pp. 48-51); also, build team consensus and shared understanding around the curriculum development task and process (see 3.5, pp. 51-5)

5.1 DRR Learning Programme Development: A Practical Ten Step Approach

This section defines ten steps to be followed in devising and developing a DRR learning programme and associated topics, activities and materials. It assumes a group composed of curriculum developers working together with NDMO and agency personnel to plan and write the programme at national, sub-national or local level. Some steps may be redundant in specific contexts, especially in situations where the developers have been given a precise and detailed mandate within which to work, or are called upon to develop curriculum within a pre-ordained framework. The steps should be followed flexibly and selectively according to the circumstances.

Step 1: Establish Contextual Clarity

Be clear about:

- The range of DRR themes, topics and concepts being covered elsewhere in the curriculum.
- Overall duration of intended DRR learning intervention: how many weeks, how many hours, how many lessons, the length of each lesson?
- The learning setting: are lessons to take place in the classroom or is there a possibility for lessons elsewhere on the school campus or out in the community?
- The grade level(s) at which the programme will be delivered.
- Materials and equipment availability in schools: audio-visual and electronic equipment, basic writing, drawing, painting materials, and/or writing and chart paper.
- The subject(s) or timetable space in which the programme will be taught.
- The quality of the teaching staff and the discipline(s) they represent

Step 2: Determine Intended DRR Learning Outcomes and Key Concepts

Identify and note down:

- DRR learning outcomes being addressed elsewhere in the curriculum (i.e. in other subjects and at earlier or later grade levels) and determine how the outcomes of the new programme will reinforce those outcomes.
- Intended knowledge learning outcomes (using verbs such as: arrange, order, define, recognize, label, locate, identify, recognize, recall, list, repeat, memorize, name, state, relate, reproduce, record).
- Intended understanding learning outcomes (using verbs such as: classify, describe, observe, recognize, discuss, report, explain, restate, express, review, select, record).
- Intended skills learning outcomes (using verbs such as: analyze, plan, calculate, categorize, examine, compare, contrast, criticize, arrange, organize, create, write, synthesize, connect, develop, imagine, assess, appraise, resolve, problematize, communicate, question, debate, explain, justify, illustrate, summarize, present).
- Intended attitudinal/dispositional learning outcomes (using verbs such as: appreciate, care, feel, commit, embrace, empathize, sympathize, respect, value).
- Key DRR concepts and ideas to be reinforced through the programme.

Step 3: Develop a Topic Web

Map out the potential and scope of the chosen programme by developing a web or flowchart using the following process:

- Brainstorm potential topic ideas, themes and issues for the programme noting them down on a whiteboard or large sheet of chart paper (at this stage accepting all ideas without comment).
- Link ideas that overlap or relate with two-way arrows; agree to reject ideas that, on reflection, are not applicable or not viable.
- Translate all accepted ideas, themes and issues into a topic web or flow chart in which ideas are organized and thoroughly interconnected, adding new ideas, as they come to mind.
- Add notes showing how different items on the web connect with chosen learning outcomes and concepts.

Note: Rather than immediately moving to a linear sequencing of topics, the flowchart approach enables the use of imagination, lateral and divergent thinking as well as relational thinking in the process. The final version of the flowchart may become an important programme document that demonstrates systemic thinking and emphasizes curriculum linkages, but it will still, nevertheless, need translating into linear format.

Curriculum Developers: Revisit 4.3 (pp. 65-71) for DRR generic learning outcomes. For the competency-based approach to developing learning outcomes, review 4.4 (pp. 71-2). Use exercises from 4.5 (pp. 72-7) to help in the development of context- and purpose-specific learning outcomes.

Curriculum Developers: Revisit 1.3 on ESD (pp. 8-14), 1.4 on CCE (pp. 14-15), 1.5.2 on life skills (pp.16-17) and 1.5.3 on child-friendly learning (pp. 17-18)

For details of the five essential dimensions of DRRE learning, refer back to 1.2 (pp. 6-8).

Policy Makers/ Curriculum Developers: For the importance of partnership in DRR curriculum development, return to 3.2 (pp. 41-5)

Step 4: Draw up the Programme Outline

Go through the following steps to develop and refine the programme outline:

- Organize elements from the topic in coherent linear progression (i.e. in the order to be taught).
- Sub-divide each element into lesson-by-lesson portions.
- Determine where priority whole school or cross-curricular dimensions overlapping with DRR (such education for sustainable development, climate change education, life skills and child-friendly learning) will be embedded in the programme.
- Review the programme outline asking if it provides sufficient potential to realize chosen DRR learning outcomes and competencies; adjust the outline (or the outcomes and competencies) if necessary.
- Review the programme according to the five essential dimensions of DRR learning (understanding mechanisms; becoming safety wise; understanding risk drivers and how hazards can become disasters; building community risk reduction capacity; building an institutional culture of safety and resilience); if they are missing, partly addressed or under-represented, adjust the outline.
- Write short descriptions of each proposed lesson; review them in the order in which the lessons are to be delivered to check the programme outline has clear structure and coherence (and to check that the curriculum development team still has a shared conception of the scope and sequence of the programme); adjust the outline, as necessary.

Step 5: Develop the Learning Materials

Gather and develop learning materials:

- Search out and review already available DRR learning and teaching materials to determine whether in whole or in part they could be used or adapted for lesson delivery (see *Online DRR Materials* box).
- Identify potential content, data and resource material and where they could be sourced from (the National Disaster Management Office or similar, meteorological office, newspapers from disaster periods, UN agencies, agricultural and disaster-related national agencies and non-governmental organizations can be excellent sources of DRR material); those in the curriculum development team drawn from outside the education sector, such as climate change experts and NDMO personnel can be particularly useful in this regard.
- Establish partnerships and communication channels so that local communities can add their local-based knowledge and memories as well as indigenous wisdom and skills to programme content; involve them in the planning of learner in-community action learning (and community role assignment).
- Select from the data and material collected and convert into purpose-appropriate and age-appropriate learning materials.
- Ensure the materials treat any prevailing DRR misconceptions and misinformation; compare and contrast indigenous and scientific knowledge and perspectives where they are at odds.
- In the conversion process, think ahead to activity development and the type of learning activity that would elicit optimal learning from the material in question; if possible, draw up the content so it serves as stimulus material for any envisaged activity.

Step 6: Design the Learning Activities

In developing learning activities, follow these steps:

- Plan activities according to three overarching principles: (a) to obtain optimal learning benefit (in terms of knowledge/understanding, skills and attitudes/dispositions) from the learning materials; (b) to ensure learning style and learning modality diversity; (c) to ensure sufficient variety in the mood, rhythm, pace and flow of learning (e.g. sedentary learning experience followed by activity involving movement; exciting activity followed by calming activity; challenging activity followed by reassuring activity).
- Ensure that the activities involve a mix that takes the learners out of the classroom and into the school campus and local community.
- Ensure that activity descriptions are clear and include: purpose and intended learning outcomes; overall and step-by-step timings; optimal classroom arrangement; resources and equipment needed; facilitation guidance; follow-up advice.
- Design and use a common template for all activity descriptions that teachers can become accustomed to.

Step 7: Apply Matrices to the Draft Programme

Do the following to check the programme fits together:

- Create a Lessons/Learning Outcomes Matrix with Lessons in order of delivery on the vertical axis and Learning Outcomes on the horizontal axis (see p.102).
- Use a scale (0= not at all; 1=addressed minimally; 2=addressed somewhat; 3= addressed reasonably well; 4=addressed very well) to complete the matrix.
- Study the completed matrix to assess the thoroughness with which each learning outcome is being addressed and reinforced across the programme. If a particular outcome is only partly addressed, ask why, and revise parts of the programme (or, reconsider the appropriateness of the learning outcome).
- Repeat the above three steps using the Lessons/DRRE Learning Dimensions Matrix (see p.103).
- Repeat the three steps with a Lessons/Pedagogies Matrix (see p.103) to check that there is balanced and diverse use of different kinds of learning activity and that the ordering and juxtaposition of learning modalities will maintain learner interest and engagement.

Curriculum Developers: Move ahead to 5.2 (pp. 92-4) for discussion of DRR learning diversity and to 6.1 (pp. 110-11) for reflections on the cycle of learning

Curriculum Developers: 5.3 (pp. 94-5) offers examples of templates for DRR activity development while 5.4 (pp. 96-101) offers three sample activities.

For the five essential DRRE learning dimensions, return to 1.2 (pp. 6-8)

For discussion of learning modalities, go to 5.2 (p. 92-4)

ONLINE DRR MATERIALS

DRR Teaching and Learning materials searchable via online database

- INEE Resource Database
  http://www.ineesite.org/index.php/resourcedb/
- PreventionWeb Education Materials
  http://www.preventionweb.net/english/professional/trainings-events/edu-materials/
- UNCC: Learn (UN materials relevant to climate change learning)
  http://www.uncclearn.org
- UNESDOC (UNESCO documents and publications)
  http://www.unesco.org/new/en/unesco/resources/online-materials/publications/unesdoc-database/

Curriculum Developers: Turn to 4.7 (pp. 80-2) for DRR student learning assessment and, in particular, to 4.1 (pp. 61-2) for discussion of 'constructive alignment' of DRR curriculum development and assessment with intended outcomes

Curriculum Developers: Learning assessment approaches should also be pilot tested

Curriculum Developers: Go ahead to 5.5 (pp.101-6) for discussion and examples of teacher guidance documents.

Step 8: Plan Learning Assessment

Do the following when planning learner assessment:

- Ensure that what is being assessed aligns with the programme learning outcomes.
- Ensure that diverse forms of formative assessment are built into the learning process.
- Ensure that diverse forms of summative assessment are built in at programme milestones and at the end of the programme.
- Plan how summative assessment will be reported in accordance with the values and ethos of the programme and schools' wider DRR mission.
- Avoid planning learner assessment as an afterthought but make it integral part of programme development.

Step 9: Develop a Teacher Guidance Document

Plan a teacher handbook, manual or pack for the programme that:

- Offers hazard- and disaster-related background information and an explanation of disaster risk reduction education.
- Offers a rationale for disaster risk reduction curriculum.
- Gives an overview of the programme and its purposes.
- Explains the learning approaches to be used and how to conduct the learning activities.
- Introduces the learning materials.
- Introduces the learning activities.
- Explains the assessment approaches.
- Includes a list of resources.

BOX 28.

Matrices

Lessons/Learning Outcomes Matrix

Learning Outcomes / Lessons	Knowledge and Understanding	Skills	Attitudes/ Dispositions

[Matrix to be expanded to cover number of lessons]

Step 10: Finalization

As final steps:

- Proof read all learning materials and the teacher handbook.
- Employ the help of an editor to check textual quality and consistency across the learning materials and teacher handbook.
- Employ the help of a graphical artist/ designer for user-friendly learning materials and teacher handbook design.
- Make ready and circulate all documentation and learning media to schools.
- Launch the programme and the handbook.

BOX 28. continued

Lessons/Learning Dimensions Matrix

Learning Outcomes / Lessons	1	2	3	4	5

[Matrix to be expanded to cover number of lessons]

BOX 28. continued

Lessons/Pedagogies Matrix

						Lessons Learning Modalities
						Brainstorming
						Small group discussion
						Whole group discussion
						Multi-media presentation
						Case study research
						Project work
						Surveys/interviews
						Media analysis/response
						Board games
						Role plays, skits, dramas, puppetry
						Simulation games
						Field visits
						Community engagement/campaigns
						Imaginal learning (visualizations)
						Somatic learning
						Artistic expression

[Matrix to be expanded to cover number of lessons]

5.2 Ensuring Learning Diversity in DRR Programmes

Students learn in a variety of different ways and each learner has their own particular set of learning style preferences.

Some learners are primarily hands-on learners who like doing practical things in a methodical and sequential manner. They like to record experiences and experiments, conduct surveys, experience and observe, make displays and do all manner of practical tasks.

Other learners prefer to work with thoughts, ideas and theories and tend to enjoy analyzing, comparing, contrasting and synthesizing them. They enjoy lectures, debates, book research and undertaking writing tasks that challenge them to organize their thinking.

Other learners are most stirred by emotional learning that focuses on sharing personal experiences, stories and perspectives. They like interpersonal work in small groups, role-plays, expressing themselves through the creative and performing arts and other tasks that exercise their imaginative and emotional intelligence.

Yet others are most at home when given latitude as learners to experiment, engage in problem solving and 'out of the box' thinking stimulated by real life or concocted situations. They like field trips, developing and implementing practical ideas, problem-solving exercises, simulations and role-plays.[57]

The above is a brief synopsis of what learning style theory has to say about the learning predispositions of the individual learner. The learning style of any learner will be a unique composite of the four styles outlined above, but all learners will feel more comfortable with some kinds of learning while needing support and guidance in becoming adept at other kinds of learning.

Within any learning situation, it is a matter of equality of opportunity that the learning approaches employed are mixed and balanced so that each learner encounters an equitable mix of comfortable and challenging learning situations. Diversity of learning style is, ultimately, a manifestation of child-friendly learning. As the Convention on the Rights of the Child affirms, education should be directed towards the development of the child's fullest potential (Article 29) and the child has the right to receive and express ideas and information through multiple media (Article 13). Building learning style diversity into a DRR learning programme can be achieved through ensuring a balanced and lively mix of learning approaches. Fortunately, the goals of DRRE coincide with the need for such diversity.

The DRRE field seeks build knowledge and understanding of the causes, nature and effects of hazard grounded in and reaffirmed by active engagement. It fosters a range of competencies and skills to contribute proactively to hazard resilience building, adaptation and mitigation. Such competencies and skills are reinforced and fine-tuned by being drawn upon and tested in real-life situations. It also enables learners to test their attitudes and clarify their values through real-life or surrogate experience. Such goals are difficult to realize within a learning monoculture or through a narrow range of learning approaches.

The pedagogical implications of the five essential dimensions of DRRE are briefly explained in 1.2 (pp. 6-8)

57 Pike, G. & Selby, D. 1995. *Reconnecting: From National to Global Curriculum*. Godalming: World Wide Fund for Nature UK. pp. 30-5.

BOX 29.

Examples of Pedagogical Approaches Suggested in DRR Teacher Guides

Fiji

Ministry of Defence. 2008. *Teachers' Handbook: Disaster Management and Earthquake Preparation*. Suva: Ministry of Defence.

- A 'Disaster Corner' (part of classroom is used to display DRR information furnished by both teacher and students)
- Group work
- Essay writing
- Dramas or skits
- Poems, chants, songs, make (traditional dance)

Georgia

UNICEF/National Curriculum Centre. 2011. *Teaching Disaster Risk Reduction with Interactive Methods: Book for Head of Class Teachers (Grades V-IX)*. Tbilisi: UNICEF/NCC.

- Mini-lectures
- Discussions
- Brainstorming
- Excursions
- Interactive presentations
- Case studies
- Role-plays
- The Socratic Method (debate between opposing viewpoints using questioning and critical thinking)
- Schematic drawings

Curriculum Developers/ Teacher Trainers/ Teachers: See activity Cyclone Message Match (pp. 97-9) for an example of DRR interactive learning

Curriculum Developers/ Teacher Trainers/ Teachers: See activity Bouncing Back (pp. 96-7) for a simple example of learning that is experiential and uses learner interaction and drama

Curriculum Developers/ Teacher Trainers/ Teachers: See activity Climate Change Despair and Empowerment Sequence (pp. 100-1) for an example of affective and imaginal learning

For these reasons, DRR learning programmes should feature a balanced mix of the following learning modalities:

- **Interactive Learning**: brainstorming (spontaneously offering ideas on a given topic, all ideas being accepted prior to their categorization, organization and evaluation); pair and small group discussion exercises; whole group discussion; interactive multi-media presentations (by students teacher, community members, DRR experts)
- **Inquiry Learning**: individual and team case study research and analysis; project work; undertaking surveys; interviewing; examining data sets; Internet searching
- **Affective Learning**: opportunities to share feelings, hopes and fears around hazards and disasters; opportunities to share emotional responses to learning experiences; empathetic exercises ('how might it feel to be in that situation?'); expressing feelings, insights and perceptions through multiple media
- **Surrogate Experiential Learning**: filmic experience (e.g., through fictional or documentary films); board games; role plays; drama (sketches, mimes, puppetry); simulation gaming; learning through artificially contrived classroom experiences
- **Field Experiential Learning**: field visits to disaster support services; hazard mapping and vulnerability assessment in home, school and community; community hazard transects; enacting emergency plans
- **Action Learning**: student/community initiatives to raise hazard awareness; working with community members on resilience-building, adaptation and mitigation

Sri Lanka
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(see full captions pp. 185-9)

initiatives; poster campaigns; street theatre; risk reduction campaigns (e.g. tree planting); student-led school assembly and community presentations on their DRR work

- **Imaginal Learning**: learning approaches using the imagination to envision positive and negative future scenarios, to envision past occasions of hazard and disaster, to visualize what to do in crisis situations, to tell and listen to stories
- **Somatic and Expressive Learning**: learning approaches using the body, such as body sculptures, human tableaux, and employing various forms of artistic expression.[58]

58 UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curriculum: Case Studies from Thirty Countries*. Paris/Geneva: UNESCO/UNICEF. p. 29.

5.3 Templates for DRR Learning Activity Development

It can be very helpful in DRR lesson and activity development to use a template so as to ensure that all relevant aspects are considered in the development and writing-up process. In this section two templates are presented.

See Box 41 for examples of student DRR actions (pp.118)

The first comes from Manitoba, Canada, and stems from the Manitoba provincial government's education for sustainable development initiative. It is designed to help teachers plan an 'ESD Learning Experience' falling within any curriculum area. As such, it can be used for planning either an entire lesson, an activity within a lesson or an activity stretching over a number of lessons.

The second is an activity template developed by the non-governmental organization, Sustainability Frontiers.[59]

59 http://www.sustainabilityfrontiers.org . See Pike, G. & Selby, D. 1988. *Global Teacher, Global Learner.* Sevenoaks: Hodder, and their 1999/2000 two-volume work, *In the Global Classroom*. Toronto: Pippin, for examples of original use of the template.

BOX 30.

ESD Learning Experience Planning Template (Manitoba)

This is a standard format that may be modified to meet individual needs.

Grade Level - Identify the grade or grades involved in the activity
Guiding Questions - Use guiding questions to provide focus for the activity. It is often useful to start with what you want the students to learn, and then work backwards to craft the activities so that they meet the objectives.
Identify Subjects and Space – Also establish the setting information. This helps in planning the activity (e.g., inside the classroom, outside on the schoolyard, or off of school property).
Duration – Establish how long it will take to complete the activity.
Group Size – Ensure an exchange of ideas in small groups for at least part of the time.
Vocabulary – List curriculum words and additional words that are relevant to the activity.
Materials – Provide a list of items required for the activity.
Safety – Review school and divisional policies. If students are travelling beyond the classroom, visit proposed areas beforehand to ensure there are no safety hazards.
Activity – Review the step-by-step methods for doing the learning activity.
Debriefing – Ask the student some pre-planned affective and cognitive questions in the debriefing session after the activity (but remember to use spontaneous questioning, too!).
Post Activity – Determine activity extensions and follow-up activities.

Source: Derived and adapted from Manitoba Education. 2011. *Education for Sustainable Development: Kindergarten to Grade 12 Correlation Chart Template and Kindergarten Tool Kit.* Winnipeg: Manitoba Education. p. 8-9.

BOX 31.

Learning Activity Template (Sustainability Frontiers)

Activity Title

Explanation: An introduction to what the activity involves and its purpose

Time Needed: Guidance on how long the activity is likely to take overall and how long each activity stage will take

Learning Outcomes: A listing of knowledge, skills and attitudes that are likely to be developed in pupils as a result of the activity

Materials: A listing of resources needed for conducting the activity with a class

Procedure: A step-by-step description of successive stages of the activity guiding the teacher on what to do

Extension: An optional section that suggests ways in which the activity can be taken further than what is described under Procedure

Variation: An optional section that suggests alternative ways of doing the activity to those described under Procedure

Curriculum Links: Guidance on what subjects and units in the curriculum with which the activity fits.

The three activities in 5.4 employ the Learning Activity Template (see following pages)

5.4 Some DRR Learning Activity Examples

5.4.1 Activity: Bouncing Back (grades 4-10)[60]

Explanation

- Pupils are helped to understand the concept of resilience

Time Needed

- 30 minutes (5 minutes demonstrating 'bouncing back'; 10 minutes in pairs; 10 minutes brainstorming; 5 minutes explaining resilience and posing the key question).

Learning Outcomes

- Understanding of idea of 'resilience'
- Enhanced ability to communicate personal experiences and emotions

Materials

- A bendy stick, a rubber band, a rubber ball, an eraser and/or any other everyday object that if bent, pulled or squeezed out of shape return to their original shape when released
- Blackboard and chalk

Procedure

Use the bendy/stretchable/squeezable objects brought to class to demonstrate the capacity to

60 This is an adapted version of a school activity that features in UNESCO/UNICEF. 2012. *Climate Change in the Classroom: UNESCO Course for Secondary Teachers on Climate Change Education for ESD*. Paris/Geneva: UNESCO/UNICEF.

'bounce back' by bending them, stretching them and squeezing them. Let each pupil try too!

1. Ask pupils to join together in pairs sitting on the floor or on chairs facing each other.
2. Ask them to sit quietly for a few moments thinking about times when they have 'bounced back' after experiencing some difficulty or setback. It may be, for example, after a sports defeat. It may be after someone has said something unkind and left them feeling flattened. Have them think about the qualities they showed in 'bouncing back'.
3. Ask each pair to nominate person 'A' and person 'B'. Ask 'B' to tell 'A' those personal 'bouncing back' stories they feel happy to share, with 'A' listening carefully to what is said. After two minutes reverse the process and ask 'A' to tell 'B' their stories, with 'B' listening carefully.
4. Then ask pairs to discuss the 'bouncing back' qualities revealed by the stories. Were they similar? Or were different qualities shown in different circumstances?
5. Conduct a whole class brainstorming session of 'bouncing back' qualities revealed by the stories, writing all ideas on the blackboard.
6. In closing, explain that the ability to 'bounce back' from a difficult time is called 'resilience'. Ask the class to think about whether the same qualities of resilience are needed in a school, village or other community after being hit by some setback or tragedy

Extension

1. Have pairs form into fours to prepare small dramas about their 'bouncing back' experiences.
2. Have the groups of four present their drama.
3. Ask the class to decide what each drama shows and discuss whether there are lessons for communities in what is shown.

Curriculum Links

This activity can be used wherever the concept of resilience is addressed across the curriculum. The drama extension fits well into performing arts curricula.

5.4.2 Activity: Cyclone Message Match (grades 4-7)[61]

Explanation

- Pupils learn about cyclone safety measures.

Time Needed

- 30 minutes

Learning Outcomes

- Understanding precautionary steps to take to avoid or reduce cyclone danger
- Enhanced ability to negotiate and work towards consensus
- Enhanced oral presentation skills

Materials

- A cut-up set of cyclone messages (see Handout provided on next page)
- A big sheet of paper and marking pen or paints for each of 3 groups

61 This is an abridged version of an activity developed by Sustainability Frontiers for a Save the Children Australia curriculum development project in Vanuatu. See: Save the Children Australia. 2012. *Disaster Risk Reduction & Climate Change Education in Vanuatu: Pilot Curriculum Materials, Teachers' Guide and Evaluation Instruments*. Port Vila.

Procedure

Stage 1

1. Ask the pupils to stand in an open area.
2. Give each pupil one piece of a cyclone message.
3. Take a part-message yourself if the number in the class is uneven and have two pupils share a part-message if there are not enough part-messages to go round because of the size of the class.
4. Tell pupils that each message contains two parts and that they each have one part.
5. Invite them to move round the open area looking for someone they can join with so that their part-messages make sense when joined together.
6. When everyone is part of a complete message, ask each pair to read out their message.[62]
7. Ask for any questions about the messages, encouraging other pupils to answer them rather than answering them yourself.
8. When discussion begins to slow, tell the class that some of the messages advise on what to do before a cyclone strikes while others advise on what to do during a cyclone and yet others advise on what to do after a cyclone.
9. Invite pairs to decide which category their message belongs to and then move around to join other pairs whose message they think falls in the same category.
10. Have the large groups, so formed, read out their messages. Ask if everyone feels pairs have joined the right group. If not have the class discuss where they belong.
11. When everyone is satisfied that everyone is in the right group and the messages properly sorted, the activity can end or the class can turn to the extension (see below).

Extension

1. Invite groups to work together to turn their messages into Before a Cyclone, During a Cyclone or After a Cyclone sections of a Cyclone Code of Behavior for the school
2. Encourage them to do this by (1) rewriting their messages so they read like guidelines for a school code; (2) asking teachers, other pupils and community members for further ideas for a school code; (3) developing their own ideas for the part of the code they are working on
3. Have each group prepare a poster of their part of the code on a big sheet of paper and present it to the rest of the class; pupils should be encouraged to ask questions and make fresh suggestions after each presentation
4. Have the class present and speak about their completed posters to the whole school during an assembly.

Curriculum Links

This activity can be used in the science or social studies curriculum. It also aligns with the general listening, speaking and writing objectives of the language curricula.

62 In Vanuatu, it was decided to add a code to each pair of part-messages, so that at the end of the pairing the codes can be used to check if they are correctly matched.

CYCLONE MESSAGE MATCH HANDOUT (5.4.2 ACTIVITY)

Fit shutters or	metal screens to all glass areas.
Stay inside and shelter away from windows	in the strongest part of the building.
Clear away everything that could blow about	and cause injury in extreme winds.
Remain indoors and stay	tuned into the radio or TV for advice.
Make sure everyone knows where	the strongest part of the building is.
Disconnect all electrical things	and use a battery radio for news.
Do not go outside	until the 'all clear' from the meteorological office.
Check that your building is in good condition	and especially that the roof is tied down and walls are strong.
Check for gas leaks	and do not use anything electrical if wet.
Stay inside and sheltered and have	an emergency kit with you.
If you have had to leave your building because of danger	don't return unless advised.
Trim treetops and branches	so they are well away from your building.
Close shutters on outside of windows, securely fasten	doors, and then stay away from glass windows.
Beware of damaged buildings, power lines and trees and don't	go in floodwaters.
Whatever the attraction	don't go sightseeing.
Listen to the radio for cyclone updates	and mark the path of the cyclone on a cyclone tracking-map.
In case of Blue Alert,	cyclone may come in less than 24 hours. Get ready.
In case of Red Alert,	cyclone is coming now. Take shelter.
In the middle of the cyclone	there is a quiet eye. Do not leave shelter - there is more storm coming.

Adapted from Tropical Cyclone Precautionary Advice, Vanuatu Meteorological Services, 2007

5.4.3 Activity: Climate Change Despair and Empowerment Sequence (grades 9-12)[63]

Explanation

Students share their anxieties about a climate-changed future and go through a series of discussion steps to discover their latent potential for contributing to a better future.

Time needed

- 60-90 minutes

Learning Outcomes

- Reinforced realization that often unarticulated fears and hopes for the future, as well as values and things held dear, are shared by peers
- Appreciation that people can direct their potentials to achieving a better future

Materials

- A circle of chairs, well spread out; sufficient cards, crayons, pencils and sheets of paper spread out within the circle; a flip chart and marker

Procedure

When students have become familiar with climate change issues and debates, the teacher takes the students, sitting in circle, through a series of stages each triggered by a question or instruction.

Stage 1: Feeling Powerful

Students are asked to think about times when they have had to do something really difficult or scary but where they came out feeling really powerful. After a few minutes' reflection they pick up a card and write down or draw images that capture the experience and feelings of those times. Students share their images round the circle. They store their card for future reference.

Stage 2: Thinking the Unthinkable

- The teacher asks students to each pick up a card and write three sentences beginning:
- 'The thing that worries me most about the warming of the climate is…'
- 'The thing I prefer not to think about happening with climate change is…'
- 'What scares me most about a hotter planet is…'

Three to four minutes are given for writing (the teacher avoids giving examples and urges students to write what they wish). The cards are collected in, shuffled and given out again. Each student reads out the card they have received. All sentences are accepted without comment.

Stage 3: Climate Change Nightmares

With eyes closed, students are asked to silently run a film in their heads about dangerous climate change inspired by their recall of a bad dream or of something they have read in a newspaper or book or seen on film. Without opening their eyes, they draw a picture on paper, not to be shown to anyone, of their feelings.

Stage 4: Something You Love

Again with eyes closed, students are asked to think deeply about something they most value about life or the world. Volunteers are asked to share and describe things they thought of.

63 This is an amended version of a school activity that features in the UNESCO Climate Change Education for Sustainable Development teacher training programme (see footnote 5, p. 109). It will be noted that an additional activity sub-heading – Potential – is used, giving space for fuller elaboration of the potential learning to be derived from the activity.

Stage 5: A Hopeful Future

On a new card, students write three sentences beginning:

- 'We really could face up to global warming by…'
- 'Life could be good, even better, if…'
- 'To transform things, a good way forward would be to…'

They read out their cards.

Stage 6: Brainstorming

Curriculum Developers: Return to Step 9, p. 89, for the itemized contents of teacher guidance documents

Students are asked to brainstorm things that people and whole societies might do to prevent or mitigate dangerous climate change. All ideas are accepted and written on the flip chart by the teacher.

Stage 7: Revisiting Feeling Powerful

Students are asked to go back to the images of themselves being powerful and look again at their cards (Stage 1). They are asked to quietly reflect on how those feelings of power might be drawn upon by them to help reduce climate change and, in particular, be used in realizing any of the ideas brainstormed. Everyone in the circle is encouraged to share their reflections; those who wish are encouraged to write 'commitment to action' cards to be shared or not shared with the class as the writer sees fit.

Potential

This activity sequence is designed to take students through a roller coaster of powerful experiences and emotions before demonstrating their potential for social action. First, they recall feelings and moments of power (Stage 1) before encountering climate change dystopias in the face of which they may very well feel acute sense of powerlessness (Stages 2, 3). Their orientation then shifts (Stages 4, 5) to focus upon what they most value in life and to consider hopeful futures (something that is likely to be made more intense by just having considered what they love). The focus then turns (Stages 6, 7) to action to preempt or reduce dangerous climate change that segues into consideration of personal change agency potential by recalling the power that students have been able to find in themselves in earlier seemingly disempowering circumstances.

5.5 DRR Teachers' Guides and Students' Handbooks

A recent global DRR curriculum mapping study[64] has discovered widespread use of textbook revision as the preferred, in some cases only, mode of DRR curriculum development. It expressed itself as 'very doubtful whether textbook-led curriculum development alone is able to deliver the skills, dispositional and behavioral learning outcomes called for by disaster risk reduction education. (Textbooks) are unlikely to foster active disaster preparedness and mitigation skills development'. In some cases, the textbooks were accompanied by a teacher handbook primarily, even exclusively, devoted to providing the teacher with hazard and disaster knowledge but with scant or no reference to learning and teaching management and facilitation.[65]

Implementing the five essential dimensions of disaster risk reduction learning while introducing and showing teachers how to teach for a proportionately wide range of learning outcomes requires a very different kind of teacher manual.

64 UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curriculum: Case Studies from Thirty Countries*. Paris/Geneva: UNESCO/UNICEF.

65 Ibid. p. 23.

Not only does the manual need to explain the local hazard and disaster situation to the teacher and introduce the basics of DRR, it needs to elaborate the curriculum, give guidance on learning materials and activities and their facilitation, and explain the steps to be followed in deploying what are likely very new approaches to assessment.

If policy calls for the development of DRR curriculum within an ESD framework, linked to climate change education, and also connecting with life skills and child-friendly learning, then the manual also needs to offer a rationale as well as simple, clear practical guidance on the implications for the teacher's delivery of curriculum. Likewise, if policy calls for the professional development of the teacher as a DRR reflective practitioner working within schools reconfiguring themselves as DRR learning organizations where DRR curriculum is linked to the notion of safe school and community leadership, then this needs reflected in the style, content, and spirit of the manual.

Box 32 below profiles three noteworthy examples of teacher handbooks that adopt a more comprehensive and fit-for-purpose approach.

Policy Makers/ Curriculum Developers: Return to Chapter 1 (pp. 2-22) for placing DRR, linked with CCE, within frameworks of ESD and quality education

Policy Makers/ Curriculum Developers: Turn ahead to Chapter 8 (pp. 138-50) and Chapter 10 (pp. 163-81) for discussion of the DRR reflective practitioner and learning organization

BOX 32.

DRR Teacher Handbooks: Noteworthy Examples

Kazakhstan

UNICEF, European Commission, Ministry of Education and Science of the Kazakh Republic, Ministry of Emergencies. 2009. *Teachers' Manual on the Issue of Disaster Risk Reduction* (128pp.) [In Russian and Kazakh]

This manual was created as part of a project of the Ministry of Education and Science of Kazakhstan, the Ministry of Emergency and UNICEF, 'Providing Support in Disaster Risk Reduction among the Vulnerable Groups of Population of Kazakhstan.'

The manual covers:

- Basic pedagogical principles for DRR.
- Roles of the Kazakhstan education system with respect to DRR.
- Methodological guidelines for using the manual.
- Guidelines for using interactive pedagogies.
- Five hazard specific modules (on natural disasters, earthquake, flood, fire, flows and landslides) aimed at helping students develop the knowledge and skills needed during emergency situations.
- Monitoring and evaluation of DRR education programmes.
- Working with parents of the school children (including developing a working plan with parents).
- List of recommended resources and glossary of key terminology.

BOX 32. continued

Viet Nam

SEEDS Asia, Da Nang University of Technology, Da Nang City Department of Education and Training. Undated. *Teachers' Handbook for Disaster Risk Reduction Education*. Kobe, Japan: SEEDS Asia. (61pp.). [In English]

This manual is an output of a project titled 'Capacity Building for School-Centred Community-Based Disaster Risk Management in Central Vietnam", implemented by SEEDS Asia, Da Nang University of Technology and Da Nang City Department of Education and Training, and financially supported by Japan International Cooperation Agency (JICA).

In addition to giving basic information on DRR and a rationale for DRR education at school, this handbook includes four kinds of DRR pedagogical approaches: lectures by teachers, student presentations, student practice, and student life-saving activities. More specifically the approaches are:

- Stories from affected people
- Essay writing/essay contest
- Drawing
- Making newspapers on disasters
- School walking and map making
- Town watching and map making
- Lectures and videos showing mechanisms of disasters and natural hazards
- Preparedness and non-structural mitigation
- Emergency bag making
- Sand bag protection
- Cooking
- Bucket brigade
- First aid
- Evacuation drills

Each section includes information on: aims and expected goals; target grade; length of time for activity; materials; preparation; assignments. The section ends with a sample lesson plan. Very brief case studies from both primary and secondary schools are also included under each section to highlight real experiences of using the suggested pedagogical approaches.

Benin

Ministry of Secondary Education, Technical and Vocational Training, Task Force for the Promotion of Home-grown and Innovative Initiatives, Ministry of the Environment and Protection of Nature, Climate Change and Development - Adapting by Reducing Vulnerability. 2009. *Climate Change Issues: Secondary Teachers' Guide.* (119pp.) English Translation. [Original in French]

Through a capacity building project for CC-DARE (a UNDP and UNEP-led programme providing technical support to countries in Sub-Saharan Africa and Small Island Developing States for flexible and targeted actions to address climate change adaptation), a secondary teachers' guide as well as an accompanying student guide were developed. In the process of developing the two guides, several workshops were organized around the country in order to integrate teachers' feedback.

The teachers' guide has four sections:

- Analysis of environmental education in Benin as well as existing windows of opportunity for integrating climate change in the secondary curriculum.
- Information on the basics of climate change science and impacts of climate change.
- Pedagogical strategies, methods and techniques to effectively address climate change in the secondary curriculum.
- 30 'reinvestment situations', which provide a number of opportunities to which students apply what they have learned through problem-solving activities and small group projects using interdisciplinary skills.

Box 33 illustrates a handbook approach employed in New Zealand that is very different in two significant ways. First, it is web-based but with CD-ROM and hardcopy versions available. Second, the handbook approach is one of combining materials for both teachers and students. With access to the Internet increasing worldwide, this approach will likely be taken up globally by educational stakeholders and multipliers.

BOX 33.

New Zealand: Multi-Media DRR Package for Teachers and Students

What's the Plan Stan? (WTPS) is a teaching and learning resource package developed under the auspices of the Ministry of Civil Defence and Emergency Management (MCDEM). The resource features the cartoon figures of Stan the dog and five children who model best practice in disaster preparation and response. It is aimed at:

- Teachers, offering guidance in incorporating disaster awareness and preparedness into their teaching and learning practices.
- Principals, school managers and Boards of Trustees, offering advice on school emergency management.
- Students (aged 7 to 12) and their families, offering interesting and user-friendly DRR materials.

The WTPS package is available in printed and CD-ROM form and through a website (http://www.whatstheplanstan.govt.nz/earthquake.html).

WTPS addresses multi-hazards including earthquakes, tsunamis, volcanoes, storms, floods and non-natural disasters (e.g. pandemics, wildfires, biohazards, transportation accidents, terrorist bombs and threats).

The teacher section of WTPS includes a comprehensive and very user-friendly *Teacher's Guide* that:

- Includes handout and worksheet templates, unit plans, additional resources, and ideas for using the CD-ROM with students.
- Is closely aligned with the New Zealand National Curriculum (especially with the following subjects: Health and Physical Education, Social Studies, Science, and English).
- Provides diverse pedagogical instruction on 'inquiry learning' that emphasizes student engagement in community, questioning and reflection.
- Offers practical advice on using formative assessment techniques.

The student section of WTPS includes facts on disasters most relevant to New Zealand, maps and historical accounts of disasters in New Zealand, photographs and video clips, an audio CD, interactive stories, quizzes and games.

BOX 34.

Namibia: DRR Radio Programmes

In Namibia, as part of the project titled 'Lesson Learned - Educational Flooding Response & Shared Good Practices' (January to March 2010), eight radio programmes on DRR were produced and broadcast on national and community radio. The programmes were based on lessons learned from Caprivi (one of Namibia's northern regions devastated by the 2009 torrential rains and subsequent floods). The initiative is held to have contributed to mitigating the psychosocial impact of current and future floods on teachers and students by focusing on disaster preparedness and sharing best practice. The initiative is in line with national MoE contingency plans and Namibian government efforts to operationalize its DRR management policy in the education sector.

Source: Adapted from Tomren, G. 2010. *HQ US Contribution Funds for the Reconstruction of Education Systems in Post-Conflict Countries- Phase 2. Country Project Terminal Report.*

BOX 35.

DRR Student Activity Books: Noteworthy Examples

Myanmar

UNICEF. Undated. *Ready – Set – Prepared!* Naypyidaw: UNICEF Myanmar. [In English]

This activity book for secondary school children offers learner-friendly, informative and practical learning about disaster mitigation, prevention and preparedness. It covers multi-hazards (i.e. earthquakes, tsunamis, storms, floods, thunderstorms, cyclones, tornadoes, floods, landslides, wildfires).

When each hazard is introduced in the book, a traditional figure from Myanmar's culture (for instance, a Nat, a guardian of nature) explains the hazard's causes and effects. The booklet includes clear guidance on what to do before, during and after the hazard period and also gives useful advice on recognizing signs of looming disasters. Some guidelines on how to mitigate and prevent natural disasters are also included. The book gives hands-on advice to help students take precautions: making disaster preparedness plans, planning their own disaster supply kit, creating family communication plans in times of disaster and drawing a safety map of their community.

Thailand

Save the Children Sweden. 2008. *The Alert Rabbit.* Save the Children. http://seap.savethechildren.se/en/South_East_Asia/Misc/Puffs/The-Alret-Rabbit/ [in English and Thai]

This story book is an outcome of a collaborative effort between grade 4-6 children at Baan Talae Nok School and a partner group in Ranong Province as part of the Save the Children's Child-led Disaster Risk Reduction Programme in Thailand. The story draws on the experiences of the Baan Talae Nok children and their community in the aftermath of the December 2004 Tsunami. This story, composed by a group of children for other children, is a good example of peer-learning and active child participation in DRR education. Animals appearing in the book teach the importance of disaster preparedness to save lives. The book includes games that check readers' understanding of key messages expressed in the book.

Box 34 offers an interesting glimpse into a Namibian initiative that used a series of radio programmes to build DRR awareness, an initiative that could be widely replicated with programmes being subsequently drawn upon for DRR curriculum delivery in schools.

Recognizing the limitations of the traditional textbook, a number of DRR curriculum initiatives are looking for more dynamic text-based tools of engaging learners by developing learner handbooks and activity books. Two examples are offered in Box 35, the first a practical activity book developed in Myanmar that uses well-known cultural figures to deliver its message, the second a text designed to encourage learner participation that was developed by children themselves.

STRATEGIC POINTERS FOR CHAPTER FIVE.

- → **Curriculum Developers**: As an early task in programme development look through Steps 1 to 10 (pp. 85-90), to determine which steps are relevant to your context and draw up a plan and schedule of action.
- → **Curriculum Developers**: Collaborate with DRR and climate change specialists in developing DRR learning programmes, especially when it comes to learning materials development.
- → **Curriculum Developers**: Ensure that learning programmes adequately address all chosen learning outcomes, offer diversity in learning approaches and meet the five essential dimensions of DRRE, using matrices (pp. 90-1) to analyze what has been developed.
- → **Curriculum Developers**: Establish a standard template for learning activities that teachers will become accustomed to using.
- → **Curriculum Developers/Teacher Educators**: Ensure close liaison during pilot testing of draft curriculum, activities and materials and assessment approaches, as well as the training of the pilot teachers: use the pilot training experience to refine a teacher education programme.
- → **Teacher Educators**: Create pilot and full-scale teacher training opportunities where teachers themselves experience the diverse pedagogical approaches they are being asked to facilitate.
- → **Curriculum Developers**: Ensure thoroughgoing evaluation of pilot tests and that monitoring and evaluation mechanisms are in place for the launch of the curriculum to cater for ongoing evaluation at scale.
- → **Curriculum Developers**: Create mechanisms for gathering and sharing developed and field tested regional and national DRR lesson examples.
- → **Curriculum Developers**: Prepare comprehensive teacher manuals that introduce DRR, explain disaster risk reduction education and give guidance on curriculum, pedagogy and assessment.
- → **Curriculum Developers**: Experiment with lively, engaging alternatives to the student textbook, including forms of student handbook, activity book and child-written guidance and storybooks.
- → **Policy Makers/Curriculum Developers**: Explore the possibilities, and cost implications for radio, television, web-based and social media DRR learning.

5.6 Selected Tools and Resources

- Department of Education. 2009. *Tales of Disasters. Handbook: A Facilitator's Guide to Using the No Strings Tales of Disasters Films*. The Philippines: Department of Education. http://www.adpc.net/v2007/programs/DMS/PROGRAMS/Mainstreaming%20DRR/MDRD-EDU%20II/Philippines/Teaching%20Aid_Tales%20of%20Disasters%20Handbook_Philippines.pdf

  This guide contains a complete lesson plan breakdown with a range of fun and effective activities that can be used with two films (the Tales of Disasters and Peace Building Two Gardens) shown to a group. As one of the fun and imaginative ways of teaching and learning, using a puppet is suggested.

- Instituto Nacional de Defensa Civil (INDECI). 2005. *Aprender es divertido: Guía de prevención y atención de desastres para instituciones educativas [Learning is Fun: Prevention and Disaster Response Guide for Education Institutions]*. Lima: INDECI. [In Spanish]

  Educational resources to facilitate teachers' lectures on DRR. By using a set of thematic cards, teachers can develop in their student's abilities linked to text production, comprehensive reading, logical mathematical thinking, social thinking, a sense of belonging and active environmental conservation. All the proposed activities are geared towards building a culture of prevention out of formal education.

- Jimenez, C., Obando A. & Guillermo,L. 2008. *Guía de actividades sugeridas para mediación pedagógica en prevención de desastres en el segundo ciclo de primaria [Activity Guide for Pedagogic Mediation in Disaster Prevention for Grades 4-6]*. San José: Instituto de Investigaciones en Educación. [In Spanish]

  Develops main teaching concepts and methodologies for work with students, in institutions and communities. Contents include: 'Disasters are not natural', 'We should respect nature instead of fearing it,' 'He who learns to prevent becomes more intelligent and by preventing I increase my survival chances.' It also identifies teaching resources such as newspapers, scale models, video, song, poetry, puppet plays, theatre and conceptual maps.

- Manitoba Education. 2011. *Education for Sustainable Development: Kindergarten to Grade 12 Correlation Chart Template and Kindergarten Tool Kit*. Winnipeg: Manitoba Education. http://www.edu.gov.mb.ca/k12/esd/correlations/full_doc.pdf

  This practical toolkit assists teachers to develop their own ESD activities by incorporating ESD learning outcomes from the attached correlation chart or from curriculum documents.

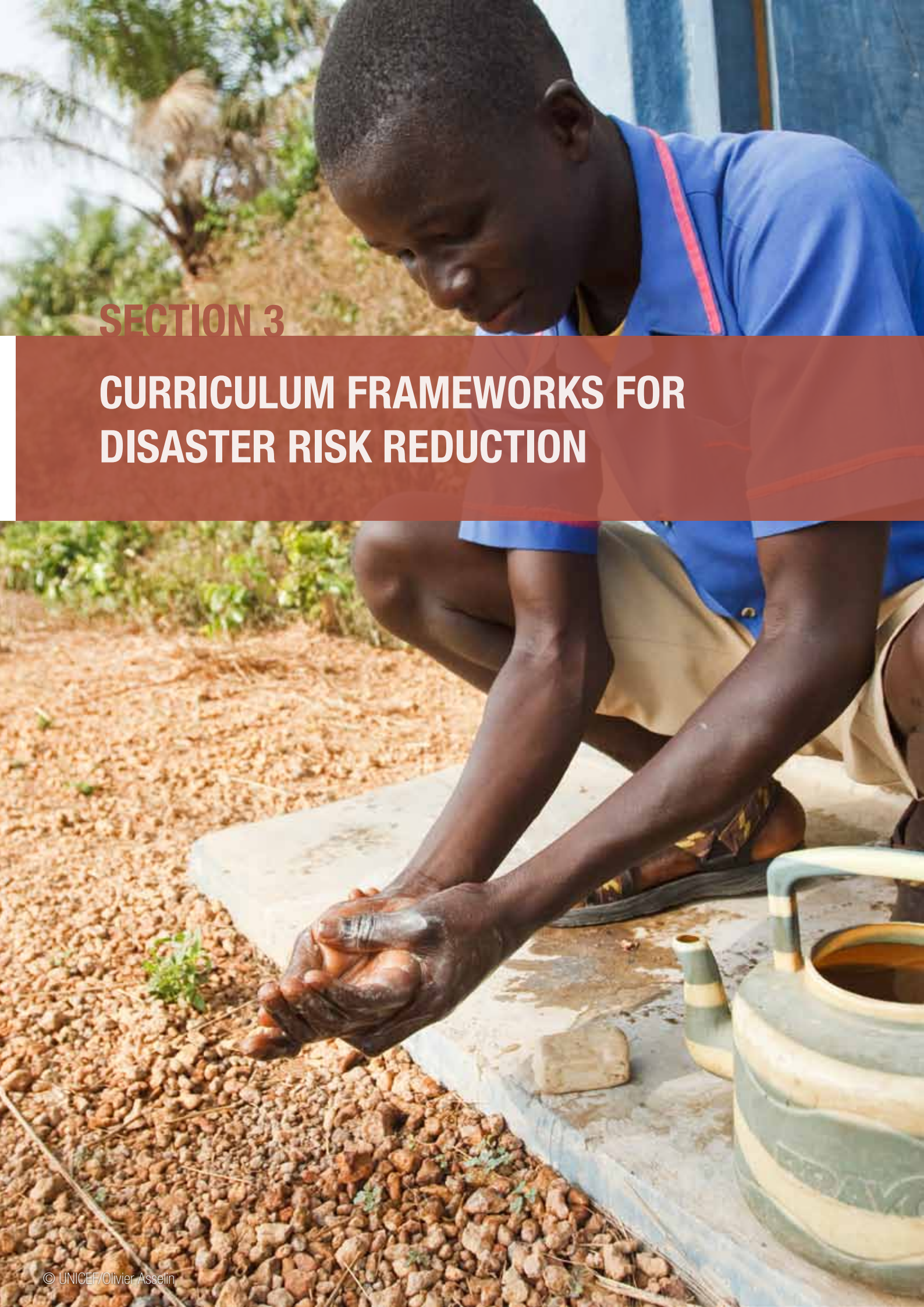
- Save the Children. 2007. *Child-led Disaster Risk Reduction: A Practice Guide.* http://www.preventionweb.net/go/3820

  This activity guide helps strengthen children's capacities to understand disaster risks and to take practical actions in their communities. The guide is divided into five sections: context and partnerships; capacity-building and awareness raising; programme implementation/activities; monitoring and evaluation/learning and documentation; advocacy. Frameworks for child-led assessment are included in the appendices.

- UNISDR in cooperation in cooperation with UNESCO. Cairo. 2010. *Education Kit on Disaster Risk Reduction.* [In Arabic]. http://www.preventionweb.net/english/professional/publications/v.php?id=18904

  This DRR kit seeks to help raise awareness among stakeholders, decision makers, teachers, students and children on how to mitigate and prepare for natural disaster risks. The package includes three booklets:

  1. Natural phenomena: Towards a culture of disaster prevention in the Arab countries.
  2. Risks of natural disasters: Preparedness and prevention procedures.
  3. Kids' stories and some illustrative posters.



SECTION 3

CURRICULUM FRAMEWORKS FOR DISASTER RISK REDUCTION

Chapter 6
Facilitating DRR Learning in Classroom, School and Community

This chapter begins by offering guidance to teachers on how to facilitate interactive and participatory learning before addressing the facilitation of emotional learning. It then gives suggestions for managing and facilitating DRR learning outside the classroom – on the school campus and out in the community. Last, the chapter gives suggestions to teachers working with the textbook as their sole resource as to how textbook learning might be enlivened, and provides some ideas for participatory DRR teaching and learning in contexts where there is no textbook to turn to.

6.1 Facilitating Learning Activities

The activities described in the previous chapter (section 5.4) signal a shift in the teacher's role from one of learning transmission to one of learning facilitation. Learning is no longer about teachers delivering and students passively receiving selected, pre-packaged knowledge in which a limited range of skills range (i.e., primarily listening, reading and memorization) is practiced. It becomes a much more fluid and dynamic process in which participation and learner empowerment are at the core. The classroom becomes a place for collaborative knowledge building, the transacting of opinion and perspective, critical and creative thinking, active problem solving, unrestricted expression and exchange of hopes and fears, and the springboard for practical and action-oriented learning. Within such a milieu the teacher assumes a facilitating role, animating the dynamic unfolding of a child-centered and much more open-ended learning process.

The following elements are essential to the facilitative approach and the effective facilitation of activities such as those described in section 5.4:

- Creating a secure, affirmative, inclusive and non-threatening classroom climate.
- Valuing the contributions and experiences of all class members and giving encouragement to the free expression of ideas and feelings.
- Modeling, as teacher, the values enshrined in the facilitative approach (the rights of the child, human rights, openness, humaneness, respect, care, compassion, participation) and coming across as a 'real person' and not only as a teacher.
- Resisting the temptation to input an excess of information before students have had the opportunity to share and discuss what they already know.
- Avoiding to give the perception that there is only one expected outcome or one right answer as a task is introduced.
- Being flexible if there are unanticipated turns in the learning process, or if an unexpected focus of attention takes the lesson in unplanned directions.
- Ensuring constant diversity in the learning approach used both within an activity and from activity to activity, mixing the pace and rhythm of the learning process according to the mood and needs of the class.
- Ensuring that there are regular shifts in size of group (pairs, small groups, larger groups, whole group) and that students are regularly mixed together in different groups.
- Being seen to also be a learner by acknowledging new ideas and insights received and, from time to time – and especially when a visitor is leading the class – joining and participating in a group activity.
- Debriefing activities effectively to maximize learning and using the debriefing as a springboard for further learning engagement and action outside the classroom (see Checklist 3 p. 112).
- Changing, and being seen to change, aspects of the learning process in the light of periodic formative assessment.

The maintenance of an appropriate cycle of learning as in Figure 10[66] (next page) is essential to the facilitation of activity-based DRR learning.

66 Pike, G. & Selby, D. 1999. *Global Education: Making Basic Learning a Child-Friendly Experience*. Amman: UNICEF MENARO. p. 20.

Teachers: An important section to guide your management of learning

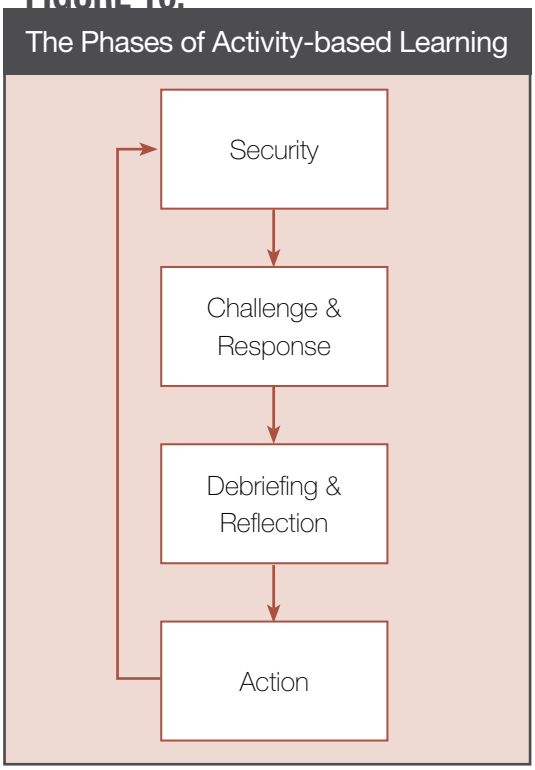
Teacher Educators: It is important to model the facilitative learning style in your professional development programmes

Curriculum Developers: This chapter carries important messages for learning activity development

Teachers/Teacher Educators: Read especially 6.2 (pp. 111-3) on the importance of free expression of emotion

Teachers/Teacher Educators: Return to 4.7 (pp. 80-2) for discussion of formative assessment

FIGURE 10.
The Phases of Activity-based Learning



The cycle can be applied within a particular activity or across a cluster of activities. In the security phase, individual and group self-esteem and confidence are reaffirmed and the inclusive and participatory nature of the classroom is reinforced. This can happen through a special activity or opening phase of a larger activity (such as the 'Feeling Powerful' stage of the Despair and Empowerment activity, p. 101). It can also be achieved by beginning a lesson with pair or small group work, where individual learners can gain a sense of security before working in larger groups. In the challenge and response phase, students are asked to address an issue using problem solving, creative and lateral thinking and decision-making skills, as well as emotional intelligence. Elements of experimentation and risk taking can be involved. In the debriefing and reflection phase, students are asked to reflect on, analyze and draw conclusions from the challenges presented by the activity, the goal being to confirm new knowledge and insights, a refinement in skills, or shifts in attitude, values, or perspective. In the action phase, students apply their newly acquired knowledge, insights, skills and confidence within real-life contexts such as a school safety initiative, and subsequently review and reflect on the experience. What is important is to recognize the need of more vulnerable students to return, at least briefly, to the affirmation provided by the security phase before going on to engage in the next learning challenge.

The most difficult facilitation skill of all is to conduct a carefully structured debriefing of the activity so as to maximize pupil learning. Checklist 3 (next page) offers some guidance.

Teachers/ Teacher Educators: An important section to guide your work

Policy Makers: Enhancing and maintaining the psychosocial wellbeing of students and teachers has a crucial part to play in improving the quality of education

6.2 Facilitating Emotional Learning

Of the learning modalities described in Chapter 5 (pp. 93-4), amongst the least visible in current DRR practice worldwide is affective learning (i.e., learning that addresses feelings and emotions).[67] This is a significant omission given that consideration of actual and potential hazard and disaster can elicit strong emotions in the learner. To learn that a disaster once ravaged one's community and that there might be a recurrence unless preemptive steps are taken can be frightening for pupils.

The absence of affective learning in DRRE is compounded by the fact that, given the increasing incidence of disaster globally, disaster risk reduction learning will more and more happen in post-disaster surroundings or situations of slow-onset disaster. Students

67 UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries*. Paris/Geneva: UNESCO/UNICEF.

CHECKLIST 3.

Debriefing an Activity

- ☐ Begin by asking a few broad, general questions to the whole class not to individual pupils. For instance: 'What new things did you learn from the activity?'; 'What surprised you about what you have done?; 'How did you find the activity?'; 'What special things have you learned about disaster vulnerability and resilience in your village?
- ☐ Also ask feelings questions right at the start if the activity has had an emotional dimension or has triggered an emotional response in pupils (What do you feel about…?, What did you feel when…?) and, only when feelings have been thoroughly aired and shared, move on to ask thinking questions ('What do you think about…?')
- ☐ Note down key points raised by the opening exchanges on the board and use as a checklist to open different areas of discussion as the debriefing progresses.
- ☐ Whenever students contribute an idea, insight or point of view, sum up what has been said and then put it back to the class for further input, e.g., 'Josephine and Edward think the old ways of preparing for a cyclone were the best. What do others think?'
- ☐ Encourage individuals and groups to ask each other questions.
- ☐ Input relevant new information at the end of the debriefing, as much as possible building upon what the students themselves have said and give recognition to their various contributions.
- ☐ Also at this time, introduce corrective information to challenge and provoke discussion surrounding misapprehensions that the debriefing has so far failed to reveal.
- ☐ Display charts and work produced by groups after the session, inviting everyone to take a close look at each other's work.

learning about reducing vulnerability and building resilience in the face of hazard may have their own traumatic personal experience or be vividly aware of familial or close-to-home experience of disaster. DRR learning messages will be delivered less and less before disaster strikes.

The teachers' perspective is no different. Facilitating DRR learning is, in itself, very demanding. Facilitating DRR learning of children affected by natural disasters adds a layer of complexity and stress. Facilitating DRR learning when facilitators themselves have been impacted, even traumatized, by life-threatening incidents adds further layers to the demands facing teachers. In such cases, it follows that

BOX 36.

Children's Learning in Disrupted Contexts

'When children's lives have been disrupted, they need to find structure, consistency and security in their day. When trust has been shattered and children have lost their sense of belonging, they need to experience kindness, inclusion and recognition. When children are distracted by intrusive memories of distressful events, they need to be given opportunities to learn in ways that are creative, engaging and active.'

Source: UNICEF. 2009. *The Psychosocial Care and Protection of Children in Emergencies: Teacher Training Manual*. p, 97.

Turn back to 1.1 (pp. 2-6) for discussion of the increasing incidence and severity of disasters globally

Policy Makers/ Teacher Educators: Develop context appropriate support mechanisms to help maintain teacher wellbeing

CHECKLIST 4.

Facilitating Emotional Learning

- ☐ Offer flexible and shorter interventions (partial lessons) and activities considering the concentration level of the affected children.
- ☐ Help to restore a sense of structure, consistency, predictability and normality for children. This can be done, for example, by establishing daily routines and 'rituals' (e.g., start and end classes on time; start the lesson with a fun routine, such as a song, a movement to a rhythm, or a short game involving all the students; always end with the class with some positive remarks).
- ☐ Help to enhance the sense of self-worth of children with empathy, encouragement, recognition and praise.
- ☐ Promote positive interactions among children (e.g., incorporate collaborative group work; encourage peer learning; use active and participatory learning approaches).
- ☐ Create a classroom environment where children feel safe to express themselves.
- ☐ Be a role model by expressing emotions and thoughts, and not only asking questions.
- ☐ Encourage the students to talk about their ideas, hopes and worries without being judgmental.
- ☐ Practice active and empathic listening (offer full attention when children talk, especially when they are expressing their feelings; avoid cutting children off before they have finished talking; seek out children's opinions regularly).
- ☐ Pay attention to and engage with quieter children.
- ☐ Build children's competencies and life skills; based on learners' needs in a particular circumstance, offer the most relevant life-skills content such as: hygiene promotion, non-violent conflict resolution, practicing interpersonal skills.
- ☐ Involve learners in choosing topics they wish to learn.
- ☐ Be patient. Children's responses, when affected by disaster might have become slow, so speak slowly and repeat the key points; seek to understand reasons behind the troubled behaviours of children.
- ☐ Include opportunities such as: sports; making music (singing and musical instruments); dancing; drawing, storytelling; theatre/drama activities; puppet shows; journal writing and poems. For very young children, the following activities are most suitable: storytelling; puppet shows; singing and simple movements; free style drawing; creative playing.

Source: Adapted from IASC (Inter-Agency Standing Committee) 2007. *IASC Guidelines on Mental Health and Psychological Support in Emergency Settings*; UNICEF. 2009. *The Psychosocial Care and Protection of Children in Emergencies: Teacher Training Manual.*

teachers 'should be encouraged to recognize and address their own stresses before working on supporting the children in needs'.[68]

It is important to remember that a teacher's role is not to conduct therapy, which requires specialist training and skills. What teachers can do is to 'provide psychosocial support to learners by adapting the way they interact with learners, creating a safe and supportive environment in which learners may express their emotions and experiences, and by including specific structured psychosocial activities in the teaching/learning process.'[69]

There is considerable convergence between the facilitation of affective learning, including esteem building, for non-traumatized learners and the facilitation of psychosocial learning for traumatized groups. Checklist 4 presents a facilitation checklist for teachers directed at the latter but with applicability to general facilitation of affective dimensions of learning.

6.3 Facilitating Learning outside the Classroom

Helping learners develop their capacity and skills for positive and proactive engagement in disaster risk reduction is one of the key aims of DRRE. Although there have been child-centered and child-led community initiatives to deliver DRR around the world, links to formal curriculum still tend to be weak.

Essentially, there are two approaches to DRR learning engagement in and with the community.

BOX 37.

What is Psychosocial Wellbeing?

The term 'psychosocial' underscores the close connection between psychological aspects of our experience (e.g., our thoughts, emotions, and behaviour) and our wider social experience (e.g., our relationships, traditions and culture). Well-being is a condition of holistic health in all its dimensions: physical; emotional; social; cognitive and spiritual. Also a process, well-being consists of the full range of what is good for a person: including participating in a meaningful social role, feeling happy and hopeful, living according to good values (as locally defined), having positive social relations and a supportive environment, coping with challenges through the use of positive life skills and having security, protection, and access to quality services. Education can protect children by helping them recover from the psychological and social effects of distress and by supporting their natural resilience to do so. Teachers may also need help with recovery as well as guidance on how education can be adapted to support the healing process.

Source: Taken from INEE. 2010. *Guidance Notes on Teaching and Learning*. New York: INEE. p. 54.

One focuses on community enquiry through data collection and analysis, using tools such as surveys, interviews, questionnaires and observation. The other concerns community-based action projects. The former can be seen as leading into the latter in that community situation analysis can help learners decide on the nature, direction and focus of community projects and action in which they would like to engage.

Curriculum Developers/ Principals/ Teachers: Move ahead to Chapter 8, especially 8.3 (pp. 146-8) for discussion of aligning DRR co-curricular activities with formal learning

68 UNICEF. 2006. *Education in Emergencies: A Resource Tool Kit*. Kathmandu: UNICEF ROSA. p. 74.

69 IASC (Inter-Agency Standing Committee). 2007. *IASC Guidelines on Mental Health and Psychological Support in Emergency Settings*. pp. 152-153.

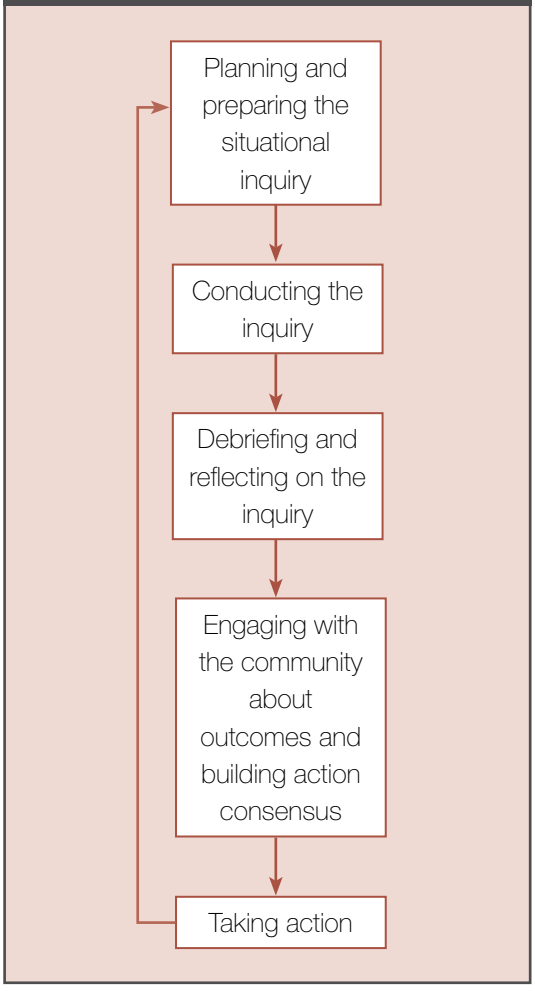
Principals: Play a leadership role in encouraging DRR student action projects at your school as part of developing a DRR learning community (see 1.2.5 (p. 8), 8.1 (pp. 138-42), 10.4 (pp. 171-9)

The school campus offers a safe practice ground for enquiry-based and action-based disaster risk reduction community projects. Vulnerability assessments, safe school awareness campaigns, 'reduce, re-use, recycle' projects and 'cool the school' climate change initiatives are examples of projects that can take place within the walls of the school. There are multiple opportunities for presenting findings, experiences and outcomes such as assemblies, drama presentations, displays, exhibitions, peer learning and student tutoring of younger children. School-based projects can also give students a first opportunity to work in conjunction with community members invited into school to assist.

Teacher facilitation of community vulnerability and resilience enquiry and action projects should broadly adhere to the cycle shown in Box 38. Facilitation of school-focused enquiry and action projects can generally follow the same steps in a reduced process. The steps outlined below assume that students work in small groups. They should be adjusted to the specific context, circumstances and action goals.

BOX 38.

Community Vulnerability and Resilience Enquiry and Action Project Cycle



Section 6.3 links to essential dimensions 3, 4 and 5 of DRR learning (pp. 7-8)

Stage 1: Planning and Preparing for Community Situation Analysis: Vulnerability and Capacity Assessment

- Determine the purposes and scope of the situation analysis to be conducted in the community.
- Choose the most appropriate windows of opportunity for the preparation of the visit based on the subjects to be investigated.
- Decide on how the situation analysis will be conducted (see Box 39 on Vulnerability and Capacity Assessment).
- Have students develop data collection tools, such as observation sheets, questionnaires and/or interview questions as appropriate (calibrate the help given to students to their age and level of maturity).
- Help students to identify key informants who can best answer their questions - their data collection tools may need to be refined depending on actual availability of key informants.
- Help students understand and have students practice using data collection techniques (including interviewing and observation).

- Help students to decide on roles and responsibilities within a group (for instance: Who will ask which question? Who will take notes? Who will collect observation data?).
- Have students conduct further preparation or research work before the visit, as necessary.
- Make ancillary and logistical arrangements for the student community visit. These would include: arranging the duration and schedule of the visit; determining the exact location for the visit; identifying and forewarning community members able and willing to make themselves available for the student visit as guides or interviewees.[70]
- Consider any roles for parents and community members beyond being interviewed or acting as guides.
- Encourage students to think ahead about what else they might need for a post-visit reporting session (e.g., photographs, drawings).
- Make sure that the activity will not expose children to any risk.

Stage 2: Implementing the Community Inquiry

- Make sure that each student group follows their plans, by arranging or offering support as appropriate.
- Play an unobtrusive observer's role for at least part of the time.

Stage 3: Debriefing and Reflecting on the Community Inquiry

- Allow enough time for each group to reflect on data gathered, decide on what to report and how to present main findings.

70 Genre of local people to approach include: local government officers; local community leaders; youth leaders; religious readers; members of local environmental, climate change, development and DRR NGOs; local health workers; local media representatives; elderly community members; women's group; migrant minorities in the area.

BOX 39.

What is Vulnerability and Capacity Assessment (VCA)?

VCA is 'a participatory investigative process designed to assess the risks that people face in their locality, their vulnerability to those risks, and the capacities they possess to cope with a hazard and recover from it when it strikes…. VAC helps people to prepare for hazards, to prevent them from turning into disasters and to mitigate their effects.'

There are a number of tools used for VCA. They include:

- Semi-structured interviews.
- Focus-group discussion.
- Mapping (creating maps which indicate the location of risks and hazards as well as resources in the community).
- Transect walks ('walking through a community to observe the surroundings, people, land use and resources').
- Seasonal calendar (a chart with 'the months of the year along the horizontal axis and the events and activities significant to the community listed in the vertical axis,' illuminating when hazards and risks take place and also helping the community reflect on 'living habits according to its vulnerability to hazards').
- Historical visualization (creating a chart which shows how key aspects of people's lives have changed over time).

Source: International Federation of Red Cross and Red Crescent Societies (IFRC). 2007. *VCA Toolbox with Reference Sheets.* p. 6, pp. 19-20.

- During the reporting phase, encourage each group to ask questions of others' reports.
- Hold a whole class discussion on the reports. Some debriefing questions include: What are things in common in the reports? What are key findings and messages? What different insights are there in different reports? Why? What are areas requiring more research/investigation? What might you do to address issues you have identified?

BOX 40.

Questions for Students that Facilitate the Design and Preparation of a DRR Action Project

- What do we want to do? [Name of the Project]
- Why do we want to do this project? [Rationale]
- What will have happened when we implement this Project? [Goals, Objectives]
- What could go wrong? [Risk]
- Where will we do it? [Physical space]
- How will we do it? [List of activities]
- Who is going to do it? [Roles and Responsibilities]
- When are we going to do it ? [Timeframe]
- What do we need in order to do it? [Resources]
- What do we have already? [Existing resources]
- How much will it cost? [Budget]

Source: Plan. 2010. *Child-Centred DRR ToolKit.* pp. 105-106.

Stage 4: Engaging with the Community about Outcomes and Building Action Consensus

- Ask students in the same groups to think back on their community visit and decide on: key messages they want to communicate to the community; primary target group(s) with which they want to communicate; the channels/locations for communication.
- Help students to consider appropriate media for communication with the chosen target group(s) (e.g., poster, photo exhibition, radio message, local newspaper, video, street performance, songs, electronic messaging).
- Ask each group to explain their initial ideas for community engagement, inviting others to give critical feedback as well as constructive suggestions.
- Help each group draw up a detailed engagement plan (who does what, when, where, resource needs).
- Support each group, or the groups collectively to engage with the community in disseminating their findings and messages, and to seek an agreement on joint action to take (use Box 40 for developing the action proposal).

Stage 5: Taking Action

- Consider how student community action projects can be linked to formal curriculum spaces.
- Have group(s) make action preparations in liaison with community members.
- Have group(s) implement their action plan with community members
- Have students reflect on their action experience, report and discuss as per the three steps in Stage 3.
- Repeat the cycle.

BOX 41.

Student DRR Action in the Community: Some Examples

Planting Trees, Haiti

Local children in Thiotte took part in a 'Risk Reduction Day' and planted trees in order to help reduce the risk of mud/landslides during flood incidents.

Source: ActionAid. 2009. *Disaster Risk Reduction through Schools: A Groundbreaking Project.*

Child-Led Emergency Drill, the Philippines

During the Children's Summer Camp, a student-led emergency drill was conducted using a drill scenario of a 7.5 magnitude earthquake and an incipient fire with mass casualties.

Source: Save the Children. 2010. *Living with Disasters and Changing Climate.*

Community Map, Thailand

As part of a Disaster Risk Reduction training programme, students in Phayao province created a community map identifying risks and safe areas. The map also identified families with children and elders in the community. They learned how to help them in case of a disaster.

Source: Save the Children. 2010. *Living with Disasters and Changing Climate.*

School Relocation, the Philippines

When students in San Francisco municipality learned that their high school was going to be relocated to a landslide risk area, they debated whether and where to relocate the school. A community-wide referendum was held. Students organized a campaign and their proposal for relocating the school to a safer location won in the vote.

Source: Plan International. 2007. *Case Study: The Power of Children's Voices in School Relocation.*

Student Risk Ambassadors, France

In order to motivate students to understand and be involved in helping solve local risks (e.g., floods, industrial accidents), a programme of 'Student Risk Ambassadors' was launched in a local high school and was later replicated in other schools.

Source: UN ISDR TPKE. 2008. *Disaster Prevention for Schools Guidance for Education Sector Decision-Makers. Consultation Version.*

Measuring Rainfall, Brazil

Children are taught to measure rainfall to give an early warning of floods or landslides.

Source: Save the Children. Undated. *Reducing Risks, Saving Lives.*

Song: 'Qasidah's', Indonesia

Children's group in Rembang adapted Qasida (a form of poetry from pre-Islamic Arabia used for religious poetry along with chanting and percussion in Rembang district) for a DRR and climate change adaptation campaign. Children performed at village gatherings.

Source: Plan International. 2010. *Child-Centred DRR Tool Kit.*

Child-Led Community Radio Programme, Sierra Leone

The Moyamba District's Children's Awareness Radio is a child-led and community based radio station. It produces a weekly one-hour radio programme on DRR by reaching out about 250,000 community members.

Source: Plan International. 2010. *Child-Centred DRR Tool Kit.*

6.4 Enlivening the Textbook

Policy Makers/ Curriculum Developers/ Principals/ Teachers: Enlivening the textbook for DRR learning is a cost effective route to quality education. Effective DRR learning can happen without a textbook.

Much disaster risk reduction teaching around the world still relies upon the presence of disaster-related topics in textbooks. Consequently, DRR learning remains heavily textbook-dependent. This can present a significant obstacle to the achievement of the skills, attitudinal and action learning outcomes, and use of interactive and participatory learning called for by DRRE. Adding to the problem is that the textbook, usually centrally developed, is a 'one size fits all' document that is unresponsive to the need for DRR learning that addresses varied and particular local hazard conditions.

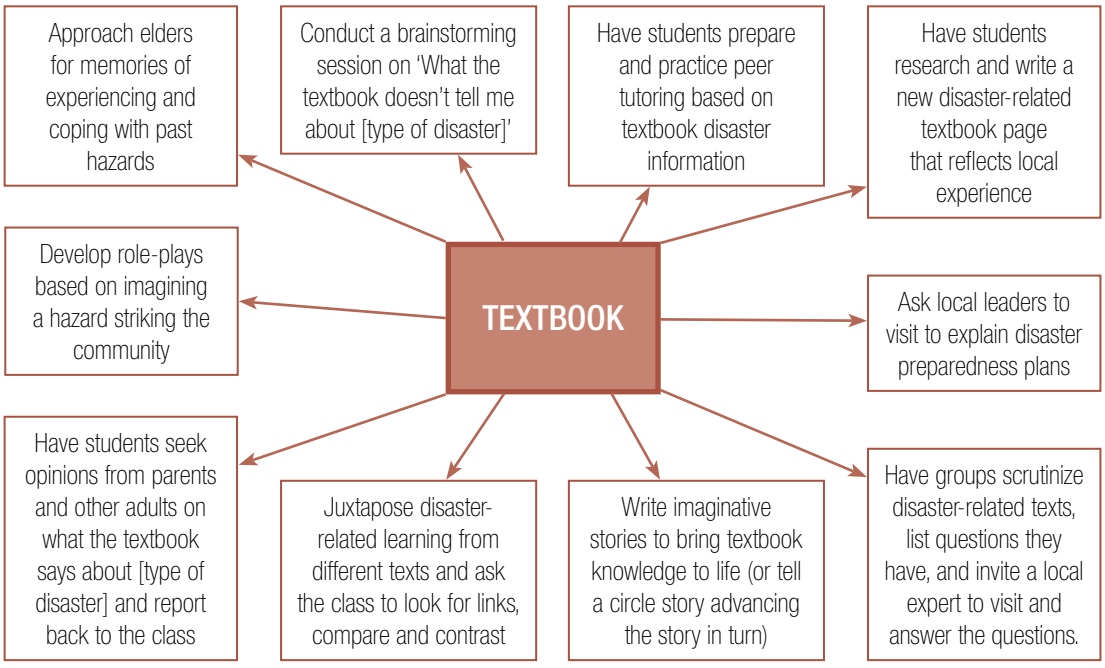
Teachers: Here are some useful ideas for DRR learning that capitalize on the textbook while avoiding any shortcomings it may have for realizing DRRE learning outcomes

While movement away from textbook-driven DRR remains a project in the works, there are steps that a facilitative teacher can take to enliven textbook-based learning without the availability of additional resources. Figure 11 illustrates some examples.

Several of the examples – taken as they are or with appropriate adjustment - can also be drawn upon in school and other learning contexts where no textbooks are available. The absence of a textbook can be perceived as an opportunity, releasing students to learn through engaging with local leaders, elders, parents, disaster risk reduction and climate change agency workers, and other community members and to express their learning through brainstorming, stories, interviewing, role plays, tutoring younger students, writing reports and making posters.

In emergency affected contexts, the basic level of learning supplies available in a UNICEF School-in-a Box kit – exercise books, pencils, erasers, scissors, slates and blackboard paint (to create an ad hoc blackboard) – provides a sufficient resource to initiate participatory, community-engaged learning.

FIGURE 11.
Enlivening the Textbook Experience



Teachers: Activities such as those in 5.4 (pp. 96-101) offer additional ways of enlivening textbook learning or doing without a textbook

Timor
© UNICEF/Candido Alves
(see full captions pp. 185-9)

STRATEGIC POINTERS FOR CHAPTER SIX.

- → **Teachers/ Teacher Educators**: Remember that effective DRR learning involves a shift to being a facilitator of learning; the shift requires time and application.
- → **Teachers/Teacher Educators**: Remember, too, that in facilitating activity-based DRR learning, it is important to work to an appropriate cycle of learning that maintains a dynamic balance between security and challenge and action and reflection.
- → **Teachers/Teacher Educators**: The emotive nature of DRR calls for affective (emotional) learning in classroom and school.
- → **Policy Makers/Principals**: Remember that the psychosocial well-being of both teachers and students is critical for quality DRR learning.
- → **Curriculum Developers/Principals/Teachers**: Connect community-based DRR learning/action and formal curriculum-based learning.
- → **Principals**: Create an enabling school environment where teachers are encouraged to facilitate student DRR learning outside the classroom.
- → **Teachers/Teacher Educators**: Developing teacher pedagogical capacity (for facilitation of learning activities, emotional learning, community-based learning, enlivening textbooks) is critical to quality DRR learning.
- → **Policy Makers/Principals/Teachers**: Finding ways of enlivening the existing textbook can be a cost effective way of achieving quality DRR learning.
- → **Policy Makers/Principals/Teachers**: Take advantage of having no textbook by engaging students in community-based learning and having them process and express their learning that requires few resources.

6.5 Selected Tools and Resources

- International Federation of Red Cross and Red Crescent Societies (IFRC). 2007. *VCA Toolbox with Reference Sheets*.
  http://www.ifrc.org/Global/Publications/disasters/vca/vca-toolbox-en.pdf

  This toolkit offers user-friendly tips and advice for conducting vulnerability and capacity assessment (VCA) using various participatory investigation tools.

- Plan. 2010. *Child-Centred DRR Toolkit*. London: Plan.
  http://plan-international.org/files/global/publications/emergencies/DRR-toolkit-English.pdf

  This toolkit provides practical tips and advice for those who work with children for community-based DRR. The toolkit includes four modules: training children on DRR through the hazard, vulnerability and capacity assessment; planning, monitoring and evaluating child centred DRR programmes; action planning with children on DRR; advocacy with children on DRR.

- Save the Children. 2007. *Child-led Disaster Risk Reduction: A Practice Guide*.
  http://www.preventionweb.net/go/3820

  This activity guide helps strengthen children's capacities to understand disaster risks and to take practical actions in their communities. The guide is divided into five sections: context and partnerships; capacity building and awareness raising; programme implementation/activities; monitoring and evaluation/learning and documentation; advocacy. Frameworks for child-led assessment are included in the appendices.

- UNICEF. 2009. *The Psychosocial Care and Protection of Children in Emergencies: Teacher Training Manual*.
  http://toolkit.ineesite.org/toolkit/INEEcms/uploads/1064/Psychosocial_Care_and_Protection.PDF

  This 5-day teacher education manual provides a clear, concrete and accessible guideline to facilitators. The training aims at supporting teachers in improving the psychosocial wellbeing of children affected by crisis and post-crisis situations. The course is structured upon the principles of adult learning and the training stresses active engagement throughout.

Chapter 7
Teacher Professional Development in Disaster Risk Reduction Education

First, this chapter provides guidance on teacher professional development for effective DRR curriculum delivery, including discussion on the training of school principals, inspectors and others having a curriculum support role. It then emphasizes the importance of professional development that fuses the acquisition of DRR understanding with training in DRR learning facilitation. Following this, it introduces the idea of the DRR 'reflective practitioner'. Finally, the chapter underlines the importance of pedagogical institutions building their capabilities in DRR to become DRR learning organizations.

7.1 Holistic, Systematized DRR Professional Development

With some notable exceptions, teacher professional development for disaster risk reduction has been limited in scope and ambition. In some cases, teachers called upon to add DRR to their repertoire have received a guidance manual but no training in its use. In other cases, the training offered has been primarily, even exclusively, content focused, (i.e., concerned with familiarizing teachers with the new disaster-related content they are being asked to deliver). In yet other cases, some introduction to the facilitation of DRR learning has been given alongside an introduction to new knowledge. However, the training offered generally 'remains of short duration, usually a one-off event, with no evident follow-up, aftercare or learning reinforcement. There is a need for more systematized, reinforced and sustained professional development'.[71]

The systematization of DRR professional development is a crucial element in DRR mainstreaming and is built upon bringing pedagogical institutions into the curriculum development and scaling-up process. This, in turn, involves capacity building of trainers through immersion in the DRR field and in DRRE theory and practice, allied with awareness and capacity building amongst pedagogical institution management and course programmers. Pedagogical institutions need to become DRR learning organizations offering core pre-service and in-service programmes that thoroughly prepare student and in-post teachers with the ability to integrate DRR (along with CCE and ESD) into their curriculum, teaching and learning. Institutional DRR research initiatives need to complement and inform course offerings.

Systematized professional development calls for all or most of the following elements: needs assessment, comprehensive planning, effective and appropriate programme delivery, reinforcement and aftercare. These are described in more detail below.

7.1.1 Needs Assessment

Prior to the development of the teacher education programme, teachers surveyed for their perceptions of their learning needs, as well as their perceptions of factors likely to inhibit effective delivery of DRR curriculum, and interventions that would help catalyze change. Principals and inspectors are also surveyed. The results of the needs assessment are then factored as much as possible into programme development.

7.1.2 Comprehensive Planning

The planning process for a teacher professional development programme for disaster risk reduction needs to give equal consideration to:

- the disaster related knowledge and concepts, including DRRE knowledge and concepts, teachers need to acquire.
- the new learning facilitation capacities and skills they need for delivery of curriculum in a manner and style appropriate to the action-oriented goals of disaster risk reduction education.

Desired learning outcomes from the training need to be identified and an analysis undertaken

Policy Makers/ Curriculum Developers/ Teacher Educators: An important chapter offering guidance on DRR teacher training program development and delivery

Go to 1.2.5, 8.4, 10.4 for discussion of DRR learning organizations

Curriculum Developers: Needs assessment for DRR professional development is best conducted as part of wider initial curriculum development planning (Stage 1, p. 40) and as part of a baseline study or curriculum review (3.4., pp. 48-51)

Policy Makers/ Curriculum Developers/ Teacher Educators: Comprehensive planning and implementation of DRR professional development is a key element in the scaling up process. See Chapter 9 (pp. 151-162)

71 UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries*. Paris/Geneva: UNESCO/UNICEF. p. 9.

to ensure alignment between outcomes and proposed programme. The Sri Lankan case (Section 7.2.3, pp. 130-3) gives an example of comprehensive and strategic DRR professional training programme development and delivery. It encompasses both pre- and in-service training, and takes scaling-up into consideration from the outset.

BOX 42.

Georgia: Teacher Training on DRR Content and Pedagogy (linked to the DRR Teacher's Guide)

DRR teacher training for the Head of Class Hour Programme (see pp. 30-2, 63-5) was a one-day (7-hour) workshop given in two parts:

- Disaster risk reduction: global disaster trends and statistics; disaster prevalence in Georgia; role of educational system in disaster risk reduction – the need to teach DRR; disaster prevention and rules of behavior before, during and after disasters; consideration of the 16 thematic modules; importance of community involvement in the learning process.
- Interactive teaching methods: encouraging and exemplifying engagement of students with DRR through mini-lectures, discussions and debates, group brainstorming exercises, games, interactive presentations and discussions as well as a variety of practical activities (such as simulations, competitions).

The training program was organized in a highly practical and interactive manner. Participating teachers were guided through using the teacher's guide: Teaching Disaster Risk Reduction with Interactive Methods: Book for Head of Class Teachers (Grades V-IX).

See pp. 145, 163-81, 195 for more on teacher as DRR reflective practitioner

7.1.3 Effective and Appropriate Programme Delivery

Delivery of a DRR professional development workshop should be appropriate to, and match with teachers' eventual role(s) in the classroom. The trainers should be seen as role modeling the facilitative style and the ways of relating that teachers are to employ in the classroom with students. The role modeling of carefully structured debriefing of workshop experiences is particularly important, given that effective debriefing of learning is a difficult skill to master. Teachers taking part should feel immersed in a learning process marked by participation, critical and creative thinking, active problem solving and unrestricted expression of ideas, hopes, fears, reservations and criticisms. They should find themselves experiencing a diverse range of carefully juxtaposed learning modalities in groups of fluctuating size and membership. Ideally, as in the Vanuatu case (Box 43, pp. 125-6), they will

THE REFLECTIVE PRACTITIONER

The elements described in 7.1.1 through 7.1.3 all relate to the making of DRR reflective practitioners – teachers who are sufficiently knowledgeable in DRRE principles and practices to no longer rely on a guidebook but are easily able to apply DRR thinking within their learning processes and environment. The ability to reflect feeds from and into the quality of their learning facilitation. As they reflect on what has and what has not been successful in their lessons, they consciously and consistently inform their further teaching with insights arising from their reflection.

also gain practice in classroom facilitation under workshop 'learning laboratory' conditions.

7.1.4 Reinforcement

Exposure to disaster risk reduction education through a one-off event can be inspiring for teachers. However, back in the classroom they may well encounter unanticipated difficulties, including unsympathetic and unsupportive colleagues and school management, with no means through which to air and share them. It is thus important for the sustained professional development of teachers who have experienced DRR facilitation in school to have the opportunity to share and process their experiences with colleagues and trainers. Ideally, as in the Timor Leste case below (Section 7.2.1, pp. 128-9), there should be several opportunities for learning reinforcement. The Timor Leste example also underlines the importance of a process of professional development that not only refreshes learning but also extends learning.

7.1.5 Aftercare

Building aftercare support for teachers into professional development programmes is vital. For example:

- Follow-up visits to schools by members of the training team to discuss with teachers their successes and difficulties, as in the Armenian case below (p. 129-30).
- Networking teachers so they can act as a sharing and support group.
- Ensuring that at least a pair of teachers from any school are involved, equipping them with mutual support skills so they can observe and creatively critique each other's teaching.
- Equipping principals with the skills to meet with and counsel teachers
- Periodic 'reunions'.

7.1.6 Linked Principal and District Inspector Training

An holistic, systematic conception of disaster risk reduction professional development – especially if DRR mainstreaming is the ambition – also needs to encompass principal and district office training so they can fulfill significant supporting, legitimizing and catalyzing roles. As in many of the examples given in this chapter, the active involvement of principals and district officers in training events can be very helpful in this regard. But there is a case, too, for specific principal and district officer training so they are properly prepared to support DRR curriculum and pedagogical development. Elements to include in principal and district office training are as follows:

- Understanding of hazards, disasters and disaster risk reduction
- Understanding of the links between DRRE, education for sustainable development, climate change education, life skills and child-friendly learning
- Awareness of hazards and potential disaster impacts in the community and region
- National and regional DRR policies/ strategies and their implications for the education sector
- Broad overview of roles of school/education in DRR
- Knowledge of DRR materials and pedagogies to be used in school
- Strategies and techniques for providing aftercare support to teachers who have participated in DRR teacher training and who are experimenting with new learning and teaching approaches
- How to plan, coordinate and monitor horizontal (including interdisciplinary) and vertical DRR curriculum integration, assigning roles to staff

- Understanding DRR formative and summative assessment approaches
- Principles, concepts, and implementation/ supervisory mechanisms for monitoring and evaluating DRR learning at school
- Strategies and processes for linking and monitoring curricular and co-curricular DRR learning and activities at school
- Strategies and processes for combining non-structural aspects of DRR (e.g., DRR learning and school disaster management) and structural elements of DRR (e.g., safe school facilities) into a whole school approach to creating a DRR learning institution with a 'culture of safety and resilience'
- Strategies for forging school learning partnerships with parents, local communities, local authorities, other local DRR-related organizations on resilience
- Strategies for communicating school-based DRR developments and initiatives
- Skills for organizing and facilitating in-school professional development events

Much of the same list applies to district officer DRR professional development but with the following additional elements:

- Information sharing and effecting liaison between schools (e.g. hosting DRR learning review meetings at a local level, holding special inter-school DRR events).
- Liaising with regional and national authorities to brief them on district DRR developments and glean new information to pass to district schools

BOX 43.

Vanuatu: Disaster Risk Reduction Teacher Education Workshop

Box 42. Vanuatu: Disaster Risk Reduction Teacher Education Workshop

Prior to the pilot testing of grade disaster risk reduction curriculum in 2012 for grades 4, 5 and 6 in the Republic of Vanuatu organized by Save the Children, some thirty teachers from ten piloting schools underwent three days of training, with principals and regional education officers also in attendance.

The basic programme is given on the next page. The unifying and consolidating elements in programme delivery listed below make the training particularly distinctive.

1. Throughout the first two days of the programme in particular, teachers were required to experience for themselves the activities they would be conducting in class on the principle that effective facilitation of activities calls for prior immersion in different learning approaches and activity types.
2. The training introduced teachers to disaster risk reduction and the idea of introducing disaster risk reduction across the curriculum and also trained them in DRR learning and teaching and learner assessment.

BOX 43. continued

3. After the first morning's session, inputs by the trainer *always* followed the activities and, as much as possible, involved whole group discussion of activity experiences and the facilitation challenges raised.
4. Activities were organized into three clusters (*awareness-raising activities, hazard specific activities and, resilience-building activities*), providing a suitable programme framework for the first two days.
5. Throughout the programme, the facilitator was seen to role model the facilitation style that the teachers were encouraged to use in their classroom.
6. 'Home groups' were created to bring together teachers from different schools at the end of each day to discuss and reflect upon their experiences, identify gaps in their learning and questions they needed answering. Home group sessions were each followed by a whole group discussion during which groups aired issues and raised questions.
7. Teachers' roles and responsibilities in the pilot evaluation process (e.g. through keeping a diary of reflection, completing implementation feedback sheets after each lesson) was explained and discussed.
8. On the last morning teams of teachers practiced facilitation of an activity they themselves had experienced using the microteaching approach.

3-day Programme Overview

	DAY 1	DAY 2	DAY 3
AM	• Introduction, rationale for workshop, explanation of workshop style • Explanation of disaster risk reduction and disaster risk reduction education • Explanation of convergence of DRR and climate change education (CCE) • Review of opportunities for integrating DRR and CCE across the Vanuatu primary curriculum • Rationale for DRR learning approaches being used in the workshop • Explanation of the three activity clusters	• Hazard-specific activities: participants engage in four sample learning activities	• Teachers take turns leading micro-teaching sessions for each other in two breakout groups • Explanation of teachers' roles and responsibilities in evaluating the pilot
PM	• Awareness-raising activities: participants engage in four sample learning activities	• Resilience-building activities: participants engage in four sample learning activities • Participants discuss school action plans in 'home groups'	• Assessing student DRR learning • School groups (including principal) determine school implementation plans • Final Q & A session

Source: Save the Children Australia. 2012. *Disaster Risk Reduction & Climate Change Education in Vanuatu: Pilot Curriculum Materials, Teachers' Guide and Evaluation Instruments*. Port Villa. Additional input from Marla Petal, Save the Children Australia.

Policy Makers/ Curriculum Developers: For more on teacher participation in DRR curriculum evaluation in Vanuatu, go to 10.4 (pp. 171-9)

BOX 44.

Training of Teachers and Trainers in Mainstreaming Disaster Risk Reduction (DRR) in the Education Sector in Lao PDR

A three-day DRR Training of Teachers and Trainers programme was carried out by the Lao Ministry of Education, in conjunction with the National Disaster Management Office, ADPC and UNDP in November 2009.

The two objectives of the training were:

- To build the capacity of teachers and of the regional centre training officers of the MoE National Teacher Training Institute in leading the integration of a DRR training module during the annual pre-service and in-service training of teachers in their area of jurisdiction
- To serve as a guide in the conduct of pre-service and in-service training for teachers so as to enable them to transfer DRR knowledge and create a culture of prevention and safety in their schools.

Day one of the programme covered the following topics: disaster management policy/strategy and concepts; disaster impacts in the region; integration of disaster in the curriculum; the range of natural and human-induced hazards. Day two focused on teaching, learning and assessment aspects, introducing DRR materials (modules, teacher's guide, student's textbook, booklets, posters). A group exercise to create a lesson plan closed the day. Day three included another group exercise concerned with creating a lesson plan. Plans were then shared and discussed. A final group exercise involved first devising and then sharing and discussing follow-up plans.

Source: Information provided by ADPC

BOX 45.

ASEAN/ISDR DRR Teacher Training: Goal and Checklist of Questions

Goal: Teachers and relevant educational personnel are properly trained in teaching DRR as part of the school curriculum

- Are curriculum changes linked to training and continued support of teachers to ensure that changes are supported at classroom level?
- Are there resources to coordinate and support necessary training, orientation, or re-orientation of trained teachers?
- Are there immediate programmes for skills development for specific areas such as pedagogy, educational modalities, and content done through workshops, online, study visits, and other alternative forums?
- Is there a long-term capacity development programme for teachers and relevant education personnel for the purpose of teaching DRR?

Source: Taken from ASEAN/ISDR. 2011. *Disaster Resilience Starts with the Young: Mainstreaming Disaster Risk Reduction in the School Curriculum*, p. 16.

7.2 Patterns of DRR Professional Development: Three Examples of Noteworthy Practice and Process

This section describes three examples of professional development processes. Each one reflects elements comprising holistic and systematized DRR professional development as outlined in 7.1.

7.2.1 Example 1. Timor Leste: Systematic DRR Professional Development for District-level Curriculum Development

Save the Children's April to November 2011 *Disaster Risk Reduction in Primary School Project* sought to increase the resilience and reduce the vulnerability of children to disasters in Manufahi and Ainaro, two of the thirteen districts of Timor Leste. The project eventually moved beyond its designated 50 schools to reach over 100 primary schools and more than 12,000 students.

One of the main features of the project was the close working relationship with the Ministry of Education especially at district level but also at regional and national levels. At district level, Ministry inspectors, school directors and teachers led on project implementation and were involved in implementing and monitoring lessons as well as training teachers on how to deliver DRR education in class. Of key importance to the project was the establishment of a Teacher Disaster Response Group (TDRG) made up of 22 school directors, inspectors and district education focal points.

To support devolved project leadership and back the TDRG in assuming a prominent leadership role, a comprehensive and systematic approach to professional development that embraces the training of inspectors, school directors and teachers was adopted. The training began with an introduction to DRR and the project itself, familiarization with DRR learning materials and training in lesson plan development, a training of trainers element, and finally, training in monitoring and reporting.

The following training, review and briefing structure was adopted.

Training Round One

A 4-day event for inspectors and school directors to introduce DRR, DRR learning materials and facilitator training, determine membership of the Teacher Disaster Response Group, and draw up a plan of activities. (34 participants)

- Facilitated by Save the Children education officers and partner NGO 'master trainers'
- Participatory and interactive training
- Examined ministry district level plans for schools and reviewed how the plans fit with the project
- Planned the involvement of 'satellite schools' (i.e., schools beyond the originally designated 50 schools)

Training Round Two

A 3-day event for school teachers (25 per district) also attended by school directors, at which inspectors who had been selected as members of the TDRG facilitated some of the training.

- Participatory and interactive training on how to use DRR learning materials and how to design and develop DRR lesson plans (by TDRG inspectors)
- Training support for TDRG trainers from Save the Children and partner NGOs made available on-site
- Training of TDRG members and teachers in lesson delivery in 'satellite schools'
- After the event, delivery of DRR learning materials to schools

Curriculum Developers: Note the strong emphasis on training in monitoring and evaluation in Save the Children's Timor Leste initiative

Training Round Three

A one-day refresher training for teachers and TDRG members held in the two districts (25 teachers attending in each district)

Training Round Four

A one-day monitoring training for TDRG, inspectors, district focal points and selected school director. (23 participants)

- Principles and concepts of monitoring and evaluating DRR learning introduced
- TDRG, inspectors, district focal point personnel and school director familiarized with using the Save the Children monitoring form
- Schedule and work plan for monitoring DRR lessons developed, and decisions made on how feedback would be collated and shared

School-level Implementation

Curricular and extra-curricular sessions conducted in the original 50 schools and an additional 68 schools (based on the decision of TDRG to outreach to other schools with vulnerability to disaster) over a ten-week period.

Follow-up Briefing and Review Sessions

A series of meetings held for briefing and review purposes.

- Project briefing meetings for other education officials through regional and district level meetings (inspectors, superintendents, directors of basic schools)
- Early review meetings held in each district to monitor project progress and seek feedback on reception of materials; both followed by district-level briefing workshop for inspectors and directors on review meeting outcomes
- Bi-monthly review meetings held with TDRG members in each district to monitor progress, share results of school and in-class observation, and give feedback on lesson implementation drawing from the monitoring forms

National Level Final Review Meeting

Attended by Ministry of Education, National Disaster Management Directorate and representatives of non-governmental organizations and UN agencies

Training Round Five

A refresher training for district focal points and project teachers entirely conducted by TDRG (at the closing of the project).

7.2.2 Example 2. DRR Pilot Teacher Training in Armenia[72]

A small scale 2010-2011 DRR pilot project led by UNICEF and the State Academy of Crisis Management (CMA) used teacher education as a central vehicle for change. The project is noteworthy because of its emphasis on locally relevant disaster topics and interactive pedagogies in training events, the training of principals together with teachers, and guidance and support given at school level after to the first training.

The project consisted of five phases:

Phase 1

Expert Group (EG) formed. EG reviewed relevant materials and developed a comprehensive training module including both DRR concepts/ content and pedagogical approaches for in-service pre-school and schoolteachers.

Phase 2

EG offered a three-day rigorous training of trainers (ToT) for more than 20 teachers and principals

72 Adapted from CMA (State Academy of Crisis Management)/UNICEF. 2011. *DRR in Education Project. Final Report*. (Unpublished)

from four districts. The training programme focused on both urgent disaster topics in their districts and interactive methodologies. Principals additionally learned about the project's evaluation plan for school implementation.

Phase 3

Participants developed thematic units on DRR to be taught at their own schools. The unit development process was supported by EG members through their visits to schools. The process resulted in the development of 24 thematic units covering all kinds of natural hazard

Phase 4

EG offered three-day teacher training events for four different regions. In addition to the teachers and principals initially trained in Phase 2, an additional 70 pre-school teachers and schoolteachers were trained. The training included a classroom teaching simulation and used highly participatory training approaches. Both DRR content and a range of pedagogical methodologies were included in the training.

Phase 5

Reflecting on needs raised by the teachers, EG adjusted and further developed teachers' and students' DRR materials. One handbook for teachers and three handbooks for students (for pre-school, elementary and secondary levels) were completed for publication.

The programmatic elements of the training approach used in this small-scale example are relevant to and replicable in at-scale in-service training interventions, including the training in DRR concepts and content and in facilitating participatory learning, the encouragement and support given to teacher-led curriculum development with a localized dimension, and the emphasis on post-training aftercare and support back in school.

7.2.3 Example 3. Sri Lanka: Mainstreaming DRR through Nationwide Teacher Education[73]

The devastation caused by the December 2004 tsunami became a turning point for the Sri Lankan government to proactively seek a new approach to deal with natural hazards. As a first concrete step, in 2005 the Ministry of Disaster Management and Human Rights was established and a national strategy was developed. The important role of the education sector was emphasized among the contributions to be made by a number of ministries. A division within the Disaster Management Centre under the Ministry of Disaster Management and Human Rights acted as interface with the education sector.

From October 2005 to December 2008, the Disaster Risk Management and Psycho-social Care in Schools project was implemented within the framework of the Sri Lankan education reform by German Agency for Technical Cooperation (Deutsche Gesellschaft fuer Technische Zusammenarbeit, GTZ) in collaboration with the Ministry of Education and the National Institute of Education.

An overall objective of the project was 'to establish pre- and in-service training in disaster safety education for lead administrators at Sri Lanka's education authorities, lecturers at the National Colleges of Education and school teachers'.[74]

73 Adapted from: GTZ. 2007. *Basic Education and Disaster Risk Management: Concept Paper*. http://www2.gtz.de/wbf/4tDx9kw63gma/Basic_Education_and_Disaster_Risk_Management_konzept_englisch.pdf; GTZ. 2008. *Sri Lanka: Teaching Disaster Risk Management in Sri Lanka's Schools*. http://preventionweb.net/files/submissions/27358_ensrilankateachingdisasterriskmanagement.pdf; GTZ. 2009. *Sri Lanka: Disaster Risk Management and Psycho-Social Care in Schools*. http://star-www.inwent.org/dokumente/bib-2010/gtz2010-0389en-sri-lanka-psycho-social-care.pdf

74 GTZ. 2009. Ibid. No pagination.

Providing psycho-social counseling for school children traumatized by the tsunami and civil war was also included in the project.

The project strategically and collaboratively worked at three different levels for the sustainable integration of disaster risk management into the Sri Lankan education system. The table below summarizes key actors involved in the project.

The project's strategy is mapped out in a schematic diagramme[75] in Figure 12 (p. 133), and key project steps are described below.

- Analysis of national education context with respect to disaster preparedness and school disaster safety.
- Development of a project strategy (see Figure 12 below for an overview of the strategy).
- A 14-day training course on disaster risk management and schools for 24 executive/senior members from the Ministry of Education, the National Institute of Education, the National Colleges of Education at the Indian National Institute of Disaster Management, followed by a similar training course for teacher trainers and key education administrators.
- Training-the-trainers (Sri Lankan educators who had been trained in India trained others in their own institutions).
- Integration of disaster safety education components into a new syllabus of pre-service teacher training by a Core Working Group consisting of senior members in the National Institute of Education and the National Colleges of Education. The newly developed cross-subject syllabus consists of five training modules: (1) basic concepts of disaster risk management, disaster mitigation and disaster relief; (2) disaster safety at schools; (3) practical drills and exercises in disaster safety; (4) post-disaster

75 75 GTZ. 2008. *Sri Lanka: Teaching Disaster Risk Management in Sri Lanka's Schools*. p. 15 http://preventionweb.net/files/submissions/27358_ensrilankateachingdisasterriskmanagement.pdf

TABLE 5.

Key Actors in Sri Lanka Disaster Risk Management and Psycho-social Care in Schools project

Level	Key actors in the education sector (key roles)
National level	• Ministry of Education (policy and guideline development) • National Institute of Education (developing curriculum, offering pre-service and in-service teacher training and developing instructional materials) • Centre for Educational Leadership Development (offering in-service training in leadership for principals and education managers) • National Colleges of Education (17 colleges training in-service teachers across the entire nation)
District level	• Teacher Training Centers (some 100 centers around the country responsible for developing methodological knowledge and skills of teachers through both pre- and in-service training)
School level	• School principals • School-based in-service teacher trainers (offering training and support to colleagues in schools)

Vanuatu
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(see full captions pp. 185-9)

psychosocial counseling; (5) post-disaster health care practices.

- Translation of the new syllabus material for pre-service teacher training into Sinhalese and Tamil following official approval of the new syllabus.
- Training for several instructors of each National College of Education before the introduction of the new syllabus by the Core Working Group.
- Training for some 400 in-service teacher trainers at school level for qualified staff of the National Institute of Education Training.
- Integration of school disaster safety components into in-service training programmes for school principals and education administrative staff by the Core Working Group.
- Training for 225 lecturers and instructors from the National Colleges of Education as well as school-based in-service teacher trainers in pedagogical methodology by the National Institute of Education.
- During the in-school training year, training teachers were obliged to conduct a school project on disaster risk management and school disaster safety.
- During the project, an informal inter-ministerial coordination group was established to support improved communication and transparent decision making processes.

A review of the project implementation revealed the following key factors contributing to the project's success:

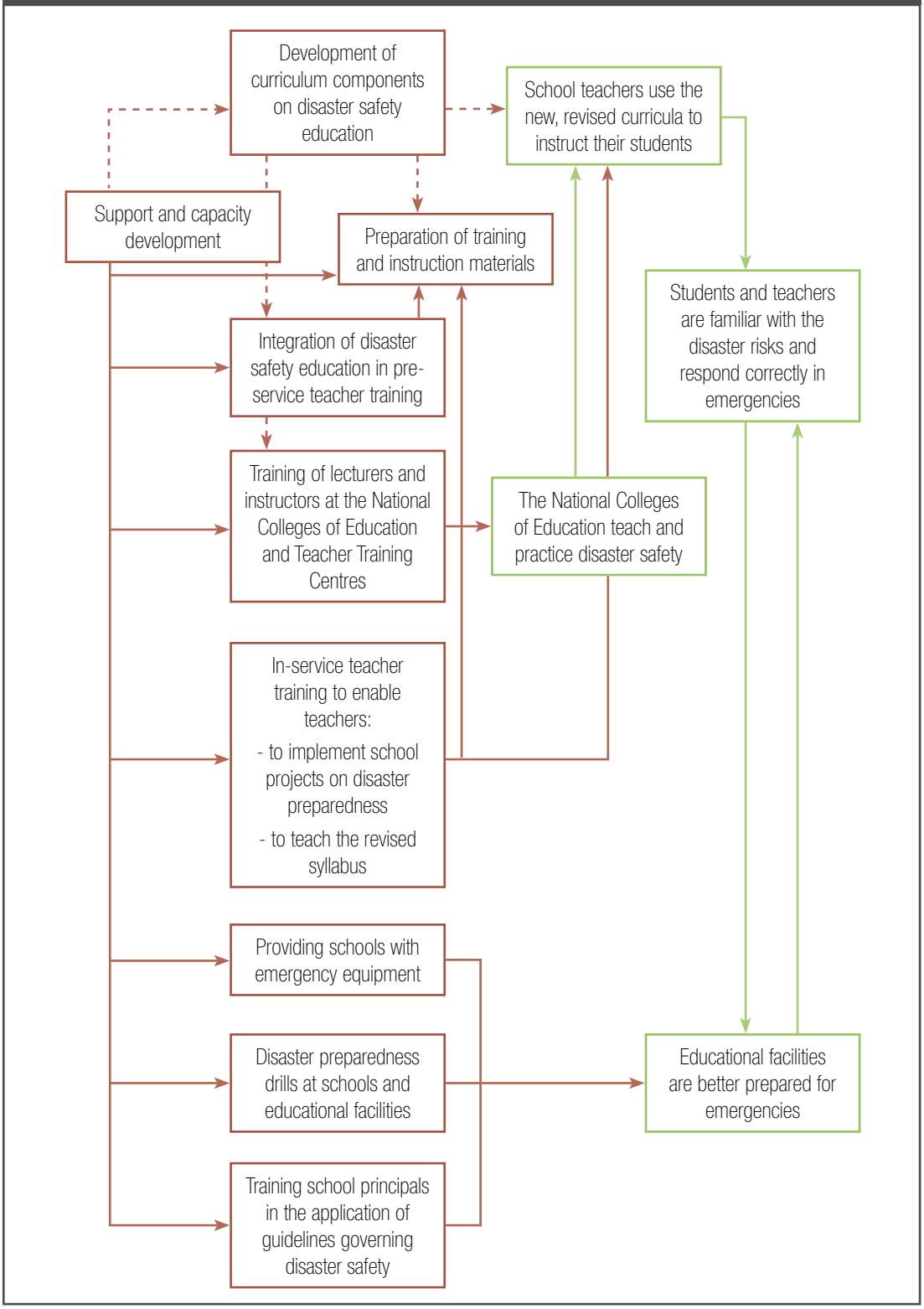
- Early buy-in of senior managerial personnel in the education sector through a training course; close intra- and inter-ministerial cooperation and collaboration mechanisms
- Integrating DRR elements into the existing structure of curriculum and school management; sensitivity to the conflict situation of the country and promoting peaceful coexistence (i.e., by ensuring balanced participation by all ethnic groups and minorities; making project materials available in three languages; ensuring gender balance among the project participants).

Although the project finished at the end of 2008, the disaster risk management component was integrated into the GTZ Education for Social Cohesion programme[76] to facilitate sustainable institutionalization and roll out pilot activities across the school system.

76 http://www.giz.de/themen/en/12404.htm

FIGURE 12.

Sri Lanka: Disaster Risk Management and Psychosocial Care in Schools Project Strategy



STRATEGIC POINTERS FOR CHAPTER SEVEN.

- → **Policy Makers/Curriculum Developers/Teacher Educators**: Link DRR professional development to the curriculum review/development/piloting process to maximize effect and save time/resources by creating synergies between them.
- → **Teacher Educators**: Avoid DRR teacher professional development being a one-off event by including and emphasizing training reinforcement and aftercare support elements within an overall programme for teachers; also provide linked principal and district inspector training.
- → **Teacher Educators**: In addition to DRR content-related information, ensure that DRR training for teachers and principals (1) offers immersion in different pedagogical approaches; (2) explores how to introduce DRR across the curriculum and how to connect what is learned in different subjects; (3) offers training in DRR learning assessment; (4) explains respective roles in the curriculum evaluation process.
- → **Policy Makers/Curriculum Developers/Teacher Educators**: Work on pedagogical institution DRR capacity building so that DRR professional development is integrated into existing pre- and in-service teacher training programmes and that programmes are enriched through DRR curriculum and pedagogical research.
- → **Teacher Educators**: Combine professional development in DRR with professional development in education for sustainable development, climate change education, life-skills facilitation and child-friendly learning in the appropriate context.
- → **Principals/District Officers**: Learn how to play a legitimizing and catalyst role in DRR curriculum and pedagogical development, and in how to take forward the process of your school becoming a DRR learning organization by taking part in training.
- → **Policy Makers**: Ensure early buy-in of senior ministerial and regional management personnel in the education sector through a DRR briefing, familiarization and/or training courses.
- → **Policy Makers**: Recognize systematic professional development as a critical element in mainstreaming DRR in the curriculum.

7.3 Selected Tools and Resources

- Global Facility for Disaster Reduction and Recovery (GFDRR). GFDRR Disaster Risk Management On-line Programme

  Visit the following websites for more information:

  - Arab Academy for Science, Technology and Maritime Transport: http://www.aast.edu/en/index.php
  - Earthquake Megacities Initiative: http://www.emi-megacities.org/home/training/ndrmp.html
  - National institute of Disaster Management: http://nidm.gov.in/default.asp
  - Middle East Technical University: http://sem.metu.edu.tr/

  Ten on-line courses capturing both theoretical and empirical aspects of disaster risk management: 1) Comprehensive Disaster Risk Management; 2) Safe Cities; 3) Damage and Reconstruction Needs Assessment; 4) Earthquake Risk Reduction; 5) Risk Sensitive Land Use Planning; 6)

Financial Strategies for Managing the Economic Impacts of Natural Disasters; 7) Community Based Disaster Risk Management; 8) Climate and Disaster Risk Management; 9) Gender Aspects of Disaster Risk Reduction; 10) Risk Analysis.

- INEE. 2009. *Applying the INEE Minimum Standards to Ensure Disaster Risk Reduction through Education*.
  http://www.preventionweb.net/english/professional/trainings-events/edu-materials/v.php?id=15283

  This is a 3.5-day training package targeted at education and disaster management stakeholders. The package includes a training guide with detailed session training notes, simulation sessions and presentations

- NWFP Directorate of Curriculum and Teacher Education Abbottabad. 2006. *Training Guide for Training Teachers in Earthquake Affected Areas*.
  http://www.teachereducation.net.pk/Manuals/Manual15.pdf (English Version)
  http://www.teachereducation.net.pk/Manuals/Manual16.pdf (Urdu Version)

  This practical guide, accompanied by a workbook and resource book, helps teachers use classroom approaches and exercises in contexts affected by earthquakes.

- UNESCO. 2012. *Climate Change in the Classroom: UNESCO Course for Secondary Teachers on Climate Change Education for Sustainable Development*. Paris: UNESCO.

  This 6-day training programme package is designed to enable secondary school teachers to integrate climate change content into their lessons using participatory pedagogies. Climate change is approached within a multidisciplinary frame addressing causes, impacts, ethics, mitigation, adaptation, gender, health, migration, lifestyle and DRR. The package includes: a conceptual framework with guidelines on facilitating participatory learning; 6 full day modules and facilitation support materials (handouts/PowerPoint slides); a regional climate change information pack for each of Africa, Asia, Small Island States, and Europe/North America; some 34 activities that teachers can use back in their own classroom.

- UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries*. Paris/Geneva: UNESCO/UNICEF.
  http://unesdoc.unesco.org/images/0021/002170/217036e.pdf

  Section 7, 'Teacher Professional Development in Disaster Risk Reduction Education' is particularly relevant to this chapter.

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Malawi
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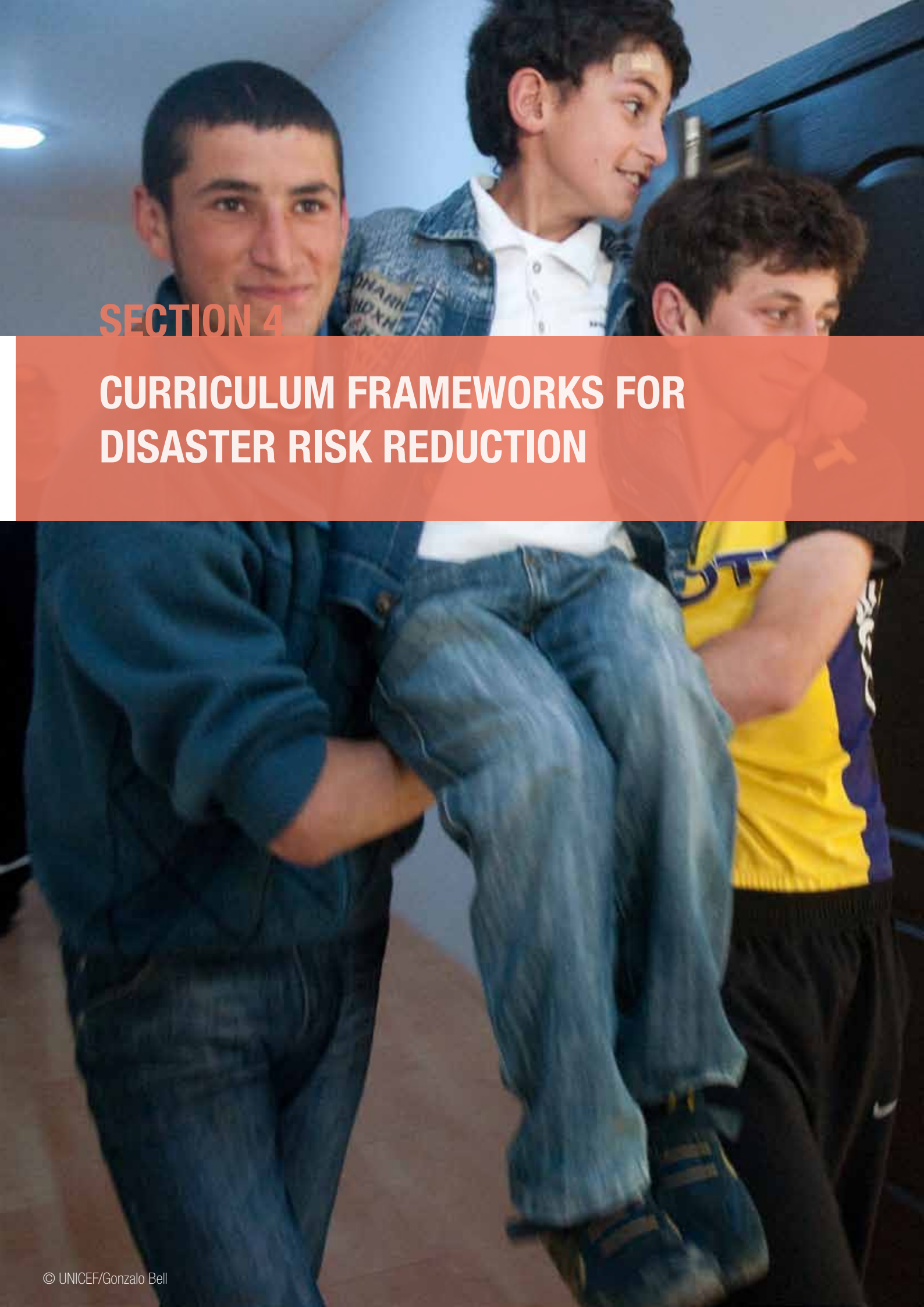


SECTION 4

CURRICULUM FRAMEWORKS FOR DISASTER RISK REDUCTION

Chapter 8
The Whole School Picture: Commingling DRR Curriculum and Safe School Management and Practice

First, this chapter examines the notion of learning communities or organizations for safety and resilience by presenting a whole school approach that embeds DRR campus, community and (institutional) culture in the curriculum. It then looks at the contribution different stakeholders can make towards fostering the DRR learning organization/community. Finally, two DRR school safety initiatives that would not normally have a curriculum manifestation are described to show how thoroughgoing links to curriculum, learning and teaching can be forged.

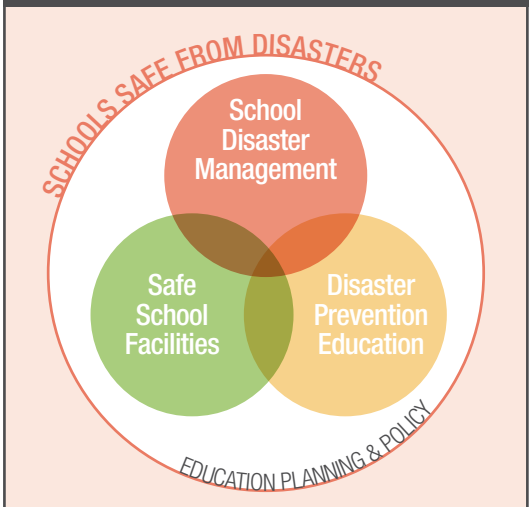
8.1 Learning Communities/ Organizations for Safety and Resilience

8.1.1 Comprehensive 3-Pillar Approach

Over the course of meetings held in 2010, the UNISDR Thematic Platform for Knowledge and Education (TPKE) reaffirmed its commitment to a comprehensive three-pillar approach to school safety from disasters. As represented in Figure 13, the pillars are seen as overlapping while being predominately distinctive. Each 'involves a significantly different set of decision-makers, developers, stakeholders and implementers as well as indicators, activities and actors responsible for implementation'.[77] Broadly speaking, the Safe School Facilities pillar is the primary concern of engineers, builders and technicians. The School Disaster Management pillar is the sphere of principals and school leadership. The Disaster Prevention Education pillar is primarily occupied by students and their teachers. The three pillars form the foundation for building an institutional culture of safety and resilience and therefore have implications for educational policy and planning at national and sub-national levels. Box 46 (next page) sets out a representative range of elements and activities falling within each pillar, as identified within a recent TPKE baseline study on school safety.

As the TPKE baseline report makes clear, the overlap between the Disaster Prevention Education pillar, on the one hand, and the Safe School Facilities and School Disaster Management pillars, on the other, is for the most part limited to the occasional co-curricular student learning experience and lacks representation in the curriculum. Curriculum opportunities are but rarely exploited. 'School construction and retrofit provide ideal opportunities for students and communities to learn the many principles of disaster resilient construction to be applied throughout their communities. This opportunity is typically wasted…and the experience is not used as a learning opportunity'.[78] 'School drills vary widely in efficacy' with schools 'failing to use the drill as a learning opportunity'.[79] There is a sense that the overlap between the educational

FIGURE 13.
A Comprehensive Approach to School Safety from Disaster



Source: Taken from UNISDR. 2012. *Assessing School Safety from Disasters – A Baseline Report.* Geneva: UNISDR Thematic Platform for Knowledge and Education. Geneva: UNISDR.

77 UNISDR. 2012. *Assessing School Safety from Disasters – A Baseline Report*. UNISDR Thematic Platform for Knowledge and Education. Geneva: UNISDR.

78 Ibid.

79 Ibid.

pillar and the safety and management pillars is one of latent potential rather than something commonly seen in practice.

BOX 46.

School Safety

Safe School Facilities

- Building codes and standards
- Safe site selection
- Hazards and vulnerability assessment
- Standard disaster-resilient designs
- Construction trades training and supervision for code compliance
- Verification, inspection, certification
- Retrofitting of education infrastructure

School Disaster Management

- System-wide policies, guidelines and standard operating procedures
- School-based safety committee
- School-based risk reduction and safety plans
- School disaster drills
- School continuity planning
- Staff capacity development

Disaster Prevention Education

- Holistic infusion of disaster prevention and risk reduction education into formal school curricula
- Expansion of regular extra-curricular disaster risk reduction activities to increase school and local community resilience
- Capacity development of teaching staff

Source: Taken from UNISDR. 2012. *Assessing School Safety from Disasters – A Baseline Report.* Geneva: UNISDR Thematic Platform for Knowledge and Education. Geneva: UNISDR.

8.1.2 The Holistic 4C Model

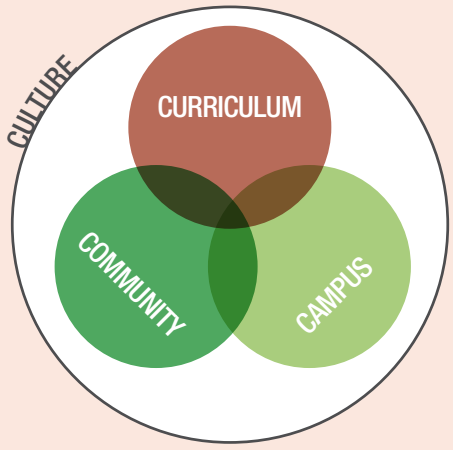
A second model, which is used within climate change education for sustainable development, can also inform a whole school approach to disaster risk reduction. The holistic 4C model (Figure 14) comprises three overlapping spheres – in this case curriculum, campus (the physical environment of the school and its grounds) and community - encircled by a fourth sphere, that of (institutional) culture.[80]

The curriculum sphere refers to infusion and integration of climate change and disaster risk reduction across the curriculum but is broadened to introduce new curricular elements arising from student engagement under the campus, community and culture headings.

80 UNESCO. 2012. *Climate Change in the Classroom: UNESCO Course for Secondary Teachers on Climate Change Education for Sustainable Development*. Paris: UNESCO.

FIGURE 14.

The Holistic 4C Model



Source: UNESCO. 2012. *Climate Change in the Classroom: UNESCO Course for Secondary Teachers on Climate Change Education for Sustainable Development.* Paris: UNESCO.

Under campus, curriculum elements might include:

- Involvement in processes to make the school carbon neutral.
- Developing and tending a food security garden of climate change resistant indigenous plants and food crops, interpreted and open to the community for awareness raising purposes.
- Installing and promoting use of water conservation and rainwater harvesting measures.
- Transforming unsustainable school practices (in building use, energy and resource use, procurement practices).
- Conducting and exhibiting school safety photographic surveys with community presentations.
- Researching the school's commitment to 'reduce, re-use, recycle' and mounting awareness-raising initiatives.
- Tree planting in the school grounds and monitoring the effects.

BOX 47.

India: Using Safety at School as an Entry Point for Disaster Risk Reduction Education

In India, UNDP has been promoting the introduction of disaster management education in schools. Some state Governments (e.g. Gujarat) have integrated such lessons into their curriculum while other states have yet to do so.

States that have had major or recent disasters have shown leadership in promoting DRR education. For example, the State of Kerala built DRR education around an integrated audit of the school covering both disaster aspects (i.e., floods and lightning) and safety aspects (i.e., traffic, chemical, electrical safety). The audit was conducted by professional safety and disaster management experts who were joined by a team of students from the school safety club. The members of the school safety club were chosen from various grades in the school and acted as champions, promoting safety issues in each class.

The audit report was prepared and approved by the safety audit team and submitted to the school management. This was followed by four kinds of action:

1. Structural changes by way of installing fences and other barriers on or around identified sources of hazards
2. Promoting key elements of safety relating to the school in all classes
3. Conducting a series of training events on key hazards identified (such as laboratory safety and first aid)
4. Promoting the messages in other schools by conducting a safety exhibition for schools in the region.

The initiative is to be repeated in 30 more schools in the region and is expected to achieve scale over five years starting from 2012.

Source: Muralee Thummarukudy, UNEP.

Under community, curriculum elements might include:

- Collecting oral histories of community members' hazard-related experiences.
- Hosting regular 'anticipatory democracy' forums at school where people raise their present and future hazard-related concerns, hopes and action ideas, with plans for action emerging.
- Holding periodic 'Student Hearings' at schools where students put their questions to local leaders and experts on safety and vulnerability issues, with the community and media in attendance.

Policy Makers/ Principals/ Teachers: The shifts described here are vital for fully realizing the fifth essential dimension of DRR learning (see 1.2.5, p. 8)

Under culture, curriculum elements might include:

- Student participation in and animation of a wide consultative process leading to a safe-school mission statement, management and/or action plan, participating in their periodic amendment and in mechanisms or arenas established to consider the quality of their implementation.
- Students taking responsibility for compiling and distributing a two-monthly broadsheet giving news of latest disaster risk reduction developments and issues.
- Students acting as researchers for the school disaster management committee or council, reporting their findings.

Policy Makers/ Principals/ Teachers: The shifts also align with ESD (1.3.1, pp. 8-10) and Child-friendly learning (1.5.3, pp. 17-18)

Culture is the encircling sphere relating to the nature of the school as an institution, its ethos, its management and decision-making style, the quality of teacher/student and student/student relationship, the degree of openness, the level of consultation, transparency and flexibility, the degree of receptivity to expressions of horizontal leadership (e.g., in which leadership on a particular issue can be raised from anywhere in the school). All of these elements will help determine the depth, richness and success of the culture of safety and resilience fostered by the school. For a significant degree of overlap to emerge between culture and curriculum, in which examples of student participation such as those outlined above find a natural curricular home, some key shifts in understanding may need to take place:

Principals: Play an enabling leadership role in school-based DRR safety developments by involving students as much as possible

- *A shift from seeing the school as a* ***teaching*** *organization to a* ***learning*** *organization (or learning community).* Such a shift requires that all members of the school community see themselves as potential learners open to learning from every facet of school culture and life, including its engagement on multiple fronts with disaster risk reduction. In a DRR teaching organization, some are teachers while most are learners. In a DRR learning organization, everyone involved is a learner.
- *A shift from inaccessible expertise to responsive expertise*. The frequent inability to link aspects of safe school and disaster management to curriculum arises, in part, from the perception that those engaged in technical aspects of safety and disaster management are not teachers and are neither able nor ready to pass on their knowledge and skill to children and others. These professionals must come to see that imparting what they know to others is integral to what they do and that they should also be open to ideas about their roles and activities as put to them by (inexpert) children and others. Similarly, principals can experience the 'magic' of management as they engage with children and others on school policy development, review the implementation of action plans, and so on.
- *A shift in the notion of who is the teacher.* While recognizing the pivotal and sustained

function of the designated teacher it becomes important to recognize that others – technicians, agency workers, non-teaching staff, community members, elders, parents, students – can take on the role of teacher within a learning community committed to developing a culture of safety and resilience.

- *A shift in perceptions of localized DRR curriculum*. Generally, the availability of localized elements of DRR curriculum is seen as giving permission to tailor nationally laid out disaster-related curriculum topics to the local or regional context. This implies that the curriculum focus emerges, in part, from within dynamic processes of engagement with issues of safety, vulnerability, resilience, adaptation and mitigation triggered within a DRR learning community comprising the school as well as the school within its surrounding community.

As these shifts are internalized, culture becomes curriculum just as campus and community become curriculum. The degree of overlap between the respective spheres of the two models presented in this section accordingly increases. These shifts will also nurture and help catalyze the idea of the child-friendly school in that they provide fertile ground for significantly higher levels of student participation and leadership as they pursue curriculum increasingly grounded in, and relating to their immediate, lived experience.

8.2 Contributions to the DRR Learning Community

Assuming widespread commitment to transforming the school into a learning community permeated by a culture of safety and resilience and that, within that culture, the school together with its community is seen as providing an ever-emergent DRR curriculum, what contribution could key actors make?

Children's potential contributions and how these can be realized through the curriculum are described in Box 48 and Table 6 (next page).

BOX 48.

Children's Contributions to DRR

- As analyzers of risk and risk reduction activities
- As designers and implementers of DRR interventions at community level
- As communicators of risks and risk management options (especially to parents, adults or those outside the community)
- As mobilizers of resources and action for community-based resilience
- As constructors of social networks and capital

These five broad types of contribution find their place across the subjects of the curriculum, enabling students to play both a critical and creative role in building safety and resilience in the school and its catchment area, as detailed in Table 6 (next page).

Source: Back, E., Cameron, C. & Tanner, T. 2009. *Children and Disaster Reduction: Taking stock and moving forward.* Brighton: UNICEF/Institute of Development Studies. p. 36.

Kazakhstan
© UNICEF/Gonzalo Bell
(see full captions pp. 185-9)

A useful exercise for curriculum developers and planners would be to ask whether planned subject curricula do, in fact, give students sufficient scope to utilize each type of contribution.

There are key contributions to be made by all stakeholders to building a DRR learning community in which campus, community and institutional issues become embedded in curriculum. Table 7, inspired by the Handbook for Child Friendly Schools (CFS) in Malawi, lays out these potential contributions.

TABLE 6.

Children's Contribution through Curricular Areas	
Modes of Contribution	**Examples**
Analyzers	• *Social Studies*: conducting school and community hazard surveys, mapping, assessments, transects • *Mathematics*: analyzing hazard and disaster statistics • *History*: drawing DRR lessons from past hazard events
Designers and implementers	• *Agriculture*: designing, planting, tending a preventative health garden • *Science*: collaborating with experts on campus resilience measures • *Geography*: mapping out, measuring and signposting evacuation routes
Communicators	• *Expressive Arts*: posters, displays, photography, videography, models to draw attention to risks and potential resilience growth points • *Language Arts*: newsletters, prose and poetry, oral presentations on DRR issues • *Performing Arts*: in-school and in-community formal and ad hoc drama, sketches, puppetry
Mobilizers	• *Citizenship*: actively contributing to DRR committees, councils and at public sessions • *Language Arts*: reporting on DRR events and sessions through postings and presentations • *Social Studies*: public awareness campaigns on DRR fault lines
Constructors	• *All Subjects*: creating DRR dedicated social networks to exchange DRR ideas and initiatives • *Geography*: building/maintaining open lines of communication with NDMO and other relevant bodies • *All Subjects*: peer tutoring of younger students on DRR issues

TABLE 7.

Key Stakeholder Contributions to Foster a DRR Learning Organization	
Key Stakeholders at School	**Roles and Responsibilities**
School Principal	• Provides overall leadership in embedding school safety initiatives in the formal curriculum, campus, community and institutional spheres and for maximizing the level of connectedness between all spheres • Encourages the participation of all students and all school staff members in curriculum-linked DRR campus-based and community-based learning opportunities • Knows and applies all relevant policies on school safety and DRR to overall school management and operation • Oversees special days on DRR to educate the whole school (and wider) community and makes sure the special day experiences are linked with formal learning • Leads the school community in creating and communicating a collective vision for whole school DRR learning • Creates spaces for open dialogue on DRR, ensuring sufficient opportunities for student participation in the school and local community • Mobilizes resources and promotes collaboration between the school and local community in order to achieve the school's intended DRR goals • Monitors whole school DRR learning (of students, teachers and non-teaching staff) • Sensitizes the PTA and School Management Committee/School Council/ Board of Trustees on the importance of linking DRR formal learning with safe school facilities, safe school management, and an overall school culture of safety and resilience • Engages actively and builds constructive partnerships with community organizations, local municipalities and traditional leaders to support student DRR learning
School Management Committee/ School Council/Board of Trustees	• Ensure training of teachers and student leaders on DRR and DRR applications in the school and community • Monitor and ensures evaluation of overall school performance on DRR with respect to school facilities, management and curriculum and, particularly, the quality and depth of inter-linkage between spheres • Develop special DRR programmes to actively support and motivate the whole school community towards achieving identified goals • Ensures effective and efficient management of resources within the school • Oversee the establishment of a School Safety Committee tasked with developing and updating a school safety plan, making sure that the plan covers each of the spheres of curriculum, campus, community and culture • Have student representation and ensure that students are well represented in all DRR arenas and developments and that in-curriculum learning opportunities generated are capitalized upon

Principals/ District Officials/ Teacher Trainers: Table 7 can be used as a tool to guide discussion amongst key school stakeholders directed at identifying and determining respective roles and responsibilities in transforming the school into a DRR learning organization

TABLE 7. continued

Teachers	• Integrate DRR in their lessons and how to embed campus, community and whole school DRR issues and initiatives in the curriculum • Facilitate DRR learning both inside and outside of the classroom • Bring DRR learning alive both inside and outside of the classroom by using a mixture of pedagogical modalities • Create a supportive learning environment where learners feel comfortable and motivated to participate and share knowledge and experience • Hold regular meetings with parents to exchange views on student achievement relating to DRR learning inside and outside of the classroom • Continuously improve their own teaching through their own reflection and learning, behaviour and projection of themselves as learning members of a learning organization
Students	• Are involved actively in active DRR learning inside and outside of the classroom • Pass on DRR messages to peers, home and local community • Observe school safety measures • Participate actively in school and school-in-community DRR forums and initiatives and see what they do as part of the curriculum • Fulfill a clear curriculum-linked change agency and change advocacy role • Teach each other about safe and protective rules and behaviors
Parent Teacher Association	• Ensures that the school has a school safety policy that is implemented, monitored and periodically reviewed, and is linked to formal learning • Works closely with communities and students to ensure that out-of-school children and youth are brought to school to participate in DRR learning • Provides support for DRR learning activities in school and in the community
District and Division Officials	• Provide schools with resource materials and latest information to enable them to understand and facilitate DRR learning • Provide schools with technical assistance to monitor and evaluate their whole school DRR learning • Assist school principals and School Management Committee/School Council/ Board of Trustees by providing technical support through consultation, training and capacity building on promoting whole school DRR learning • Ensure that school management know and understand departmental policies and practice relating to safe school and DRR • Coordinate the supervision and inspection of all aspects of DRR learning at school, including the dovetailing of curriculum and campus, community and whole-school DRR initiatives • Harmonize and share DRR learning initiatives taking place in the district • Develop inter-school/inter-community DRR links and dialogue

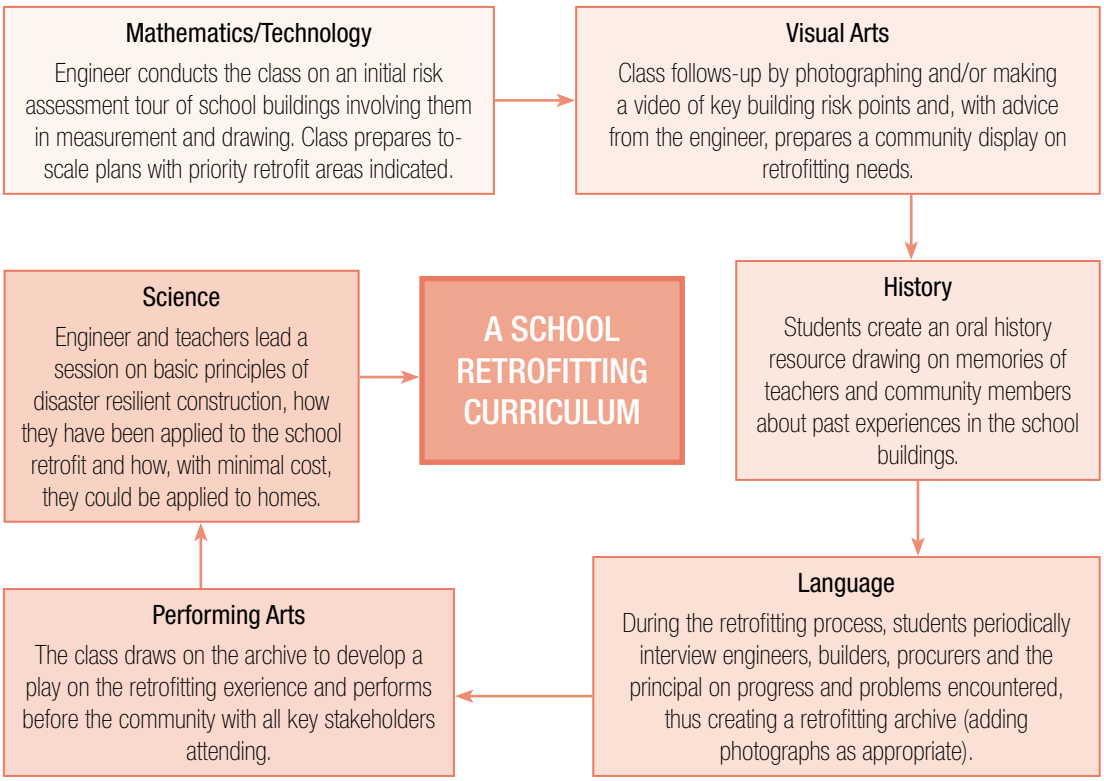
8.3 Translating School Safety and Disaster Prevention Measures into Curriculum

As touched upon earlier (p. 138), learning opportunities presented by safe school developments and school disaster management are rarely taken advantage of and where opportunities are exploited it tends to happen in co-curricular and/or extra- curricula rather than in their own curricular spaces.

Two examples of safe school and disaster risk reduction processes (Figure 15 and 16), both rarely receiving curriculum embodiment demonstrate how complementarities with curriculum can be forged. The first example concerns school retrofitting and the second, safe school policy development.

FIGURE 15.

A School Retrofitting Curriculum (exploiting the learning potential of engineers' process of improving the hazard resilience of existing school buildings)



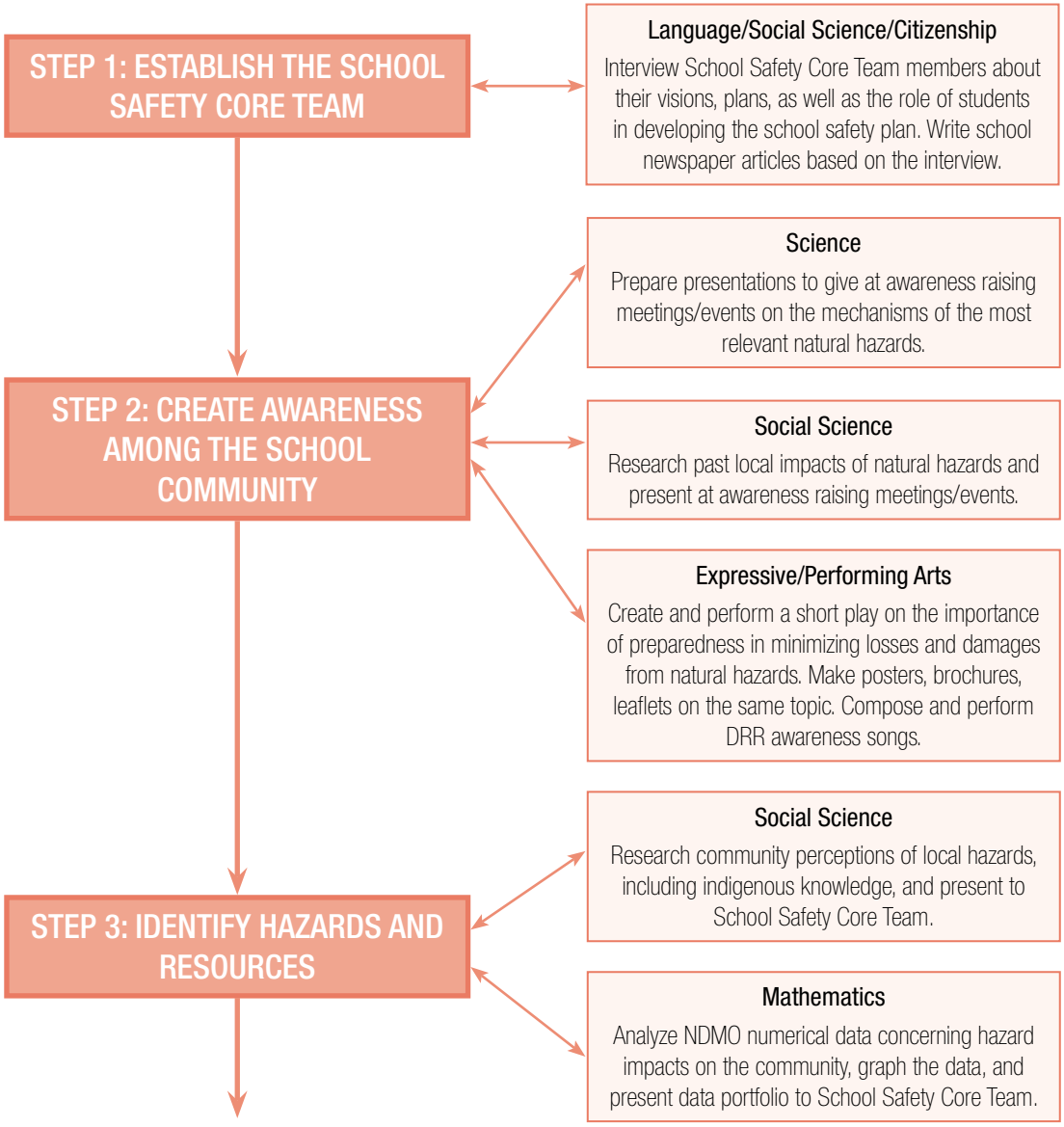
The seven steps for developing a school disaster safety plan as set out in Figure 16 have been developed by the Ministry of Education of Sri Lanka. The curriculum links suggested are inspired by, but not derived from the guidelines document where they appear.[81] They serve to illustrate how a school safety process not normally linked to curriculum can, in fact, feed into and from subjects across the curriculum.

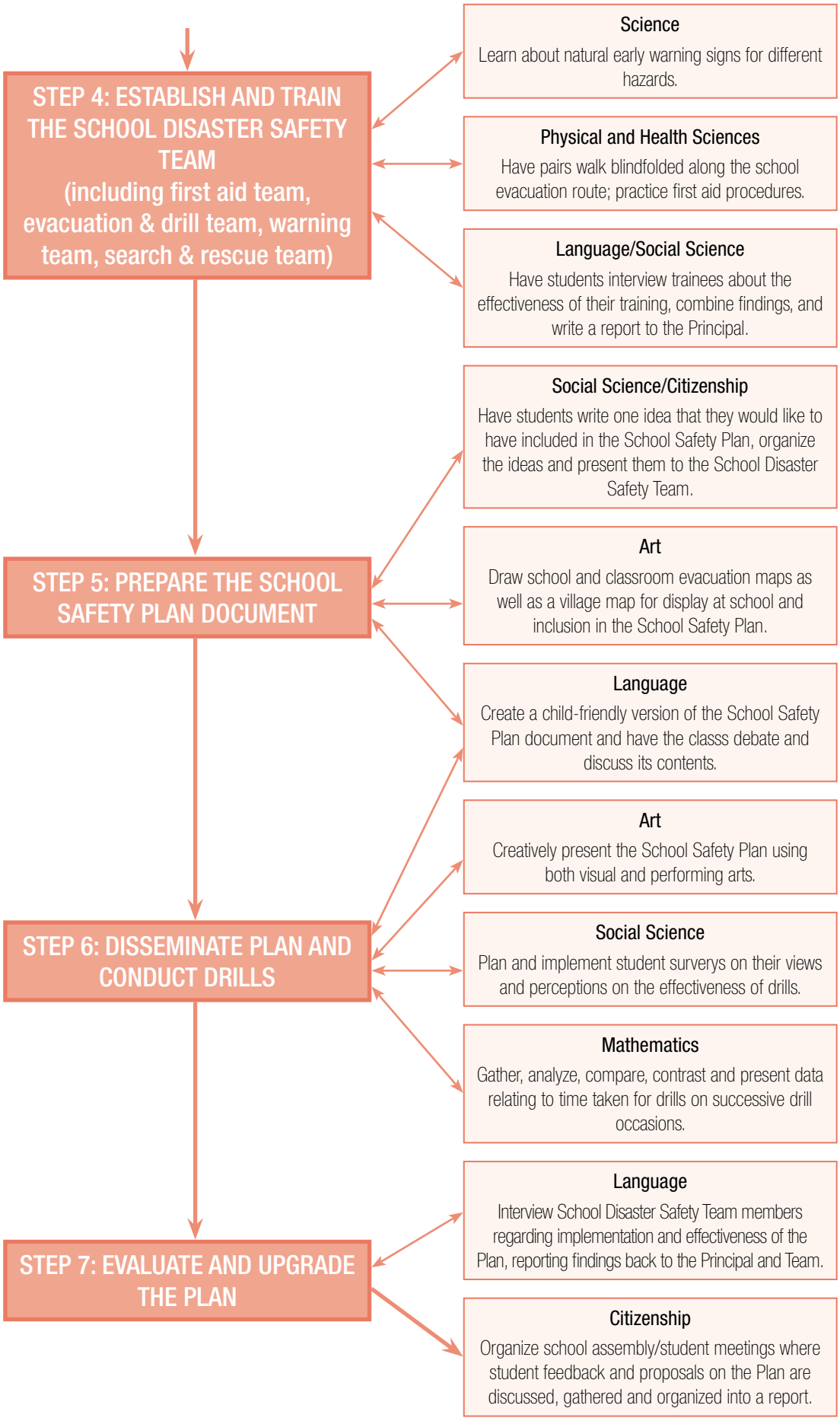
81 Ministry of Education of Sri Lanka. 2008. *Toward a Disaster Safe School: National Guidelines for School Disaster Safety*. Colombo: Ministry of Education of Sri Lanka.

FIGURE 16.

A School Safety Plan Curriculum (exploiting the learning potential presented by the development and implementation of a school safety plan)

The School Core ('Nuclear') Team is presented as a small group comprising the principal or vice principal, sectional head, teacher and member of School Development Committee. It has an overall leadership role in managing and coordinating the whole school disaster safety programme..





8.4 Selected Tools and Resources

- *Ahmedabad Action Agenda for School Safety*. 2007.
  http://www.preventionweb.net/english/professional/trainings-events/edu-materials/v.php?id=5146

  This Agenda adopted at the 2007 international Conference on School Safety in Ahmedabad, India, provides guiding principles and recommendations for further advancing the school safety agenda. The importance of DRR learning and practice in all aspects of children's lives - in formal, co-curricula, and community contexts - is emphasized.

- INEE/GFDRR World Bank/UNISDR. 2009. *Guidance Notes on Safe School Construction*.
  http://toolkit.ineesite.org/toolkit/Toolkit.php?PostID=1005

  These guidance notes provide a framework of both principles and general steps to develop context-specific disaster resilient construction and retrofitting of school buildings. The document is available in English, Bahasa Indonesia, Chinese, French, Hindi and Spanish.

- International Finance Corporation. Undated. *Disaster and Emergency Preparedness Guidance for Schools*. Washington DC: International Finance Corporation.
  http://www.preventionweb.net/files/13989_ifcdisasteremergencyhandbook63010.pdf

  This handbook helps school administrators and teachers understand structural and non-structural school safety issues and procedures.

- Ministry of Education of Education of Sri Lanka. 2008. *Toward a Disaster Safe School: National Guidelines for School Disaster Safety*. Colombo: Ministry of Education.
  http://www.preventionweb.net/files/25231_25100nationalguidelinesbookenglish1.pdf

  This document offers seven practical steps for developing a safety plan for schools in Sri Lanka (see section 8.3) and is applicable in other countries. It includes 'do's and don'ts' before and during hazards such as fire, lightning and thunderstorms, cyclones and floods, tsunami, earthquakes and bomb threats. An example of a school disaster safety plan is included.

- Ministry of Education, Science and Technology/UNICEF. 2008. *Handbook for Child Friendly Schools (CFS) in Malawi*. Malawi: UNICEF.

  Detailed indicators as well as distinctive roles that different stakeholders should play are articulated in each of the five characteristics of a child-friendly school model (1. rights-based and inclusive; 2. academically effective; 3. safe, protective and health promoting; 4. gender responsive, quality and equity promoting; 5. building linkages and partnerships with the community). This manual is also of help in developing whole school indicators for DRRE (see Chapter 10, pp. 184-99).

- UNICEF. 2009. *Child Friendly Schools Manual.* New York: UNICEF.
  http://www.unicef.org/publications/index_49574.html

  This comprehensive manual on child friendly schools is based on the principles of the Convention on the Rights of the Child. It helps those seeking to integrate DRR within the whole-school learning

STRATEGIC POINTERS FOR CHAPTER EIGHT.

- → **Curriculum Developers/Principals/Teachers:** Take advantage of opportunities to link safe school and school disaster management initiatives to formal curriculum.
- → **Curriculum Developers/Principals/Teachers: W**ithin the formal DRR curriculum, create opportunities for students to contribute to risk reduction and resilience building initiatives as analyzers; designers and implementers; communicators; mobilizers; constructors (see pp. 142-3).
- → **Principals/Teachers/District Officials:** Consciously work towards recreating the school as a DRR learning organization/community.
- → **Principals/Teachers/District Officials:** Enable all parties – children, parents, community members, school managers/trustees – to understand their role and play a part in the school becoming a DRR learning organization/community.

environment, guiding them on how to realize the notion of 'school as a learning community' in a context sensitive manner. Available in English, French and Spanish.

- UNICEF/UNISDR/EC. 2008. *Safe Schools in Safe Territories: Reflections on the Role of the Educational Community in Risk Management*.
  http://www.unisdr.org/we/inform/publications/8962

  This document was produced within the framework of the DIPECHO project, Strengthening Local Risk Management in the Educational Sector in Central America. It focuses on the notion of 'safe territory', 'territory' defined as 'the outcome of the ongoing interaction between human communities and the ecosystems of which they form a part'. The idea of the school as a promoter of territorial safety is advanced.

- UNISDR. 2010. *Guidance Notes: School Emergency and Disaster Preparedness*. UNISDR Asia and the Pacific.
  http://www.unisdr.org/files/15655_1msshguidenotesprefinal0313101.pdf

  A checklist guide for school administrators and teachers covering: school emergency and disaster preparedness committees; school emergency and disaster preparedness plans; the emergency responsibilities of stakeholders; emergency drills and exercises; first aid kits.

- UNISDR. 2012. *Assessing School Safety from Disasters – A Baseline Report: UNISDR Thematic Platform for Knowledge and Education.* Geneva: UNISDR.

  This desk review of existing reports concerning all aspects of school safety (i.e. safe school facilities, school disaster management, and disaster prevention and risk reduction education) offers critical analysis and recommendations for achieving the goal of comprehensive school safety.

Chapter 9
Scaling-up and Mainstreaming DRR Curricula

This chapter first examines different approaches for scaling-up DRR in the curriculum. It then describes the differences between going to scale and mainstreaming, and the various considerations when embarking on, negotiating and reviewing processes directed towards mainstreaming DRR curriculum integration. The enabling and disabling factors are then listed and discussion tools described for application within specific curriculum development/integration contexts. The chapter ends with short sections on web-based curriculum development and international collaboration as channels for mainstreaming.

Policy Makers/ Curriculum Developers: Chapter 9 offers vital guidance on DRR curriculum policy and strategy development

9.1 Going to Scale

'Going to scale' or 'scaling-up' refers to processes whereby a development or initiative spreads spatially and engages an ever-widening number of actors and proponents. The movement to scale may be within a community, through adoption across communities or, as often understood, may involve the implementation of the development or initiative at national, in some cases supranational, level.

Policy Makers/ Curriculum Developers: The Georgia case study (pp. 28-9, 58,123) and Sri Lankan case study (pp.130-3) are successful examples of DRR curriculum development primarily using the explosion approach to scale

There are a number of approaches to going to scale. One is commonly referred to as the *explosion approach or big bang approach.* This involves an initiative being suddenly and universally applied through national directive. Large, temporarily focused efforts are engaged for the development. The approach relies on the availability of sufficient funding. Maximum coverage is sought in the shortest possible time period. The programme is centrally conceived and 'although community participation and popular education may be considered central elements of the programme philosophy,'[82] the outcomes and implementation are given to communities with little or no tailoring to local contexts. A centrally determined, relatively standardized blueprint design is adopted.

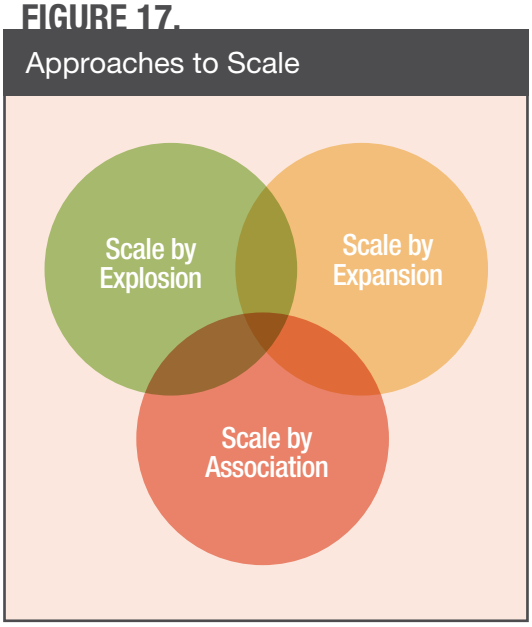
While the explosion approach can work well in cases where it replicates proven practice and where there are few components and variables, it has a number of potential drawbacks. Quality may be sacrificed for quick coverage; explosion does not generally embody a sufficiently extensive learning process to ensure thoroughgoing capacity adjustment; faults in the original conception can prove costly if not tested before implementation in the diverse contexts where the development will be applied.[83]

A second approach is usually described as the scale by e*xpansion or roll out approach.* Here a new programme is first developed and applied on a relatively small scale, adjusted in the light of experience and evaluation, and then replicated in a manageable number of new locations before spreading out in waves until the whole country is covered. A three-stage learning process parallels the roll out in which programme developers and implementers first *learn to be effective* (i.e., fix the problems in their programme), second, *learn to be efficient* (i.e., adopt means to bring the programme to more stakeholders, including through capacity training of personnel), and,

82 Myers, R.G. 1984. *Going to Scale*. A paper prepared for UNICEF for the Second Inter-Agency Meeting on Community-based Child Development, New York, October 29-31 1984. pp. 8-9.

83 Ibid. p. 9; UNICEF. 2009. *Child Friendly Schools Manual*. New York: UNICEF. 9.1.1.

FIGURE 17.
Approaches to Scale



third, *learn to expand* (i.e., develop or leverage the organizational capacity and capabilities for at-scale implementation.[84] The roll out approach offers latitude for learning from and through experience; it enables the working through uncertainties towards what works best; it offers fertile space for sensitivity to the particularities of context. 'This heuristic approach to scaling up may appear to be slower and less efficient, but it allows for applying lessons learned and making changes to improve the model as it is rolled out to more schools. It also avoids costly errors, which is especially important when available resources are limited.'[85] The approach can suffer from a lack of sufficient high-level commitment from the outset, and therefore require intensive financial and labor commitment in order to finally realize scaling-up. There has been a recurrent tendency in the DRR in education field of 'not thinking through what you will do, if you succeed'. Adopting an effective approach to expansion means thinking through the scaling-up process at the point of initial design.[86]

A third approach is to achieve *scale by association*. Here scale is achieved by grafting together previously independent projects or initiatives sharing similar and/or overlapping characteristics. Scale by association can happen by chance. Or, it can be supported with government funds in the knowledge that it is likely to cost less to implement than the big bang or roll out approaches.[87]

The principal approaches to movement to scale outlined here are by no means mutually exclusive and it is quite usual to use a hybrid mix of approaches for scaling-up DRR curriculum development, as evidenced by the examples and cases presented in the previous chapters. Examples of the symbiosis approach whereby DRR curriculum development is embedded within Life Skills, ESD and Environmental Education initiatives (pp. 11-7) involve scale by association but also amalgamate elements of scale by expansion. The Georgia Head of Class Hour programme development (pp. 28-9, 58,

84 Myers, R.G. 1984. *Going to Scale*. A paper prepared for UNICEF for the Second Inter-Agency Meeting on Community-based Child Development, New York, October 29-31 1984. pp. 7-8.

85 UNICEF. 2009. *Child Friendly Schools Manual*. New York: UNICEF. 9.1.1.

86 UNISDR. 2012. *Assessing School Safety fro Disasters – A Baseline Report*. Geneva: UNISDR Thematic Platform for Knowledge and Education.

87 Myers, R.G. 1984. *Going to Scale*. A paper prepared for UNICEF for the Second Inter-Agency Meeting on Community-based Child Development, New York, October 29-31 1984. pp. 10-11.

BOX 49.

Successful Change As Learning Experiences (SCALE)

A proponent of the expansion approach, FutureGeneratons, uses the acronym SCALE to denote Successful Change As Learning Experiences. The organization offers a 'biological' approach to scale that is sensitive to local ecology, culture and economics and in which change is first successfully developed within community contexts. Once capacity has been developed the original communities become regional training centers for neighboring communities. The network of training centers creates 'regional niches' of practice that, at a third stage, coalesce towards national coverage, sometimes 'like wildfire'.

Source: http://www.future.org/applied-research/process-change/going-scale

Policy Makers/ Curriculum Developers: The Timor Leste case study (pp. 128-9) offers a successful of scale by expansion

Policy Makers/ Curriculum Developers: The symbiosis approach to curriculum development described, with examples, in 2.3.1 (pp. 32-3) is a strong example of development primarily using scale by association for DRR curriculum mainstreaming

123), quickly implemented at scale, merges a significant element of scale by explosion with tempering elements of scale by expansion. The Sri Lankan Disaster Risk Management and Psychosocial Care in Schools project (pp. 130-3) employs features of expansion to scale within a frame of explosion to scale through teacher education provision.

9.2 Mainstreaming

The terms 'going to scale' and 'mainstreaming' are often used synonymously. But these terms, while closely related and considerably overlapping, are not the same. Going to scale is a project- or initiative-related notion in which particular products of the development in question achieve widespread take-up. Mainstreaming, on the other hand, is a more holistic or systemic notion in which key impulses, ideas, concepts and models driving the development are infused across all aspects of, for example, an education system including 'the processes and parameters that shape the system'. Educational policy, planning, curriculum implementation, staffing, training, management and leadership, supervision, monitoring, evaluation and reporting 'intrinsically embrace' the approach. 'The advantage offered by mainstreaming is that it promotes sustainability. The model becomes an integral part of the education system rather than a project that needs to be fully integrated into the system later as it takes hold in schools and districts'.[88] Essentially, mainstreaming is about creating the most widely and deeply conducive context for movement to scale.

88 UNICEF. 2009. *Child Friendly Schools Manual*. New York: UNICEF. 9.1.1.

BOX 50.

Six Areas Crucial to the Process of DRR Mainstreaming

Policy – where there is, optimally, full policy development understood and accepted across the organization

Strategy – where there is a comprehensive mainstreaming strategy based on an agreed conceptual framework and policy

Geographical Planning – where there is ongoing analysis of contextual variations in vulnerabilities and associated needs and priorities

Project Cycle Management – where DRR is routinely part of the stages of planning, implementation and evaluation

External Relations – where the 'public face' reflects DRR policy and strategy and there is collaboration with other key players and regional and global actors

Institutional Capacity – where there is capacity to take forward all the above-described areas

Source: La Trobe, S. & Davis, I. 2005. *Mainstreaming disaster risk reduction: a tool for development organizations.* Teddington (Middlesex): Tearfund. 4,10-15. http://www.tearfund.org/webdocs/Website/Campaigning/Policy%20and%20research/Mainstreaming%20disaster%20risk%20reduction.pdf

BOX 51.

The Philippines: Establishing a Strong Legal and Policy Framework for Mainstreaming DRR in Education

In response to the 2007-9 Mainstreaming DRR in the Education Sector (MDRD-EDU) project (see pp. 27-8,49-50), the Department of Education of the Government of the Philippines issued a departmental order to undersecretaries, assistant secretaries, bureau directors, directors of services/centers and heads of units, regional directors, schools city/division superintendents, and heads of public and private schools to prioritize the mainstreaming of disaster risk reduction management (DRRM) in the school system and ensure implementation of programmes and projects related to DRR.

With the passage of the Disaster Risk Reduction and Management Act of 2010 (RA 10121) - "An Act Strengthening the Philippine Disaster Risk Reduction and Management System, Providing for the National Disaster Risk Reduction and Management Framework, and institutionalizing the DRRM Plan, Appropriating Funds Therefor and for Other Purposes" - in May 2010, efforts to mainstream DRR were boosted. Implementing Rules and Regulations for RA 10121 were approved on September 2010 and the eventual approval of a National DRRM Plan (NDRMMP) in February 2012 further strengthened the National Disaster Risk Reduction and Management Council (NDRRMC) and the Department of Education's mandate for integrating DRR in curriculum and schools.

RA 10121 provides a legal basis for policies, plans and programmes to deal with disasters, outlining activities aimed at strengthening the capacity of national and local government to build disaster resilient communities, enhance disaster prevention/mitigation and preparedness and response capabilities at all levels, and institutionalize arrangements and measures for reducing disaster and climate risks. With this stronger legal mandate, disaster management in the country shifted from a reactive to more proactive ethos.

Section 4 of RA 10121 specifically included provision for the development of policies, plans, actions and measures pertaining to knowledge building and awareness raising (Section 4) and the integration of DRR education in school curricula at secondary and tertiary levels, in the National Service Training Programme (NSTP), in mandatory training in DRR for public sector employees, in formal and non-formal vocational and indigenous learning and in out-of-school youth courses and programmes (Section 13). It also provided for the establishment of at least three training institutes for continuous and sustained DRR education.

The NDRMMP serves as the roadmap for mainstreaming disaster risk reduction and climate change adaptation in development processes such as policy formulation, socio-economic planning, budgeting and governance, including in the education sector. In such processes, disaster practice has moved from a single hazard to a multi or all-hazard approach while the focus has become inter-sectorial, inter-agency and an all-government. One dimension of this shift has been the early review of the 2009-19 Strategic National Action Plan so it reflects the new DRR vision and strategic objectives.

BOX 51. continued

To support DRR mainstreaming in the education sector a Build a Safe Learning Environment project has been conducted (2007-8) under the auspices of the Safe Schools Programme of the Department of Education. In partnership with the Education in Emergencies Cluster and the NDRRMC, the project involved validating teams being assigned to areas to monitor and boost school safety through a combination of observation, comparison of findings, discussions/ recommendations and dialogues with elementary and secondary students, their parents and teachers.

Under the new arrangements, each national agency is mandated to formulate its own DRRM Implementing Plan and manual of operations. Using RA 10121 as the legal framework, the Department of Education has established a DRRM Core Group composed of the Central Office key officials. The Group offers an arena for discussing DRRM and Education in Emergencies issues, and for recommending policies, programmes and projects for disaster risk reduction.

The Department of Education has also created a DRRM Office (DRRMO) that is becoming the focal point in mainstreaming DRR in the education system and in fostering a system-wide culture of safety. The DRRMO has reviewed and revised subject curricula so as to better utilize opportunities for addressing disaster- and climate change-related issues. At the time of writing, the DRRMO is formulating a monitoring and assessment tool that can be used to further evaluate and assess the impact of projects, programmes and interventions on education for disaster risk reduction and climate change adaptation.

Source: Response to authors' query on status of mainstreaming of disaster risk reduction in the education sector in the Philippines submitted on their behalf by ADPC, June 2012.

9.3 Things to Consider in the DRRE Scaling-Up/Mainstreaming Process

See Box 53 (pp.166-8) for indicators linked to the ten main areas of performance

An ASEAN Knowledge Sharing Workshop on *Mainstreaming Disaster Risk Reduction in Education*, held in Malaysia in February 2011, identified ten main 'areas of performance' in any DRR curriculum mainstreaming process. They are listed and elaborated below.

1. Political commitment and support, with coordination mechanisms in place involving relevant bodies
   - Multi-sectorial national disaster management committee usually with prime minister as chair
   - Technical working group with focus on DRR mainstreaming
   - Clearly demonstrated government commitment
2. Establishing a legal mandate and regulations for DRR in the school curriculum
   - National legislation in place to expedite DRR mainstreaming
   - Associated compliance and accountability mechanisms in place
3. National DRR policies and plans
   - DRR education policies issued separately by the Ministry of Education or incorporated in comprehensive national DRR plans

- Corresponding allocation of resources
- Clear cross-departmental understanding and commitment to policy

4. Multi-sectorial committee (or equivalent) in place to spearhead mainstreaming of DRR in the curriculum
   - Committee a collaboration between the ministry of education and the national disaster management organization, with others
   - Committee has authority, resources and the ability to implement
   - Implementation on the ground through a technical working group
5. Using the national curriculum process to mainstream DRR
   - Institutionalization of DRR by harmonizing development with established curriculum review and development cycle
   - Development of curriculum including identification of learning outcomes
6. Development of curriculum materials on DRR and pilot testing
   - Instructional materials of sufficient quality developed and approved
   - Materials pilot tested and validated following training of pilot teachers
7. DRR in co-curricular and extra-curricular activities
   - Inclusion in the school calendar of co- and extra-curricular programmes
   - Allocation of time and resources for the programmes
8. Non-formal education activities in DRR
   - Inclusion of DRR in community-based activities and alterative learning programmes
9. Teacher training and professional development
   - Teachers properly trained to deliver DRR as part of the school curriculum
   - Resources in place to support the training (handbooks, manuals)
   - Long-term capacity development programme for teachers in place
10. Assessing student knowledge on DRR/evaluation of effectiveness of instruction
    - Mechanisms in place to comprehensively assess students' knowledge and skills development as the result of DRR-enhanced curriculum
    - Assessment and evaluation of outcomes shared with those responsible for drafting and revising the curriculum.[89]

The OECD Policy Handbook on Natural Hazard Awareness and Disaster Risk Reduction Education focuses not so much on the mechanics of movement to scale and mainstreaming but on the communication qualities and styles called for in creating a climate conducive to consensual scaling up of DRR.

- Messages should be clear, consistent and persistent: 'a consensus message from a broad array of trusted sources, can be crucial to effective risk reduction'
- Non-technical language: using everyday terms and concepts in the public domain
- Messages should put disaster risk into perspective: so reducing the emotional impact of hazard
- Promotion of both awareness and action: what is said should be immediately actionable rather than disempowering with

89 ASEAN/UNISDR. 2011. *Disaster Resilience Starts with the Young: Mainstreaming Disaster Risk Reduction in the School Curriculum*. Jakarta: ASEAN.

Policy Makers/ Curriculum Developers: Return to 3.2 (pp. 41-5) for discussion of the importance of multi-sectorial partnerships

Policy Makers/ Curriculum Developers: For learning outcomes development, return to Chapter 4 (pp. 61-84)

Policy Makers/ Curriculum Developers: For curriculum development processes, return to Chapter 3 (pp. 40-60); for development of instructional materials, return to Chapter 5 (pp. 85-108)

Curriculum Developers/ Teacher Trainers: For teacher professional development, return to Chapter 7 (pp. 122-36)

Policy Makers/ Curriculum Developers: Go ahead to Chapter 10 (pp.163-81) for monitoring and evaluation mechanisms

a problem-solving rather than rules-based approach generally employed

- Engaging format: engaging, attractive and interactive public education materials employing a range of innovative strategies for engagement
- Positive, empowering and accurate examples: positive, empowering and faithfully-described examples of disaster risk reduction are preferable to images of destruction
- Targeting of multiple audiences: public awareness and education activities that give positive images of women, children and minority groups and that reach vulnerable sub-populations are vital
- Multiple dissemination strategies: multiple communication modalities can help shift people from contemplation to action to development
- Long-term strategic planning: collaborative multi-messaging from various governmental bodies, corporate leaders, civil society organizations and educational institutions.[90]

In their endeavors to scale up and mainstream their work, DRR curriculum developers are certain to encounter enabling factors that will smooth and advance progress as well as disabling factors that will inhibit, impede and disrupt, progress. Some key enabling and disabling factors are highlighted in Table 7. The factors are drawn together under three categories: Resources and Information; Political Will, Leadership and Structures; Process. The list is by no means exhaustive.

9.4 Web-based approaches to Scaling-up DRR curriculum

Web-based DRR curriculum development can keep pace with, even surpass, the explosion approach to going to scale given the speed with which it reaches teachers and students as well as the numbers reached with relatively low resource allocation.

In Turkey an online *Basic Disaster Awareness in Turkish School*s project took place between 2003 and 2005 involving collaboration between the Ministry of Education, Boğaziçi University, Kandilli Observatory and the Earthquake Research Institute and funding by USAID. With free online registration, it aimed at allowing school teachers to learn the rudiments of individual and family disaster preparedness through a 4-hour self-study curriculum. Two thousand five hundred volunteers took this initial online training, which served as a filter for selecting 100 instructor trainers for a week-long face-to-face training. Instructor-trainers and trainers then used the portal to report on cascading workshops delivered face-to-face to teachers nationwide. By 2012 voluntary efforts had provided and reported on delivery of face-to-face awareness seminars to an estimated 294,000 teachers.[91] In 2010-11 the Ministry of Education in Turkey put up its own e-learning portal. The first offerings were developed with the Ministry by Risk RED with support from the American Red Cross and Boğaziçi University. Two complete interactive online self-study courses (a total of twenty 45-60 minute lessons) were offered on Individual and Household Disaster Preparedness and School Disaster and Emergency Management. Registration is

90 OECD. 2010. *Policy Handbook on Natural Hazard Awareness and Disaster Risk Reduction Education.* Organization for Economic Co-operation and Development. 23-4. http://www.oecd.org/dataoecd/24/51/42221773.pdf

91 Basic Disaster Awareness in Turkish Schools Online Program. http://www.koeri.boun.edu.tr/aheb/memlogin.htm

TABLE 8.

Enabling and Disabling Factors in Scaling-up/Mainstreaming DRR Curriculum		
	Enabling Factors	**Disabling Factors**
Resources and information	Sustained funding flow	Funding for scale not available or cut off
	Essential resources and information made available to all stakeholders in appropriate form at all key points in movement to scale	Essential resources and information not delivered to stakeholders in appropriate form at key moments in movement to scale
Political Will, Leadership and Structures	Proactive political commitment and partnership ethic on the part of all key stakeholders	Territoriality, passive or reluctant commitment on the part of one or more key stakeholders
	Legal and regulatory systems in place to enable mainstreaming of DRR curriculum	Legal and regulatory systems do not exist to enable mainstreaming of DRR curricula
	Quality, commitment and vision of pre-scale leadership demonstrated by leadership at all stages of movement to scale	Failure to translate quality, commitment and vision of pre-scale leadership to support and guide scaling-up process
	A clear national policy and strategy to mainstream DRR curriculum supported by known and understood national coordination mechanisms	A lack of clear national policies and strategies to mainstream DRR curriculum and imprecise, ill-understood national coordination mechanisms
Process	Broadly conceived professional development aimed at active, sustained and reflective capacity building	Narrowly conceived (e.g., technical tips) one-off event capacity building or no capacity building
	Pre-scale sense of participation and ownership retained by those involved during scaling-up process	Pre-scale sense of participation and ownership not replicated during scaling-up process
	Challenging nature of DRR innovation embraced at successive levels during scaling-up process	Challenging nature of DRR innovation becomes threatening, leading to 'watering-down' at the higher political levels
	At-scale initiative signals that local and regional contextual adaptation should be accommodated and welcomed	A 'one size fits all' approach to curriculum development not allowing for local and regional adaptation
	Anticipation and active pre-emption of barriers to movement to scale	Failure to anticipate and pre-empt barriers to movement to scale
	Informed movement to scale (i.e. guided by lessons learned through pre-scale monitoring and evaluation and research) built into advocacy and practice	Failure to monitor, gather data, evaluate and research DRR curriculum innovation leading to uninformed advocacy and practice
	Coordination and dissemination mechanisms for good practice are in place	Initiatives remain in isolation and there is a lack of interplay and synergy between them
	Working in step with the national cycle of curriculum review and development	Working out of step with the national cycle of curriculum review and development

Policy Makers/ Curriculum Developers: Be aware of enabling and disabling factors from the outset of DRR curriculum development

Source: Adapted from UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curricula. Case Studies from Thirty Countries.*. p. 57.

DISCUSSION TOOL 9.

DRR Curriculum Scaling-up/ Mainstreaming SWOT Analysis

In a group, first examine and discuss Table 7 (p. 158) on enabling and disabling factors in DRR curriculum scaling-up/mainstreaming. Use the SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis framework below, copied on a large sheet of chart paper, to examine current DRR curriculum scaling-up/mainstreaming efforts in your own context.

Strengths	Weaknesses
Opportunities	Threats

After brainstorming and writing down ideas under each section, discuss the following points:

- Ways in which to strengthen strengths
- Ways in which to seize opportunities
- Ways in which to minimize weaknesses
- Ways in which to counteract threats.

Then further discuss and develop strategies and action plans. Also discuss roles and responsibilities among different stakeholders.

DISCUSSION TOOL 10.

Tackling Disabling Factors in Scaling-Up/Mainstreaming

Examine Table 7 and choose one disabling factor that you hold to be most serious and urgent for your own DRR curriculum scaling-up/mainstreaming efforts (or create your own, if none of the factors faithfully capture your most serious and urgent problem). Use the Problem Tree Analysis exercise (p. 54) and then work on the Objective Tree analysis exercise (p. 55) to discuss the root causes and come up with strategies and actions.

through administration ID or school ID.[92] Both on-line programmes received endorsement from the Ministry of Education although they were not made mandatory. Within the first six months of offering this online programme 10,000 teachers had voluntarily completed all lessons in each course and at least 75,000 users had collectively completed 250,000 lessons.[93]

New Zealand has also created a web platform for DRR roll-out in schools across the country through the Ministry of Civil Defence and Emergency Management's *What's the Plan Stan?* (WTPS) teaching and learning resource aimed at both teachers and students (see Box 33, p. 104).[94]

'E-learning self-study and online curricular resources are effective for scaling-up teacher training and student outreach. For education authorities where schools number in the thousands and staff in the tens of thousands, cascading models of instruction are prohibitive in terms of resource allocation and technical competency. Online instruction affords the ability to reach a broad group of teachers (and students) with consistent foundational content, which can then be applied and enriched with local context.'[95]

9.5 International/Regional Collaboration Support to Mainstreaming

The burgeoning number of regional and sub-regional partnerships for disaster risk reduction shows that such partnerships can make a significant contribution to mainstreaming.

Policy Makers/ Curriculum Developers: Make full use of global networks and partnerships for DRR curriculum development (Box 17, p. 47)

An early example was the 2004-9 three-country initiative of the Regional Consultative Committee (RCC) on Disaster Management directed at integrating DRR in the lower secondary school curriculum. Comprising the heads of 26 Asian disaster management offices, RCC launched a Mainstreaming Disaster Risk Reduction into Development programme with education as one of five priority sectors. Lao PDR, Cambodia and the Philippines expressed interest in taking up a priority implementation partnership (PIP) to mainstream DRR in education by incorporating disaster risk reduction in the school curriculum and promoting hazard resilient construction of school buildings. The PIP led to significant curriculum development in each country. Mainstreaming DRR curriculum efforts have been guided by the regional road map laid down by the 2007 *Ahmedabad Action Plan for School Safety* and the 2007 *Bangkok Action Agenda*.[96]

Refer back to Box 8 (p. 25) and 3.6 (pp. 56-9) for RCC PIP

92 *School Disaster & Emergency Management* online program. http://uzaktanegitim.meb.gov.tr/faces/Oys01001.jsp

93 This section on Turkey is based on information provided by Marla Petal and Zeynep Turkmen, Risk RED

94 http://www.whatstheplanstan.govt.nz/eaethquake.html

95 UNISDR. 2012. *Assessing School Safety fro Disasters – A Baseline Report*. Geneva: UNISDR Thematic Platform for Knowledge and Education.

96 Rego, L., Bhatia, S., Magyi, K.M., Anisur, R. & Roy, A.S. 2007. Mainstreaming Disaster Risk Reduction (DRR) into Education Sector, in *Asian Disaster Management News*,13,3, 1-3.; MOE/NDMO/UNDP/ADPC/ECHO. 2010. *Mainstreaming Disaster Risk Reduction in the Education Sector in Lao PDR*; MoEYS/NCDM/UNDP/ADPC/ECHO.2010. Mainstreaming Disaster Risk Reduction in the Education Sector in Cambodia; DepEd/NDCC-OCD/UNDP/ADPC/ECHO.
Undated. *Mainstreaming Disaster Risk Reduction in the Education Sector in the Philippines*.

A more recent example has been the establishment of a Regional Thematic Platform for DRR safe school and curriculum development in Latin America and the Caribbean. Education ministers and senior officials attending the Latin American Conference on Disaster Risk Reduction in the Education Sector in Panama City, October 2011, expressed strong commitment to advancing a safer schools agenda and integration of DRR into the school curriculum. In a joint declaration, the ministers of education and other governmental delegates pledged themselves to regional collaboration for DRR education by constituting 'a Regional Thematic Platform for disaster risk management in the education sector' and by strengthening 'coordination and cooperation links between the ministries and secretariats of education in Latin America and the Caribbean in regard to disaster risk management'.

Such forms of collaboration and partnership can be catalytic in a number of regards. First, they can create a deeper sense of ownership of the mainstreaming process on the part of ministries of education and national disaster management organizations, not least through having to report on progress to ministerial peers of partner nations. Second, an international commitment to mainstreaming can bring additional energy to the realization of domestic commitments, not least because of the 'competition within collaboration' that tends to be a feature of goal-oriented international agreements. Third, arenas of collaboration offer opportunities for a sharing and subsequent mimicking of noteworthy mainstreaming practice. Fourth, there can be beneficial resource-sharing and cost-sharing aspects to regional curriculum development.

9.6 Selected Tools and Resources

- Asian Disaster Preparedness Centre (ADPC). 2007. Mainstreaming Disaster Risk Reduction into Education Sector. *Asian Disaster Management News*, 13: 3. http://www.adpc.net/v2007/ikm/ONLINE%20DOCUMENTS/downloads/2008/Mar/ADPCnewsletterSepDec2007Vol13No3.pdf

  This issue showcases practices to help the mainstreaming of disaster risk reduction in education in the Asia and Pacific region by highlighting initiatives in Cambodia, Fiji, India, Indonesia, Iran, Lao PDR, New Zealand, Philippines, Sri Lanka, Turkey, Uzbekistan, and Vietnam.

- Asian Disaster Preparedness Centre (ADPC). 2007. Regional Consultative Committee on Disaster Management (RCC) Programme on Mainstreaming Disaster Risk Reduction into Development (MDRD). I*ntegrating Disaster Risk Reduction into School Curriculum: Consultation Version 3.1*. Pathumthani, Thailand: Asian Disaster Preparedness Center. http://www.preventionweb.net/files/4006_ADPCEducGuidelineConsultationVersion3.1.pdf

  After a brief exploration of reasons for teaching disaster risk reduction in school and discussion of DRR integration in the school curriculum, four key approaches to mainstreaming DRR in curriculum are reviewed as well as six implementation steps (see 3.6, pp. 61-3) with supporting case study examples.

STRATEGIC POINTERS FOR CHAPTER NINE.

- → **Policy Makers/Curriculum Developers:** Consider scaling-up/mainstreaming strategies/ implications from the very outset of DRR curriculum development and design
- → **Policy Makers/Curriculum Developers:** Decide the best mix of scale by explosion, expansion and association for your context
- → **Policy Makers/Curriculum Developers:** Systematically consider and plan for the 'ten main areas of performance' in DRR curriculum development (9.3 pp. 155-7)
- → **Policy Makers:** Pay attention to effective communication qualities/styles to apply to the DRR curriculum scaling-up/mainstreaming process (p. 157)
- → **Policy Makers/Curriculum Developers:** Address the enabling and disabling factors in scaling up/mainstreaming DRR curriculum (Table 7, pp. 158) in your context and creatively and resourcefully consider how to capitalize on the former and pre-empt or steer around the latter
- → **Curriculum Developers:** Consider web-based DRR curriculum development and professional development as an option for scaling-up by explosion involving relatively low resource allocation
- → **Policy Makers/Curriculum Developers:** Take full advantage of international and regional collaborative mechanisms to support mainstreaming

- ASEAN/UNISDR. 2011. *Disaster Resilience Starts with the Young: Mainstreaming Disaster Risk Reduction in the School Curriculum*. Jakarta: ASEAN Secretariat. http://202.46.9.39:8889/Portals/0/dis-res-young-asean-lowres-final.pdf

  This document lists key questions to be asked about mainstreaming DRR curriculum and provides indicators for assessing progress towards mainstreaming according to the ten performance areas (see 9. 3, pp.176-7, and 10. 2, Box 51, pp.188-90).

- UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries*. Paris/Geneva: UNESCO/UNICEF. http://unesdoc.unesco.org/images/0021/002170/217036e.pdf

  Section 9, 'Integrating Disaster Risk Reduction in the Curriculum; Other Aspects of Policy, Planning and Implementation' is particularly relevant to this chapter.

Chapter 10
Monitoring and Evaluating Change: Towards Continually Informed and Revitalized Practice

This chapter provides insight and guidance on the need for monitoring and evaluation of curriculum change before exploring the nature and use of indicators. It then gives examples of the application of indicators to DRR curriculum development/integration monitoring and evaluation. The chapter further provides guidance on data collection tools and conducting an evaluation, outlining the need and benefits of stakeholder engagement in monitoring and evaluation processes. Finally, it draws out important linkages between the notions of the reflective practitioner and the DRR learning organization/community.

Policy Makers/ Curriculum Developers: Return to 3.1.4 (p. 41) for earlier discussion of the place of monitoring and evaluation in curriculum development

10.1 Why Monitor and Evaluate Curriculum Change?

Monitoring and evaluation are integral aspects of curriculum development. They need to be considered from the outset of the curriculum development process and included in the different stages of curriculum change. They need to be planned and conducted strategically and thoroughly to keep track of the progress of interventions, and inform future curriculum directions, including decisions relating to scaling-up. They provide the 'means of driving forward the dynamic process of change'.[97]

Monitoring and evaluation of curriculum change are linked exercises but with some differences. Monitoring is the routine tracking of the process of curriculum intervention through on-going data collection guided by the intended plan, goals and objectives. It is conducted over an extended period of time and records whether planned activities are being carried out or deviated from and in what way(s). Monitoring gives opportunities for those who are involved to learn from experiences and improve on-going activities in a timely manner. It provides information and evidence for accountability and advocacy.[98]

Curriculum Developers: Turn back to 3.4 (pp. 48-51) for discussion of needs assessment and baseline research

Curriculum evaluation involves more in-depth study that makes value judgments on a part, or on parts all of a curriculum development initiative by collecting evidence. Process evaluation, done along with monitoring, collects data to measure how well intended curriculum activities are being delivered. It assesses the on-going quality and scope of curriculum intervention implementation. Outcomes and impact evaluation determine whether and to what extent intended outcomes have been achieved; whether changes resulted from the curriculum intervention and what these were; whether curricular interventions have influenced the knowledge, attitudes, skills and behaviours of the targeted audience.[99]

97 UNICEF. 2009. *Child Friendly Schools Manual.* New York: UNICEF. Chapter 8.5.

98 UNICEF. 2006. *Education in Emergencies: A Resource Tool Kit. Kathmandu:* UNICEF ROSA; UNICEF. 2009. Child Friendly Schools Manual. New York: UNICEF. Chapter 8.

99 Ibid.

BOX 52.

Widely-Used Programme Evaluation Criteria

- Relevance: What is the value of the intervention in relation to other priority needs, issues and efforts?
- Effectiveness: Is the activity achieving satisfactory progress set against stated objectives?
- Efficiency: Does the programme use the least costly resources to achieve its results in the given context?
- Impact: What are the results of the intervention, including the social, economic and environmental effects on individuals, communities and institutions both in the short and long term?
- Sustainability: Will the activity and its impact likely continue when external support is withdrawn, and will it be replicated or adapted?

Source: Taken from UNICEF. 2006. *Education in Emergencies: A Resource Tool Kit.* Kathmandu: UNICEF ROSA, p. 144.

Evaluation takes place at agreed points during the curriculum intervention cycle. Formative evaluation is conducted during the implementation so as to provide inputs into the planning and designing of subsequent implementation phases. Needs assessment and baseline research are forms of formative evaluation and they provide baseline data for a summative evaluation. Summative evaluation takes place at the end of curriculum implementation cycle. It can also take place some time after the implementation to analyze long-term impacts.[100] Both formative and summative evaluation exercises draw upon monitoring data that has already been collected.

10.2 DRR Monitoring and Evaluation Using Indicators

In determining what to monitor and evaluate from a DRR curriculum development initiative, taking the following into account can be helpful:

- Rationales and goals: What are overall goals and targets of the DRR curriculum? What are overarching goals of the monitoring and evaluation? Who will use the results of the monitoring and evaluation (e.g., donors, government, school communities) and how it will be used?
- Focus: Based on the determined goals, what are areas of focus of the DRR intervention (e.g., DRR in-service teacher training; DRR student resource development)?
- The spatial level of analysis: Is monitoring and evaluation focused on one level or multiple levels (e.g., classroom, school, locality/ district, regional, national, international)?
- Key questions: Based on the overall goals and the areas of focus, what are the main questions (or indicators) which monitoring and evaluation should answer or address.[101]

Indicators are management/enquiry tools for identifying progress and achievements set against the aims, objectives and targets of the project or initiative.[102] An indicator is 'a measure that is used to demonstrate change in a situation, or the progress in, or results of, an activity, project or programme.'[103] Indicators can be established from the outset of the intervention, although it is important to leave some flexibility to include new indicators as the initiative advances and new considerations emerge.

There are a number of different types of indicators, each with a different function and focus. Table 8 (next page) shows key types of indicators as described in relevant literature.[104]

100 Ibid.

101 Adapted from Sinclair, M. with Davis, L., Obura, A.& Tibbitts, F. 2008. *Learning to Live Together: Design, Monitoring and Evaluation of Education for Life Skills, Citizenship, Peace and Human Rights*. Eschborn, Germany: GIZ: Geneva.

102 There are other forms of evaluation such as illuminative and naturalistic evaluation that shy away from using indicators. See Denzin, N.K. & Lincoln, Y.S. 2003. *Strategies of Qualitative Inquiry*. Thousand Oaks, CA: Sage.

103 UNICEF. 2006. *Education in Emergencies: A Resource Tool Kit*. Kathmandu: UNICEF ROSA; UNICEF. p. 145.

104 Amalgamated and adapted from Sinclair, M. with Davis, L., Obura, A. & Tibbitts, F. 2008. *Learning to Live Together: Design, Monitoring and Evaluation of Education for Life Skills, Citizenship, Peace and Human Rights*. Eschborn, Germany: GIZ; Geneva; Tilbury. D., Janausek, S., Denby, L. Elias, D., & Bacha, J. 2007. *Asia-Pacific Guideline for the Development of National ESD Indicators*. Bangkok: UNESCO Bangkok; UNICEF. 2006. *Education in Emergencies: A Resource Tool Kit. Kathmandu*: UNICEF ROSA; UNICEF. *Life Skills: Monitoring, Evaluation and Assessment*. http://www.unicef.org/lifeskills/index_10489.html

TABLE 9.

Types of Indicators and Indicator Functions	
Types of Indicators	**Indicator Function**
Context Indicators	• To identify the existence of supportive mechanisms, systems, public opinion towards the curriculum intervention
Process Indicators	• To identify coverage (reach), stakeholder satisfaction, levels of participation in decision-making, implementation process of the curriculum innovation
Input Indicators	• To measure human, financial, material, technological, informational resources being fed into the curriculum intervention
Output Indicators	• To measure immediate, usually tangible, results (e.g. tools, products, resources and services) of the curriculum intervention
Outcomes Indicators	• To measure immediate, tangible and less-tangible results generated by the curriculum intervention
Impact Indicators	• To measure long term, tangible and less tangible results of the curriculum intervention

TABLE 10.

HFA Indicator 3.2: Five Levels of Progress Achieved				
1	2	3	4	5
Minor progress with few signs of forward action in plans or policy	Some progress, but without systematic policy and/or institutional commitment	Institutional commitment attained, but achievements are neither comprehensive nor substantial	Substantial achievement attained but with recognized limitations in key aspects, such as financial resources and/or operational capacities	Comprehensive achievement with sustained commitment and capacities at all levels

Refer back to 1.1.2 (pp. 3-6) for discussion of the Hyogo Framework for Action

Indicators are expressed in quantitative and qualitative form. Quantitative indicators are expressed in terms of counts, percentages, ratios, proportions or averages. Qualitative indicators are expressed in words. Analysed together in an assessment, they can indicate the presence or absence of an achievement or criteria (e.g., the existence of a government policy to integrate DRR into curriculum), or they can be expressed as descriptions related to how, what, when, where, who, which, and why.

Policy Makers/ Curriculum Developers: Refer back to 9.3 (pp. 155-7) for discussion of areas of performance.

A graduated 5-point or 3-point (Likert) scale from 'no progress' through to 'full achievement' provides one possibility to quantify qualitative characteristics. For example, progress according to the Hyogo Framework for Action (HFA) (which includes priority 3 core indicator 3.2 on 'School curricula, education material and relevant trainings include disaster risk reduction and recovery concepts and practices') has been self-assessed by governments according to five levels of progress achieved as outlined in Table 9.[105]

The 3-point scale system for ten DRR curriculum performance areas (see Box 53) based on the DRR curriculum mainstreaming experiences of ASEAN member states offers a valuable example of how to systematically and comprehensively assess a mainstreaming progress.

105 Taken from UNISDR. 2011. *Compilation of National Progress Reports on the implementation of the Hyogo Framework for Action (2009-2011): HFA Priority 3, Core Indicator 3.2*. http://www.preventionweb.net/english/hyogo/progress/documents/hfa-report-priority3-2(2009-2011).pdf

BOX 53.

Types of Indicators and Indicator Functions

1. Area of Performance: Political Commitment

1	2	3
Neither coordination mechanisms nor political 'champions' exist in support of DRR mainstreaming in the education sector.	Political 'champions' from the Ministry of Education, NDMO or other sectors, both governmental and non-governmental, exist and are actively promoting DRR mainstreaming in education (e.g. press releases, speeches), albeit in an uncoordinated manner.	Formal mechanisms of coordination and collaboration (e.g. memorandum of understanding) between and among the Ministry of Education, national disaster management office, other relevant government agencies are established and functioning, exemplifying a whole-government approach to mainstreaming DRR in education.

2. Area of Performance: Legal and Regulatory Systems

1	2	3
No legislation exists related to mainstreaming DRR in education.	National legislation passed with provisions recommending the mainstreaming of DRR in the education sector.	National legislation passed with provisions requiring the mainstreaming of DRR in the education sector.

3. Area of Performance: National DRR Policies and Plans

1	2	3
The Ministry of Education has no policy related to mainstreaming DRR in school curriculum; national plan for DRR does not identify mainstreaming DRR in education in general as a key component or strategy.	Policy on mainstreaming DRR in school curriculum still being developed, but there exists a national plan for DRR that includes mainstreaming DRR in education as a priority.	Official policy on mainstreaming DRR in the school curriculum adopted and being implemented by the Ministry of Education, with corresponding budget support.

4. Area of Performance: Institutional Structures and Mechanisms

1	2	3
A multi-sectorial committee (or equivalent) does not exist and there are no plans to create one at the present time.	A multi-sectorial committee (or equivalent) exists but without clear mandates, authority, mechanisms or resources to implement DRR-related changes in the school curriculum.	A multi-sectorial committee (or equivalent) exists and functions with clear mandates, authority, mechanisms and resources to implement DRR-related changes in the school curriculum.

Note: In the original document, less achievement is indicated by 3 and high achievement by 1. The numbering system here has been reversed so that it is consistent with the HFA 5 point scale system mentioned above, i.e., 1 for no or little progress and the higher number for higher achievement.

BOX 53. continued

5. Area of Performance: Using the National Curriculum Development Process to Mainstream DRR

1	2	3
DRR is not yet integrated in the school curriculum, although there are plans to do so in the near future.	DRR integration is incomplete or incipient, and not yet part of the regular curriculum review and development cycle.	Relevant knowledge, attitudes, skills, and learning outcomes related to DRR are fully integrated in the school curriculum as part of the regular curriculum review and development cycle.

6. Area of Performance: Developing Instructional Materials on DRR and Pilot Testing

1	2	3
Instructional materials are developed without conscious consideration for DRR.	Instructional materials integrating DRR are partially developed and not available for the entire country.	Instructional materials integrating DRR are developed and validated by experts, duly approved by relevant authorities, and distributed for nationwide usage.

7. Area of Performance: DRR in Co-Curricular and Extra- Curricular Activities

1	2	3
Co-curricular and extra-curricular activities related to DRR are conducted rarely, if at all.	Co-curricular and extra-curricular activities related to DRR are being conducted irregularly or on an ad hoc basis.	Co-curricular and extra-curricular activities related to DRR are being planned and conducted regularly as part of the academic calendar.

8. Area of Performance: Non-formal education activities in DRR

1	2	3
DRR is not integrated in non-formal education and there are no plans to do so in the present time.	DRR is not formally incorporated in non-formal education activities, but certain initiatives and plans are currently underway.	DRR is taught as part of an established non- formal education programme, such as through community-based activities, with corresponding textbooks and other instructional materials fully developed.

BOX 53. continued

9. Area of Performance: Training of Teachers in Disaster Education

1	2	3
There are presently no opportunities for teachers and other relevant education personnel to enhance their knowledge and skills in teaching DRR.	There are no long-term programmes for training teachers on DRR, and short-term interventions are still inadequate to capacity build all teachers and other relevant education personnel.	Short- and long-term training and professional development programmes related to teaching DRR are provided to teachers and other personnel, which may be done in collaboration with INGOs, NGOs and other concerned stakeholders.

10. Area of Performance: Assessing Student Knowledge on DRR

1	2	3
There is no established mechanism to effectively assess learning outcomes related to DRR.	Evaluation of students' DRR-related knowledge and skills is weak and limited mostly to tests and examinations in relevant subjects.	Assessment of learning outcomes is comprehensive and progressive and effectively linked to the curriculum review and development cycle.

Indicators emerge from asking what needs to be determined to satisfactorily answer each evaluation question. For example a question appropriate to output evaluation such as 'Have students received cumulative exposure to disaster risk reduction through the primary and secondary grade levels?' translates, inter alia, into the following output indicators:

- Number of curriculum units in textbooks which address DRR in each grade
- Number of student handbooks/resource books for both primary and secondary grade levels
- Percentage of school teachers who are trained in DRR education and equipped for DRR classroom facilitation
- The availability of a national policy to mandate DRR education throughout primary and secondary grade levels

For questions concerning process evaluation such as 'Are DRR curricula being developed through a proactive and fully committed partnership between the ministry responsible for education and the ministry responsible for disaster and emergency management?', possible indicators could include:

- The existence of coordination mechanisms and resources enabling collaborative development of DRR curricula
- The quality, style and frequency of use of coordination mechanisms
- The perceptions of quality of interaction between partners

The balance between quantitative and qualitative indicators will vary according to the nature of the evaluation question, whereby output questions will lean towards quantitative indicators and process questions towards qualitative indicators.

A *benchmark* is 'a reference point or standard against which progress or achievements may be measured, or a target that is desired to be achieved. Benchmarks can be set for any indicator.' [106] For example, in Box 50 above, statements for the third level of progress scale can be seen as a benchmark. But 'in some cases an indicator itself can be chosen to be a benchmark.'[107]

Policy Makers/ Curriculum Developers: It is important to choose a manageable number of indicators

It is preferable to have multiple indicators in order to capture multiple dimensions of the curriculum intervention experience. However, it is also important to carefully select a manageable and limited number of indicators relating to the most essential aspects of the curriculum intervention at hand. A situation with too many indicators can be a source of confusion, may create some overlapping, and can make the gathering and interpretation of data more technically challenging and time consuming. Practical ease in data collection and cost implications are, therefore, important points to consider in selecting indicators.

Policy Makers/ Curriculum Developers: Including DRR indicators in existing national and sub-national education plans as well as EMIS is cost -effective and sustainable

A sustainable way to develop and implement DRR indicators is to embed them within the existing national and sub-national education plans and mechanisms. For example, national education sector plans, annual work plans, emergency preparedness and response plans as well as sub-national contingency plans and education development plans provide such opportunities. Another important opportunity is an Education Management and Information System (EMIS), which is designed for education authorities to 'collect and analyze data on the educational system to improve planning, resource allocation, monitoring, policy formation and decision-making'.[108] DRR specific questions can be added to the annual school survey for EMIS with relatively little additional cost.[109] School based community vulnerability assessment data can also be part of EMIS data.

There are a number of criteria that can be applied to improving the quality of indicators. Two approaches to characterize indicators are set out in Box 54. SMART indicators, the more frequently used variant, tend to be more mechanistic, based on notions of objectivity. SPICED indicators veer towards the systemic and value the dynamic interplay of subjectivities. These characteristics are not necessarily mutually exclusive and policy makers and curriculum developers should feel free to combine them so as to come up with criteria most appropriate to context.

10.3 Monitoring and Evaluating DRRE

A wide variety of data collection tools commonly in use can be applied to DRR curriculum monitoring and evaluation. The choice of which to use will depend upon the evaluation purpose, parameters, human resources and technical facilities available, time scale, spatial level, cultural context, the quality of training of the evaluators and the nature and availability of participants. Frequently used quantitative and qualitative data collection tools are set out in Box 55.

Ensuring and checking the validity of the data and of findings drawn from the data requires the use of a range of tools. Triangulation is an approach

106 UNISDR. 2008. *Indicators of Progress: Guidance on Measuring and Reduction of Disaster Risks and the Implementation of the Hyogo Framework for Action*. Geneva: UNISDR. 8.

107 Ibid.

108 UNESCO IIEP. 2010. *Guidebook for Planning Education in Emergencies and Reconciliation*. Paris: UNSCO IIEP. pp. 153-154.

109 Ibid.

BOX 54.

Characteristics of Good Indicators – SMART or SPICED?

SMART Indicators

- Specific: What things does the project intend to change?
- Measurable: Can the indicator be measured objectively and independently?
- Attainable: Is it possible for the project to achieve the indicator?
- Relevant: Is the indicator relevant to the project, and practical/cost-effective to use?
- Time-bound: When should the indicator be achieved by?

SPICED Indicators

- Subjective: Informants may have unique insights which give reliable information which is anecdotal but valuable
- Participatory: Indicators should be developed together with those best placed to assess them – this may be teachers, parents or children
- Interpreted and communicable: Indicators defined by local groups may need to be explained to external audiences
- Cross-checked: Check information by comparing different indicators of progress and using different informants and methods
- Empowering: The process of setting and using indicators should be empowering by helping groups and individuals reflect on their changing situation
- Diverse: Using indicators set by different groups, e.g. men and women – information gathered should reflect these different perspectives

Questions suggested for consideration:

- Which indicators do you have experience in using?
- Which do you think would give the most useful information about whether education quality has improved?
- Could you combine them?
- In your own context, which indicators would be the most challenging to use?

Source: Taken from Cain, E. 2003. *Quality Counts: Developing Indicators in Children's Education.* London: Save the Children UK. p. 20.

BOX 55.

Data Collection Tools

Quantitative Tools	Qualitative Tools
• One-on-one or focus group interviews (highly structured) • Questionnaires and surveys (closed questions) • Statistical surveys • Reviews of past statistics • Tests and forms of multiple choice questions	• One-on-one or focus group interviews (semi-structured; structured; unstructured) • Questionnaires (open-ended questions) • Observations • Video recordings and photographs • Interpretation of artefacts (e.g., children's work) • Reviewing documents and analyzing texts

Refer back to 4.7 (pp. 80-2) for brief discussion of triangulation in student assessment

to data collection and analysis that examines a phenomenon from multiple methodological perspectives, ensuring that there is a healthy and diverse mix of participants bringing different perspectives. If contradictory pieces of evidence are found through triangulation, it indicates a need to explore more deeply and broadly.

CHECKLIST 5.

Conducting an Evaluation

- ☐ Involve stakeholders in evaluation design, implementation and follow-up, and ensure findings are shared with them.
- ☐ Obtain high-level authorization for the evaluation and establish an advisory group to maximize cooperation and buy-in to the results.
- ☐ Train evaluation team as well as participants who will have evaluation roles.
- ☐ Involve multiple categories of stakeholders and participants in the data collection process.
- ☐ For large programmes, choose in-depth, high quality evaluation in randomly or purposively selected institutions rather than thin data from all.
- ☐ Pilot test all data collection instruments to ensure their usefulness.
- ☐ Design evaluation instruments that will result in ideas to feed back into practice and on-going development.
- ☐ For quantitative data, ensure proper statistical analysis.
- ☐ For qualitative data, read through the data several times and allow key themes to emerge.

Source: Adapted from Sinclair, M. with Davis, L., Obura, A. & Tibbitts, F. 2008. *Learning to Live Together: Design, Monitoring and Evaluation of Education for Life Skills, Citizenship, Peace and Human Rights.* Eschborn, Germany: GIZ.

10.4 Nurturing A Culture of Improvement within a Culture of Safety and Resilience: Stakeholder Engagement in DRR Curriculum Monitoring and Evaluation

Stakeholder involvement in various aspects and stages of DRR curriculum monitoring and evaluation processes is important for a number of reasons. First, it can create a sense of ownership that underpins the long-term sustainability of the curriculum integration project. Second, involvement in evaluation can be an important element in capacity building. Third, it is crucial at the point of translating lessons learned from the evaluation into informed practice. Evaluation is not something to be conducted in a vacuum but is a key element in a process of ensuring and improving quality system wide.

10.4.1 Indicator Development

At a national level, the involvement of key stakeholders in designing and implementing the monitoring and evaluation process and reflecting on findings can be vital for upskilling and building linkages across the DRR education community. The example below, adapted from Education for Sustainable Development literature, outlines a process whereby key stakeholders determine national DRRE indicators.

The Consortium for Disaster Education, an Indonesian DRR education network (see Box 16, p. 51) has uniquely built and achieved

consensus on values, principles, parameters, indicators and verifications to guide DRR education initiatives nationally. Indicators are organized into four areas:

- Attitude and Action
- School Policy
- Preparedness Planning
- Resource Mobilization. [110]

110 Consortium for Disaster Education Indonesia. 2011. *A Framework of School-Based Disaster Preparedness*. pp. 10-11.

BOX 56.

A 7-Step DRRE National Indicator Development Process

Step1. Form a working group on national DRRE indicators.

Step 2. Develop a common understanding among working group members.

Step 3. Gather relevant data from related indicator initiatives.

Step 4. Engage in working group capacity building.

Step 5. Develop DRRE indicators in line with Decade of Education for Sustainable Development goals and priorities.

Step 6. Share DRRE indicators with a wider audience.

Step 7. Report on progress and share lessons learned nationally and regionally. Apply, revise and adapt indicators periodically.

Source: Adapted from Tilbury. D., Janausek,S., Denby, L. Elias, D., Bacha, J. 2007. *Asia-Pacific Guideline for the Development of National ESD Indicators.* Bangkok: UNESCO Bangkok, pp. 42-45.

In Malawi, school level stakeholders are invited to be involved in the critical examination of indicators by way of selecting and adapting them for their own context. Such a creative and critical use of indicators by each school is emphasized in the *Handbook for Child Friendly Schools (CFS)* in Malawi.[111]

Stakeholder evaluation of whole-school sustainability performance is proposed in the *Education for Sustainable Development Lens: A Policy and Practice Review Tool*.[112] The Lens suggests the establishment of a School Sustainability Working Group of teachers, parents, learners and school managers to undertake a whole-institution sustainability review and collectively report back to the broad school community.

An auditing tool for DRRE within ESD is outlined iin Box 57 (next page). It reflects the case made in chapter one that DRRE should be integrated within an ESD framework to better ensure that the five essential dimensions of DRR learning are comprehensively addressed. It borrows from and elaborates on the Lens' Sustainable Schools Audit, with the additional suggestion that the strong community orientation of DRRE also calls for the inclusion of community members in the stakeholder group.

Refer back to 1.3 (pp. 8-14) for discussion of ESD and DESD

Refer back to p. 123 on teachers as reflective practitioners

111 Ministry of Education, *Science and Technology/ UNICEF. 2008. Handbook for Child Friendly Schools (CFS) in Malawi*.

112 UNESCO. 2010. *Education for Sustainable Development Lens: A Policy and Practice Review Tool.* Paris: UNESCO. pp. 82-6.

BOX 57.

Sustainable and Resilient School Audit

The Formal Curriculum	Excellent 4	Good 3	Fair 2	Getting Started 1	Not happening 0
1. There are school policy and guideline documents clearly itemizing curricular learning outcomes for ESD and DRRE at the school					
2. There is effective co-ordination of ESD and DRRE learning across the curriculum and through the grade levels					
3. Every opportunity is taken to introduce issues of sustainable development and disaster risk reduction into all school subjects					
4. Teaching approaches encourage active student engagement in sustainability, disaster risk reduction and other issues					
5. Sufficient good quality learning materials and activities for ESD and DRRE are available					
Formal Curriculum Sub-Total					

BOX 57. continued

Social Sustainability and Resilience	Excellent 4	Good 3	Fair 2	Getting Started 1	Not happening 0
6. There are school policy documents clearly laying out a whole school commitment to sustainability and disaster resilience					
7. Students are given the opportunity to participate in an in-school and in-community ESD/DRRE action agenda					
8. Sustainability and resilience building approaches are gender sensitive					
9. The special needs of all students, especially those with disabilities or from marginalized groups, are taken into consideration					
10. The school is notable for humane, inclusive, caring and compassionate inter-personal relationships that foster sustainability and resilience					
Social Sustainability and Resilience Sub-Total					

BOX 57. continued

Environmental Sustainability and Resilience	Excellent 4	Good 3	Fair 2	Getting Started 1	Not happening 0
11. The school actively promotes attitudes of respect and care for the natural world					
12. The school is concerned to raise awareness of unsustainable treatment of the environment and how it increases vulnerability to hazard					
13. A watchful eye is kept on environmental factors that threaten school and community with disaster and action taken to mitigate any threat					
14. Resources are procured with an eye to minimizing environmental harm and reducing climate change					
15. The school is implementing recycling and energy saving measures					
Environmental Sustainability and Resilience Sub-Total					

BOX 57. continued

Economic/Structural Sustainability and Resiliencee	Excellent 4	Good 3	Fair 2	Getting Started 1	Not happening 0
16. School buildings have been built or retrofitted according to safety criteria					
17. Economic drivers of unsustainability and vulnerability, especially poverty and inequality, are given due weight in school discourse and decision-making					
18. Students learn practical measures and skills that will enable the local community to adapt its economy to climate change and other threats					
19. A sufficient allocation of funding resource is put behind the school's sustainability and disaster risk reduction efforts					
20. The economic consequences of unsustainability and any shortcomings in disaster management are made clear to all school stakeholders					
Economic/Structural Sustainability and Resilience Sub-Total					

BOX 57. continued

Cultural Sustainability and Resiliencee	Excellent 4	Good 3	Fair 2	Getting Started 1	Not happening 0
21. The prevailing ethos of the school gives high profile to matters of sustainability and disaster resilience					
22. The prevailing ethos also confirms that everyone matters and has a contribution to make in building a culture of sustainability and resilience					
23. The school joins forces with the local community in efforts to build a sustainable and resilient future					
24. There is a clearly articulated, clearly visible and clearly understood whole-school approach to sustainability and disaster management					
25. The school is a lively and engaged ESD/DRR learning community					
Cultural Sustainability and Resilience Sub-Total					

Transfer the five sub-totals to the table below to calculate an overall total out of 100. The higher the score the better the school's orientation towards ESD/DRR. Areas with a lower score indicate where action is especially necessary. In reporting the results, the Working Group should engage stakeholders in discussion regarding actions to be taken.

The Formal Curriculum	
Social Sustainability and Resilience	
Environmental Sustainability and Resilience	
Economic/Structural Sustainability and Resilience	
Cultural Sustainability and Resilience	
TOTAL	

Source: Adapted and elaborated from UNESCO. 2010. *Education for Sustainable Development Lens: A Policy and Practice Review Tool.* Paris: UNESCO. 84-6.

10.4.2 Teacher Involvement in Monitoring and Evaluation

If teachers are to become reflective practitioners, an active role in monitoring and evaluation is of central importance. For example, in Vanuatu, teachers engaged in piloting DRR materials were trained in pedagogy as well as on the evaluation of the new DRR curriculum's effectiveness. To do so, the teacher's maintained a diary of reflections on their experiences in pilot implementation including reactions, impressions, thoughts, comments and pupil's responses, levels of pupil engagement and the quality of their facilitation. They then shared their diary with the evaluation team. Teachers were also asked to complete activity implementation summary sheets as well as give feedback on activities whenever possible. Teachers took part in workshop sessions where they were familiarized with all the elements in the evaluation process.[113]

Another excellent teacher contribution to the evaluation process can be through paired observation where two teachers act as 'critical friends' visiting each other's lessons and evaluating each other's conduct of DRR teaching and learning. Put another way, teachers in a DRR learning organization need to be active researchers committed to heuristic engagement and concerned with gaining insight as a basis for refreshing and enriching the quality of their practice both in the classroom and in their contribution to whole-school and school-in-community risk reduction and resilience building developments.

113 Save the Children. 2012. *Disaster Risk Reduction & Climate Change Education in Vanuatu: Pilot Curriculum Materials, Teachers' Guide and Evaluation Instruments*. Port Vila.

10.4.3 Engaging Children and Students

The child participation principles enshrined in the Convention on the Rights of the Child support the involvement of children in monitoring and evaluation efforts in an age appropriate, meaningful, safe and voluntary manner. There is increasing evidence that when appropriate guidance and chances are afforded, children and young people can make positive contributions to monitoring and evaluation efforts. They can contribute: as advisers to the evaluation team on various aspects of planning and implementation; as peer evaluators who help to collect and analyze child-related data; as documenters who record their own and other children's views and reflections relating to the initiative under evaluation; as active respondents who use participatory methods and tools; as reviewers of the draft evaluation report; as active change agents who disseminate conclusions and recommendations of the evaluation and who contribute to putting recommendations into practice.[114]

Box 58 (next page) highlights an actual process used to develop impact indicators by children working with facilitators in Save the Children projects in Nepal and India.

Members of a school community, such as principals, teachers and students are commonly identified as key stakeholders who should be involved in monitoring and evaluation processes. The disaster risk reduction ethos, with its emphasis on in-school and in-community engagement suggests that monitoring and evaluation can be a learning opportunity for those who are involved and can contribute to building a 'culture of continuous

114 Save the Children International. 2012. *Evaluation Handbook*. London: Save the Children International. p. 28.

BOX 58.

6 Steps for Creating Child-Led Indicators

Step 1. Problem identification and prioritization. Children brainstormed and listed problems related to 'quality of education'. They prioritized them and chose two major problems they wanted to address most urgently.

Step 2. Causes and effects analysis. Children discussed and identified the causes and effects of the two chosen problems.

Step 3. Objective mapping. Children envisioned the situation they would like to see in three years with regard to the chosen problems.

Step 4. Activity mapping. Children identified activities that they could do to ensure that their vision articulated in the objective mapping would be realized. They came up with sets of activity ideas.

Step 5. Setting up indicators. Children considered how they could know if the activities were carried out; how far they had got; if the activities were carried out properly; what would be the criteria for success.

Step 6. Identification of tools to measure indicators. Children considered ideas of how they could assess progress using the indicators they developed for themselves.

Source: Adapted from Save the Children. 2007. *Child-led Disaster Risk Reduction: A Practical Guide*. Save the Children. pp. 102-104.

Refer back to 4.7 (pp. 80-2) for discussion of student assessment modalities

improvement' when it is conducted by and with key stakeholders (involved as subjects).[115] This can be extended to include student formative assessment modalities such as self/ peer assessment, drama, displays and presentations into the monitoring and evaluation process.

10.5 A Basis for Continually Informed, Improved and Revitalized Practice

At this point, the key connections between DRR curriculum monitoring and evaluation and the notion of school as a DRR learning organization or community have been laid out. A DRR learning organization calls on everyone to be a learner, to continually reflect on risk-related experience, and to diligently build personal, collective and institutional resilience capacity. The goal of best curriculum evaluation practice is improvement in quality through a process whereby lessons learned and insights gained are reflected and deliberated upon so as to inform future directions of curriculum development ('continuous improvement'). A dynamic culture of safety and resilience building, thus, complements and fuses with a dynamic culture of informed and revitalized practice.

115 UNICEF. 2009. *Child Friendly Schools Manual*. New York: UNICEF. Chapter 8.

STRATEGIC POINTERS FOR CHAPTER TEN.

- → **Policy Makers/Curriculum Developers:** Decide what you want to evaluate – the process, the outcomes, the impact, or a mix of each – and the balance you want to achieve between formative and summative evaluation
- → **Policy Makers/Curriculum Developers:** Choose an appropriate mix of indicators, and indicator types to achieve the best possible evaluation results
- → **Policy Makers/Curriculum Developers:** Also ensure a manageable number of indicators relating to the most essential aspects of the DRR curriculum intervention
- → **Policy Makers/Curriculum Developers:** Include DRR curriculum indicators in existing national and sub-national education plans and in EMIS as a cost effective and sustainable way to help mainstream DRR curriculum
- → **Policy Makers/Curriculum Developers/Evaluators:** In choosing data collection tools for DRR curriculum monitoring and evaluation, consider evaluation purpose, parameters, human resources and available technical facilities, time scale, spatial level, cultural context, the quality of training of the evaluation team and the nature and availability of participants
- → **Policy Makers/Curriculum Developers/Evaluators:** Ensure diverse stakeholder involvement in various aspects and stages of DRR curriculum monitoring and evaluation, ensuring that children and other stakeholders are not used as evaluation objects but are actively engaged as evaluation subjects
- → **Policy Makers/Curriculum Developers/Evaluators:** Support principal, teacher and student involvement in DRR curriculum monitoring and evaluation at school level as a means of both affirming and consolidating the school's ethos and practice as a DRR learning organization/community

10.6 Selected Tools and Resources

- Adamchak, S., Bond, K., MacLaren, L., Magnani, R., Nelson, K. & Seltzer, J. 2000. *A Guide to Monitoring and Evaluating Adolescent Reproductive Health Programs*. http://www.fhi360.org/en/Youth/YouthNet/Research/monitoringevaluation.htm

  A very detailed and rigorous monitoring and evaluation guide with application to different stages within a programme cycle. Steps and examples presented are easily adaptable to a DRR curriculum development context.

- Cain, E. 2003. *Quality Counts: Developing Indicators in Children's Education. London: Save the Children*. http://toolkit.ineesite.org/toolkit/INEEcms/uploads/1089/Quality_counts_developing_indicators.pdf

  A concise and very informative guide describing the nature of monitoring and evaluation in relation to quality education and the use of indicators.

- Save the Children International. 2012. *Evaluation Handbook.* London: Save the Children International.
  http://resourcecentre.savethechildren.se/content/library/documents/evaluation-handbook

  This handbook gives a step-by-step guide for the systematic design and implementation of programme evaluation processes. It is written for Save the Children managers and technical specialists, but it is also helpful for those who want to develop evaluation processes and methods predicated on child-centered principles. Sections 4.2, 5.2 and Annex 7 in particular deal with issues related to the involvement of children and young people in evaluation processes.

- UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries*. Paris/Geneva: UNESCO/ UNICEF.
  http://unesdoc.unesco.org/images/0021/002170/217036e.pdf

  Section 11, 'Checklist of Optimal DRR Curriculum Practice', is particularly relevant to this chapter.

- Sinclair, M. with Davis, L., Obura, A. & Tibbitts, F. 2008. *Learning to Live Together: Design, Monitoring and Evaluation of Education for Life Skills, Citizenship, Peace and Human Rights*. Eschborn, Germany: GIZ; Geneva: UNESCO IBE.

  A guide offering a number of practical steps and examples of data collection tools for monitoring and evaluation. Steps and examples are easily adaptable to a DRR curriculum development context.

- Tilbury. D., Janausek,S., Denby, L. Elias, D. & Bacha, J. 2007. *Asia-Pacific Guideline for the Development of National ESD Indicators*. Bangkok: UNESCO Bangkok.
  http://unesdoc.unesco.org/images/0015/001552/155283e.pdf

  A resource developed to assist UNESCO Members States in the Asia-Pacific region to develop national DRR indicator frameworks in order to assess progress during the UN Decade of Education for Sustainable Development.

- UNISDR. 2008. *Indicators of Progress: Guidance on Measuring and Reduction of Disaster Risks and the Implementation of the Hyogo Framework for Action*. Geneva: UNISDR.
  http://www.preventionweb.net/files/2259_IndicatorsofProgressHFA.pdf

  A very useful document that gives clear and practical guidelines on developing indicator-based approaches to the design and implementation of overall DRR activities under HFA.

Recommended Resources

This list is, for the most part, additional to the Selected Tools and Resources listed in the final section of each chapter.

Curriculum Policy and Curriculum Guidance Documents

- Inter-Agency Network for Education in Emergencies (INEE). 2010. *Minimum Standards for Education: Preparedness, Response, Recovery*. New York: Inter-Agency Network on Education in Emergency (INEE).
  http://www.ineesite.org//index.php/post/know_updated_inee_minimum_standards_handbook/

  This handbook offers international standards to safeguard children's rights to quality education and a safe learning environment at all times. It includes Standards and Guidance Notes in the following five domains:

  1) Foundational Standards;
  2) Access and Learning Environment;
  3) Teaching and Learning;
  4) Teachers and Other Educational Personnel;
  5) Education Policy. It is available in English, French, Spanish, Russian, Chinese and Arabic.

- International Finance Corporation (IFC). 2010. *Disaster and Emergency Preparedness: Guidance for Schools*. http://www1.ifc.org/wps/wcm/connect/8b796b004970c0199a7ada336b93d75f/DisERHandbook.pdf?MOD=AJPERES&CACHEID=8b796b004970c0199a7ada336b93d75f

  This document offers detailed guidance on: assessment and planning; physical and environmental protection; response capacity building; practice, monitoring and improvement.

- UNESCO IIEP. 2010. *Guidebook for Planning Education in Emergencies and Reconciliation*. Paris: UNSCO IIEP.
  http://www.iiep.unesco.org/fileadmin/user_upload/Cap_Dev_Technical_Assistance/pdf/Guidebook/Guideboook.pdf (online interactive version)

  This guidebook aims at supporting ministries of education in countries affected by conflict or natural disasters as well as UN organizations, donor agencies and NGOs working with those ministries. It is organized in five sections: general overview; access and inclusion; teachers and learners; curriculum and learning; management capacity. Section 1.2 focuses on 'Prevention of Conflict and Preparedness for Disaster'.

- UNESCO. 2010. *Education for Sustainable Development Lens*: A Policy and Practice Review Tool. Paris: UNESCO.
  http://unesdoc.unesco.org/images/0019/001908/190898e.pdf

  This ESD Toolkit aims at assisting both policy makers and practitioners to start reorienting formal learning at a school level towards ESD. It includes a total of 13 tools (2 planning and

contextualizing review tools; 3 policy review tools; 2 quality learning outcome review tools; 6 practice review tools).

- UNESCO. 2012. *Education for Sustainable Development Source Book.* Paris: UNESCO. http://unesdoc.unesco.org/images/0021/002163/216383e.pdf

  This source book is developed for primary and secondary school teachers, mid-level decision makers responsible for primary and secondary education, and teacher educators. It aims at assisting them to integrate ESD into primary and secondary formal learning.

- UNICEF ROSA in Conjunction with New York Headquarters. 2006. *Education in Emergencies: A Resource Toolkit*. UNICEF ROSA, Kathmandu. http://www.unicef.org/rosa/Rosa-Education_in_Emergencies_ToolKit.pdf

  This toolkit is developed for UNICEF officers. It includes practical information and tools to prepare for and respond to emergencies so as to comply with UNICEF's Core Commitment for Emergencies in the education sector. This is a useful toolkit for those who work in DRR curriculum development especially in contexts affected by emergencies.

- UNISDR. 2008. *Disaster Prevention for Schools: Guidance for Education Sector Decision-Makers. Consultation Version, November 2008*. Geneva: International Strategy for Disaster Reduction Thematic Platform for Knowledge and Education. http://www.unisdr.org/we/inform/publications/7556

  This guidance document is for school administrators at all levels and for school safety advocates. Following on discussion of safe learning environments, the document offers sections on teaching and learning about disaster prevention and preparedness, educational materials and teacher training, and developing a culture of safety.

Case Study/Good Practice: Descriptive, Analytical and Evaluative Documents

- Back, E., Cameron, C., and Tanner, T. 2009. *Children and Disaster Risk Reduction: Taking Stock and Moving Forward*. Brighton: IDS/Children in a Changing Climate. http://www.preventionweb.net/english/professional/publications/v.php?id=12085

  This research report reviews child-focused and child-led DRR approaches and techniques. Brief case studies look at projects in Algeria, Bangladesh, Bolivia, El Salvador, Kyrgyzstan, Mozambique, Nepal, the Philippines, the Solomon Islands, UK, USA and Zimbabwe.

- GFDRR/UNISDR/UNICEF. 2011. *Children and Disaster: Building Resilience through Education*. http://www.unisdr.org/we/inform/publications/24583

  Following a brief overview of major hazards and disaster risks in Central and Eastern Europe and the Commonwealth of Independent States (CEE/CIS), the study profiles 25 countries in the

region giving an overview of national hazards and disasters, DRR management structures and legislation, DRR education activities, key national and international partnerships in DRR.

- UNESCO/UNICEF. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries*. Paris/Geneva: UNESCO/UNICEF.
  http://unesdoc.unesco.org/images/0021/002170/217036e.pdf

  This publication, to which this document is the companion volume, captures key national experiences in the integration of DRR in the curriculum, identifying good practice, noting issues addressed or still lacking, and reviewing learning outcomes. This study is based on research into DRR related curriculum development and integration, pedagogy, student assessment, teacher professional development and guidance, learning outcomes and policy planning and implementation aspects covering thirty countries.

- UNESCO. 2009. *UNESCO Associated Schools Second Collection of Good Practice: Education for Sustainable Development*. Paris: UNESCO.
  http://unesdoc.unesco.org/images/0018/001812/181270e.pdf

  This collection includes 22 case studies of ESD programmes under the UNESCO Associated Schools initiative from all five UNESCO regions.

- UNISDR/UNICEF. 2009. *Good Practices and Tools on Disaster Risk Reduction in Education in Central Asia*. Dushanbe: UNISDR; Geneva, UNICEF RO CEE/CIS.
  http://www.preventionweb.net/files/12164_CompendiumEng.pdf

  This compendium of 22 stories of good practice, not all school focused, were acquired through a competitive process.

- UNFCCC. 2010. *Report on Essential Needs for, Potential Gaps in, Barriers to, and Progress in the Implementation of the Amended new Delhi Work Programme*. Note by the Secretariat.
  http://unfccc.int/documentation/documents/advanced_search/items/6911.php?priref=600006023

  This report synthesizes educational training programmes on climate change as well as the activities undertaken to engage the public at large to address climate change issues. It highlights good practices, identifies emerging gaps and offers recommendations.

Photo Credits

Page	Credit	Description
1	© UNICEF/Tattersall	Sipai, 10, sits working in her grade five classroom at Long Lao Primary School. The school is part of a UNICEF-backed government strategy to improve the quality and access to primary education in Lao PDR. It is one of over 1,600 school applying the " School of Quality" approach. Thanks to UNICEF input, Long Lao primary school now has a new school building where all five grades can be taught, teaching and learning kits have been supplied and training for the school director, teachers and other members of the community has been provided.
20	© Olivier Asselin	On 22 October, a girl waves to a friend as she and classmates wade through floodwater on their way home from school in Cité de Paix, a neighbourhood on the outskirts of the city of Cotonou. By 27 October in Benin, widespread flooding had affected over 680,000 people, including 122,000 children under age five. The crisis began in September, when Benin experienced twice its average rainfall, causing rivers to overflow. An estimated 180,000 people have been displaced and at least 46 killed, and the Government has declared a state of emergency. Nearly a hundred health centres have been damaged, and many others are inaccessible due to floodwater. Hundreds of schools have been destroyed, and crop damage has caused concerns about food security. Waterborne diseases are also spreading, with 846 cases of cholera reported. Flood survivors are in immediate need of shelter, clean water, food and medical care. In response, UNICEF is providing water tanks, sanitation supplies, therapeutic food, disinfectants and school kits. UNICEF is also chlorinating contaminated wells and promoting hand washing to prevent the spread of disease. Benin is the worst-affected of several West and Central African countries that are contending with torrential rains and flooding, a disaster that has killed over 400 people and disrupted over 1.8 million lives throughout the region.
34	© UNICEF/John Isaac	Grade 4 students hold 'Window of Hope' certificates at the end of a life-skills education session at Ehenya Primary School in the town of Oshakati in the northern Oshana Region. The programme helps students, aged 10-14 years old, gain the knowledge and confidence to successfully navigate issues and relationships in their personal lives, including domestic problems. This, in turn, teaches skills to prevent HIV infection before they become sexually active. The certificates are awarded to students upon completion of each of the eight study modules in the programme. The session began with a prayer that included the wish to "help the Namibian people to understand the impact of HIV and AIDS". 'Window of Hope' complements 'My Future is My Choice', a life-skills high school programme more directly focused on HIV/AIDS prevention. [#1 IN SEQUENCE OF SIX] In September 2008 in Namibia, children continue to face poverty, violence, and food insecurity, exacerbated by the HIV/AIDS pandemic, which has reversed social progress on many fronts. Children represent over 40 per cent of the country's 2 million people. HIV infection rates among pregnant women now average 20 per cent, with rates as high as 42 per cent in some regions. More than half of new HIV infections are among youths under age 25. Some 250,000 children are orphaned or otherwise vulnerable. HIV/AIDS is contributing to rising rates of violence, school drop-outs, malnutrition and to family and community breakdown. Wide income disparities and other chronic inequalities also reflect the lingering affects of apartheid policies, imposed by neighbouring South Africa before Namibia achieved independence in 1991. Working with the Government, other United Nations agencies and NGO partners, UNICEF supports a range of programmes to: prevent mother-to-child transmission (PMTCT) of HIV and provide antiretroviral (ARV) medicines; care for orphaned or other vulnerable children; advocate against violence and the abuse of children and women; and promote child participation in government forums and elsewhere. UNICEF also helped create and promote life-skills training for young people to prevention new HIV infections: 'Window of Hope' is available in all primary schools, and 'My Future is My Choice' reaches 50 per cent of high schools. Studies indicate that these programmes have contributed to a decline in new HIV infections in this age group. However, they are optional after-school programmes; if mandatory in the curricula, they would reach all students.

Page	Credit	Description
38	© UNICEF/ Jim Holmes	School children gather in front of the Patuxai monument on World Water Day 2009. In conjunction with The Lao Youth Union the children colour in a mural painted on the pathway depicting the River Mekong watershed and the way water is used throughout the region. Vientiane.
39	© UNICEF/Marco Dormino	(Centre) artist Alexandre Clarens, Jr. leads children in an arts-and-crafts activity in a UNICEF-supplied tent in Port-au-Prince, the capital. Mr. Clarens, Jr. is director of the NGO Mouvement Social pour l'Avancement de la Jeunesse (Social Movement for Youth Advancement). The community-based organization is among 92 managing child-friendly spaces in displacement camps and impoverished communities. It was one of the first to provide psychosocial support services in the aftermath of the 2010 earthquake. [#1 IN SEQUENCE OF THREE] In December 2011, Haiti and its approximately 4.3 million children continue to recover from the 12 January 2010 earthquake that killed some 220,000 people, displaced more than 1.6 million and further disrupted the country's already inadequate infrastructure. Progress has been substantial: a new national government is in place; about half of the mounds of rubble have been cleared; almost two thirds of those displaced by the quake have moved out of crowded camps; and the country's health, education and other core services are being rebuilt on a stronger foundation. Still, the country remains a fragile and impoverished state, requiring international support. Working with multiple international and national partners, UNICEF continues to address the emergency needs of children, while focusing on building the Government's capacity to uphold and sustain children's rights. In nutrition, an unprecedented expansion of preventive and treatment services for childhood under-nutrition has begun to address the pre-quake 'silent crisis' of chronic malnutrition. In health, routine child immunizations increased to almost 80 per cent in the past year; medicines and training for midwives have increased; HIV prevention and treatment services, including to prevent mother-to-child transmission (PMTCT) of the virus, are expanding; and a national emergency cholera treatment response was implemented (in response to the late 2010 cholera outbreak). Emergency WASH (water, sanitation and hygiene) services, including for cholera, have shifted from large-scale water delivery to camps, to urban and rural community-centred efforts to improve WASH access, practices and knowledge. Haiti's first metropolitan waste disposal and treatment site opened in September; 2.2 million people received cholera-prevention supplies; and cholera prevention is being integrated into school curricula. In education, although an estimated half of eligible children are still not in school, UNICEF supports a new government initiative to introduce free education; over 1,200 schools have been repaired or constructed since the quake; more children than ever before have received basic school supplies; and policies for early childhood pre-schools are completed. Nevertheless, needs remain enormous across all these vital sectors for children. To date, UNICEF has received US $351.3 million to fund its response since the earthquake and requires an additional US $54 million to support activities through 2012.

Page	Credit	Description
44	© UNICEF/Kat Palasi	On 29 December, children who have been displaced by Tropical Storm Washi look at UNICEF-provided colouring supplies, at a child-friendly space in a high school in the coastal city of Iligan, Northern Mindanao Region. The spaces offer safe places for children to play, learn, and regain a sense of normalcy after a disaster. Thirteen of the city's schools are flood-affected, and 11 are currently sheltering evacuees. Schools are scheduled to reopen on 3 January, but challenges to meet this goal are great. On 19 December 2011 in the Philippines, Government-led emergency rescue, evacuation and relief operations continue following the devastation caused by Tropical Storm Washi, which hit the southern island of Mindanao three days before. More than 1,000 people have been killed, and an estimated 15,000 families and 200,000 children have been affected. More than 284,000 people are displaced; many sheltering in overcrowded evacuation centres in the hardest-hit cities of Cagayan de Oro and Iligan in Northern Mindanao Region. Many are in urgent need of rescue, water, food, and clothing. Homes and infrastructure were also destroyed. UNICEF has dispatched supplies for affected communities, including water containers and kits, water bladders and mobile water units, temporary pit latrines and other sanitation equipment, tarpaulin sheeting and tents for temporary shelter, hygiene kits, vitamin A for women and infants, school supplies and child recreation kits. UNICEF has also launched an appeal for US $4.2 million to meet urgent water and sanitation, health, nutrition, education and child protection needs.
48	© UNICEF/Josh Estey	(Standing) seventh-grade student Nguyen Dieu Hong, 13, make posters with her classmates during a life-skills training session in Kim Dong Lower Secondary School in the town of Sa Pa in Sa Pa District in remote Lao Cai Province. The school is among 120 lower secondary schools providing life-skills training on child rights, health, HIV/AIDS and other issues in an initiative implemented by the Government with support from UNICEF. In March 2009 in Viet Nam, UNICEF is supporting the Ministry of Education and Training (MOET) to provide bilingual education to ethnic minority children – in Vietnamese and their indigenous language – and to improve adolescent learning, especially among minority ethnic girls. The Norwegian Government and IKEA, the Swedish home-furnishings retailer, are major UNICEF funding partners. Norway has committed US $1.6 million, and IKEA has contributed more than US $1 million for these projects. Although 95 per cent of all eligible children attend primary school, an estimated 20 per cent of the children of the 11 million members of ethnic minorities do not have access to basic education. Additionally, drop-out rates among ethnic minorities are high due to the lack of trained bilingual teachers, limited bilingual texts and curricula and inadequate infrastructure. Adolescent girls are especially at risk because of poverty, cultural biases against gender equity in education and the lack of properly equipped child-friendly schools. UNICEF has worked with MOET since 2007 to research and implement educational models that support bilingual education for indigenous minorities, now benefiting some 5,000 students (including preschoolers) from the Hmong, Jrai and Khmer ethnic groups in the provinces of Lao Cai, Gia Lai and Tra Vinh. The programme to improve adolescent education, adding critical life skills, reaches an estimated 120,000 students and 3,000 out-of-school adolescents, in eight provinces. IKEA is UNICEF's largest corporate funding partner, supporting UNICEF education, child protection and health programmes for children in Asia, Africa and Europe.

Page	Credit	Description
62	© UNICEF/Gonzalo Bell	Fourth-graders, (left-right) Karina Sultanbai, Sabira Satygaliyeva, Arailym Tursynaliyeva and Symbat Otebay, seek shelter under a table during an earthquake preparedness exercise, at Elementary School No. 148 in the city of Almaty. Their school is one of the first in the country to implement the Disaster Risk Reduction (DRR) Programme. [#5 IN SEQUENCE OF SIX] In May 2011, Kazakhstan continues to be prone to natural and man-made hazards, including earthquakes, mud flows, avalanches, landslides and floods. This is, in part, due to global climate changes, which increase the regularity, scale and impact of hazards around the world. Nevertheless, hazards only become disasters when a society's ability to cope within existing resources is overwhelmed; when this occurs, the poor and marginalized – of those, especially children – are most at risk. UNICEF has joined the Government and NGO partners to create the Disaster Risk Reduction (DRR) Programme – supported by the European Commission's Humanitarian Aid and Civil Protection – to better prepare at-risk children for these potential emergencies. The Programme is guided by the Hyogo Framework for Action, a plan endorsed by 168 countries in 2005 to reduce disaster risks worldwide. The DRR Programme in Kazakhstan includes the implementation of standardized DRR training in the national school curriculum so children can identify different types of natural disasters and know how to respond to each in practical ways. It also involves carrying out measures to address risk assessment and preparedness for disaster at the local level.
65	© UNICEF/Gonzalo Bell	Seventh-grade students, (standing left-right) Ana Marjanishvili, Margo Khundzakishvili, Milena Mukaeliani and Ina Teimurazovi, present their poster on earthquakes, volcanoes and tsunamis. The poster is part of a presentation on how to stay safe in the event of natural disasters, at Mleta Public in Metla, a mountainous village north of Tbilisi, the capital. The school is one of eight pilot schools participating in the Disaster Risk Reduction (DRR) Programme. [#9 IN SEQUENCE OF NINE] In May 2011, Georgia continues to be prone to natural and man-made hazards, including earthquakes, mud flows, avalanches, landslides and floods. This is, in part, due to global climate changes, which increase the regularity, scale and impact of hazards around the world. Nevertheless, hazards only become disasters when a society's ability to cope within existing resources is overwhelmed; when this occurs, the poor and marginalized – of those, especially children – are most at risk. UNICEF has joined the Government and NGO partners to create the Disaster Risk Reduction (DRR) Programme – supported by the European Commission's Humanitarian Aid and Civil Protection – to better prepare at-risk children for these potential emergencies. The Programme is guided by the Hyogo Framework for Action, a plan, endorsed by 168 countries in 2005, to reduce disaster risks worldwide. The DRR Programme in Georgia includes a review of the country's educational policy, the development of teacher manuals and educational kits for children and the training of teachers to lead DRR sessions throughout the country. Beginning in the 2011–2012 academic year, the Programme will be introduced countrywide for grades five through nine.
72	© UNICEF/Anastasia Dutova	Girl at a Russian school working on geography lessons on earthquake and tsunamis.

Page	Credit	Description
94	© UNICEF / Tom Pietrasik	Students clap during a class activity in Namahal Vidyalaya Government Tamil Mixed School in Navalady Tsunami Resettlement Village, Batticaloa District, in Eastern Province. The school serves 434 students (grades 1-11) in the village which has also been affected by conflict. The original school was destroyed in the tsunami and 119 students died. UNICEF funded construction of the new school, which opened in June 2008. It is bright, well-ventilated and includes an auditorium. UNICEF also supported teacher-training. In September/October 2009 in Sri Lanka, long-term development continues, almost five years after the 26 December 2004 earthquake off the western coast of Indonesia and subsequent tsunamis devastated coastal areas in more than eight countries. The tsunami killed almost 230,000 people, destroyed infrastructure, schools and health facilities, and caused massive social, economic and environmental devastation. An estimated one third of all victims were children. The international community responded with an unprecedented outpouring of relief and recovery support. UNICEF tsunami funding for all countries reached more than US $694 million, 75 per cent of which was raised from individual and private sector sources by National Committees. More than 35,000 Sri Lankans were killed and over 430,000 were displaced by the tsunami. Working with government authorities, local communities, UN and other partners, UNICEF has supported sustained emergency relief and development including: support for integrated health, nutrition and early child development; construction of health facilities, social-care centres, and earthquake-resistant 'child-friendly' schools; school rehabilitation and the provision of related supplies; the installation of safe water points and improved sanitation systems; and psychosocial and other child protection interventions. UNICEF has also provided emergency support for people in tsunami-affected areas who were caught in the country's long-running civil conflict between the Government and the now-defeated rebel Liberation Tigers of Tamil Eelam (LTTE). UNICEF tsunami-related programmes are now integrated into ongoing country programming.
109	© UNICEF/Olivier Asselin	A boy washes hands after using latrines at the Kathala community primary school in the village of Kathala, Bombali District, Sierra Leone on Friday March 25, 2011.
120	© UNICEF/ Candido Alves	Students are happy and give applause/clapping their hands when participating in the launch of the Back to School Campaign hold at Farol Primary School on September 4, 2006.
132	© UNICEF/Giacomo Pirozzi	2006, Tanna Island, Imanaka primary school, Lenakel Area, this is a child friendly school supported by UNICEF. They follow the French curricula. Children in class learning about plants, learning how to make toys and baskets from palm tree leaves, dancing in the school garden wearing their traditional costumes, portraits in their traditional costumes and in class doing French first and then Mathematics.
136	© UNICEF/Nicole Toutounji	In August 2001 in France, two adolescent girl cousins, (left-right) Chloe Kfoury, 15, and Nazli Kfoury, 16, stand together on a street in Paris, the capital.
136	© UNICEF/Christine Nesbitt	A girl writes in her exercise book in an overcrowded classroom at Hanock Msokera primary school in Kasungu city in Kasungu district in Central Region of Malawi on October 30, 2012. Overcrowding in classrooms is a problem for both learners and children. More than 200 learners attend this class for Standard 7, the second last year of primary school, at Hanock Msokera primary school. The nationally recommended number is a ration of sixty learners to one teacher.

Page	Credit	Description
137	© UNICEF/Gonzalo Bell	(Middle) fifth-grade student Anzori Burduli pretends to be injured as he is evacuated by two ninth-graders, Misha Burduli (left-right) and Shio Burduli, during a simulation exercise, at Mleta Public School in Metla, a mountainous village north of Tbilisi, the capital. The school is one of eight pilot schools participating in the Disaster Risk Reduction (DRR) Programme. [#6 IN SEQUENCE OF NINE] In May 2011, Georgia continues to be prone to natural and man-made hazards, including earthquakes, mud flows, avalanches, landslides and floods. This is, in part, due to global climate changes, which increase the regularity, scale and impact of hazards around the world. Nevertheless, hazards only become disasters when a society's ability to cope within existing resources is overwhelmed; when this occurs, the poor and marginalized – of those, especially children – are most at risk. UNICEF has joined the Government and NGO partners to create the Disaster Risk Reduction (DRR) Programme – supported by the European Commission's Humanitarian Aid and Civil Protection – to better prepare at-risk children for these potential emergencies. The Programme is guided by the Hyogo Framework for Action, a plan, endorsed by 168 countries in 2005, to reduce disaster risks worldwide. The DRR Programme in Georgia includes a review of the country's educational policy, the development of teacher manuals and educational kits for children and the training of teachers to lead DRR sessions throughout the country. Beginning in the 2011–2012 academic year, the Programme will be introduced countrywide for grades five through nine.
143	© UNICEF/Gonzalo Bell	(Foreground left-right) Aruzhan Turganbayeva and Danil Tikhoncheyev, both of whom are 6 years old, read their Disaster Risk Reduction (DRR) Programme textbooks, which guide children through different types of emergencies and provide practical methods of response, at Kindergarten No. 53 in the city of Almaty. The school is one of the first in the country to implement the DRR Programme. [#3 IN SEQUENCE OF SIX] In May 2011, Kazakhstan continues to be prone to natural and man-made hazards, including earthquakes, mud flows, avalanches, landslides and floods. This is, in part, due to global climate changes, which increase the regularity, scale and impact of hazards around the world. Nevertheless, hazards only become disasters when a society's ability to cope within existing resources is overwhelmed; when this occurs, the poor and marginalized – of those, especially children – are most at risk. UNICEF has joined the Government and NGO partners to create the Disaster Risk Reduction (DRR) Programme – supported by the European Commission's Humanitarian Aid and Civil Protection – to better prepare at-risk children for these potential emergencies. The Programme is guided by the Hyogo Framework for Action, a plan endorsed by 168 countries in 2005 to reduce disaster risks worldwide. The DRR Programme in Kazakhstan includes the implementation of standardized DRR training in the national school curriculum so children can identify different types of natural disasters and know how to respond to each in practical ways. It also involves carrying out measures to address risk assessment and preparedness for disaster at the local level.

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Towards a Learning Culture of Safety and Resilience:

Technical Guidance for Integrating Disaster Risk Reduction in the School Curriculum