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Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries



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Young girl in class, Ethiopia, 2005.

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Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries

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Foreword

Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries

The increased exposure of countries to both natural and man-made hazards poses a threat to lives and sustainable development efforts.

In 2011 alone, 302 hazards resulted in disasters that claimed almost 30,000 lives, affected 206 million people and inflicted damages worth an estimated US\$366 billion, according to the United Nations Office for Disaster Risk Reduction ('UNISDR' Towards a Post-2015 Framework for Disaster Risk Reduction). In the event of a disaster, children are the most affected, schooling systems are disrupted, therefore affecting a fundamental right of children, the right to education. Developmental gains in education are reversed with the damage or destruction of school facilities, the prolonged disruption of education, limited access to schooling, and decreased education quality. To effectively reduce disaster risks for communities, the United Nations Children's Fund 'UNICEF' and the United Nations Educational, Scientific and Cultural Organisation 'UNESCO' recognise the important role education plays in reducing vulnerability and building resilience. Education can be instrumental in building the knowledge, skills, and attitudes

necessary to prepare for and cope with disasters, as well as in helping learners and the community to return to a normal life. This report is a mapping of countries that have included elements of disaster risk reduction into their education system. It captures national experiences whilst noting key challenges in countries where disaster risk reduction is less clearly prioritised or where specific teacher training doesn't exist.

We hope that this publication and the subsequent technical guidance for education planners that UNICEF and UNESCO are developing will provide support to all countries in the process of integrating disaster risk reduction into their curricula with examples of best practices and innovative solutions.

By placing Education and Disaster Risk Reduction at the heart of the sustainable development agenda we are offering future generations the chance to thrive.

UNICEF and UNESCO would like to thank the consultants who undertook this exercise and all the members of the technical reference group for their commitment and dedication to this project.



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¹ UNISDR - Post-2015 Development Agenda

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Executive Summary

This document reports the findings of a UNICEF/UNESCO *Mapping of Global DRR Integration into Education Curricula* consultancy. The researchers were tasked with capturing key national experiences in the integration of disaster risk reduction in the curriculum, identifying good practice, noting issues addressed and ones still lacking and reviewing learning outcomes. The methodology employed has been one of meta-research of available literature and case study documentary research into the experiences of thirty countries.

The most frequently found approach to DRR integration is that of infusion, i.e., disaster-related themes and topics that are woven into specific school subjects. DRR is, for the most part, integrated into a narrow band of subjects, typically the physical and natural sciences, although there are examples of its appearance across a wider range of subjects. There are a limited number of examples of DRR appearing as the primary focus or key strand within a special new subject area. Moreover, there is little evidence of cross-curricular linkages being forged nor of an interdisciplinary approach being adopted. If horizontal integration is not prominent, neither is vertical integration of DRR learning at the primary and secondary grade levels.

A broad range of approaches to integrating disaster risk reduction has been identified: the textbook-driven approach; the pilot project approach; the centralized competency-based approach

(in which curriculum development is determined by the identification of key competencies); the centrally developed special subject approach; the symbiosis approach (in which an established cross-curricular dimension such as environmental education, education for sustainable development or life skills education serves as a carrier for DRR); the 'special event' approach. The advantages and disadvantages of each approach are enumerated.

Learning and teaching approaches used in addressing DRR curriculum tend to be generally limited in application. Links are not, in many cases, being made between the competency, community engagement and proactive citizenship ambitions of DRR and the need for interactive, participatory and 'in the field' learning through which competencies, involvement literacy and confidence are built. Successful examples of interactive, inquiry, experiential and action learning are to be found across the case studies but not in great numbers. There is little evidence for affective learning approaches (involving the sharing of feelings and emotions) even though learning about hazard and disaster can elicit a strong emotional response in the learner. The need for affective learning becomes ever stronger in that the increasing incidence of disaster means that pre-disaster learning is increasingly taking place in post-disaster or slow-onset disaster learning environments.

Rebuilding schools after the 2010 earthquake, Haiti.



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With a few exceptions, an assessment of student DRR learning is thin on the ground. The assessment that does take place tends to be summative and written rather than formative, multi-modality, and designed to inform and improve the learning process. Exciting ideas for DRR-appropriate student assessment such as self-assessment, peer assessment and portfolio assessment tend to remain for the most part aspirational with relatively few examples of their concrete implementation. Assessment tends to signal curriculum status, while shortfalls and shortcomings in assessment of student DRR learning leave the integration project incomplete.

Teacher professional development in DRR also needs advancing. In a number of cases, teachers are given a manual for teaching DRR but provided with no training. In other cases, the manual is linked to training. Most training described in the case studies is content-focused, i.e., concerned with familiarizing teachers with the new content they are being asked to deliver. In some cases, practice in DRR facilitation in the classroom through interactive processes is given equal weight in the training alongside the introduction of new content. Across the case studies, however, the training remains of short duration, usually a one-off event, with no evident follow-up, aftercare or learning reinforcement. There is therefore a clear need for more systematized, reinforced and sustained professional development. No examples of DRR initial teacher training programmes have been found.

The researchers have discovered no comprehensive, systematic listing of DRR learning outcomes; there are simply subject-specific lists and unit-specific lists. An analysis of the lists reveals a heavy predominance of knowledge-based outcomes. Skills-based learning outcomes do feature but they are often restricted to practical skills and do not respond to the community engagement and change agency ambitions of DRR. The treatment of attitudinal and dispositional learning outcomes is, at best, tokenistic. A comprehensive listing of generic DRR learning outcomes is included in the report. The list is more than a summation of the present 'state of the art' of DRR learning outcome development but rather seeks to 'fill the gaps' in an aspirational way.

The thirty case studies cover all UNICEF regions and represent all levels of development. They reflect the wealth and variety of national initiatives to integrate DRR into school curricula. There are twenty-five extended case studies with sub-sections on the following: curriculum development/integration; pedagogy; student assessment; learning outcomes/competencies; policy development, planning and implementation aspects. There are five shorter, synoptic cases.

A checklist of optimal DRR curriculum practice concludes the report.

Section 1. Introduction

The *Hyogo Framework for Action (HFA) 2005-2015: Building the Resilience of Nations and Communities to Disasters* adopted by 168 Member States of the United Nations at the January 2005 World Conference on Disaster Reduction resolved to 'use knowledge, innovation and education to build a culture of safety at all levels' as an action priority. An indicator of achievement would be the 'inclusion of disaster risk reduction knowledge in relevant sections of school curricula at all levels' (UNISDR, 2005, 9).

The UN International Strategy for Disaster Reduction (ISDR) Secretariat, tasked with supporting governments in the implementation of the Hyogo Framework, undertook a global campaign, *Disaster Risk Reduction Begins at School* from 2005 to 2006, mobilizing global efforts to integrate disaster risk reduction (DRR) into school curricula as well as school safety infrastructures and procedures (UNISDR, 2007). When the Second Session of the ISDR Global Platform for Disaster Risk Reduction was held in 2009, commitments were made to integrate DRR into school curricula by 2015, commitments that were reinforced at the 2011 Third Session of the Global Platform (UNISDR, 2009, 2011a).

In the compilation of national progress reports on the implementation of the Hyogo Framework curriculum indicator, 2009-11, just over half of the 70 reporting countries relate the inclusion of DRR-related themes and topics, mainly at the primary level (UNISDR, 2011b). Thus, while overall governments were ready and willing to respond the Hyogo imperative and to meet the 2015 deadline, they still lacked an understanding of the nature of DRR-related curricula and how to develop and implement them. There was a proliferation of documentation offering glimpses of good practices and pointing to windows of opportunity

in curricula for integrating DRR, but no clear picture of how to proceed and little way of knowing what other countries were doing (Ibid). A critical mapping was therefore called for.

This report is the primary output of a September to December 2011 co-joint UNICEF/UNESCO *Mapping of Global DRR Integration into Education Curricula* consultancy. The goals of the consultancy were to 'undertake a comprehensive mapping that captures key national experiences and good practices with regard to integration of DRR in school curriculum'. To this end, the researchers have undertaken a desk review of literature as well as case study research into DRR-related curriculum development and integration, pedagogy, student assessment, teacher professional development and guidance, learning outcomes and policy development, planning and implementation aspects covering some 30 countries in all.

The consultancy and resultant report are intended to inform a second co-joint consultancy in 2012 to develop policy and technical guidance to governments on integrating DRR learning outcomes into primary and secondary level curricula, teaching and learning.

More widely, the report is intended to inform policy and strategic deliberation, development and implementation in light of the 27 July 2010 Resolution of the UN General Assembly on *the right to education in emergency situations* requesting Member States to 'ensure that the best possible systems of education are in place,' including, *inter alia*, the 'appropriate adaptation of curricula and training of teachers' and 'disaster preparedness programmes in schools' so as to withstand emergencies (UNGA, 2010a, 3)¹.

¹ The Interim Report of the Special Rapporteur on the right to education of 5 August 2011 pursuant to the Resolution reinforced its message by recommending that 'Disaster risk reduction and preparedness notions should be embedded in education policies and curricula' and that 'participatory processes involving students and their communities must be used to ensure local hazard assessments and preparedness' (UNGA, 2010b, 23).

Congolese children during a lesson at the Mugosi Primary School close to the Kahe refugee camp. The school, which is still under construction, is mainly visited by children from the camp and nearby villages, the Democratic Republic of Congo.



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Section 2. Methodology

The methodology employed in this study has essentially been one of meta-research of available documentation coupled with documentary case study research.

At the outset, UNICEF furnished the researchers with electronic portfolios of documents on disaster risk reduction education from a range of countries. The documents were read and annotations written.

A search for further documentation involved:

- Approaches to UNICEF, UNESCO, UNDP, UNEP for specific regional and country contacts and for copies of additional documents to which researchers found references in the electronic portfolios
- Approaches to umbrella bodies for contacts and documentation and for following up leads for potential country case studies, i.e., UNISDR, the Inter-Agency Network for Education in Emergencies (INEE), the Coalition of Global School Safety (COGSS)/Disaster Prevention Education (DPE), and the Global Facility for Disaster Reduction and Recovery (GFDRR)
- Utilizing the data bases of INEE², PreventionWeb³, the UNICEF Intranet and UNESDOC⁴
- Approaches to international non-governmental organizations for contacts and documentation and for following up on leads on potential case studies, i.e., ActionAid, CARE, Plan International, Save the Children, Oxfam, International Federations of Red Cross/Red Crescent, Norwegian Refugee Council and World Vision
- Exploring UNISDR country progress reports, 2009 and 2011, on the implementation of Hyogo Framework for Action Priority 3, core indicator 3.2

- Keyword searching for DRR educational documents
- Posting a request for data in the INEE *Bi-weekly Bulletin* (15 October 2011)
- Following up on all of the above with direct communications with UNICEF, UNESCO and UNDP regional and country officers, regional and country INGO and NGO officers, and with officials of ministries and/or governmental bodies in the search for deeper and richer data.

In communications in search of country-specific documentation the researchers identified the following criteria for choice of countries for the study:

- Countries in which curricula respond to a range of disaster hazards
- Countries in which there are primary level and secondary level DRR-related curricula
- Countries in which DRR appears across a range of subjects
- Countries in which there is a spiral or cumulative curriculum (i.e., building DRR knowledge, skills, attitudes and behaviours architectonically through primary then secondary levels)
- Countries in which there are noteworthy and innovative learning and teaching approaches
- Countries in which there are innovative approaches to assessment of students' DRR learning
- Countries that have documented national and/or regional policies for DRR in the curriculum
- Countries in which there is structured and systematic training and guidance to teachers in their delivery of DRR curriculum
- Countries in which DRR-related curriculum, learning and teaching link to Education for Sustainable Development, Climate Change Education, Emergency Education,

² <http://www.ineesite.org/index.php/resourcedb/>

³ <http://www.preventionweb.net/english/professional/publications/>

⁴ <http://www.unesco.org/new/en/unesco/resources/online-materials/publications/unesdoc-database/>

¹⁹ <http://standart.edu.ru/catalog.aspx?CatalogId=1083>

Section 2. Methodology

Environmental Education, Child Friendly School initiatives and/or Life Skills Education

It was assumed that noteworthy cases would meet a significant number, but not necessarily all, of the criteria. The resultant collection of case studies, taken as a whole, would also meet two further criteria: representation of all UNICEF regions and of all development levels.

The first major task of the researchers was to develop an annotated review of DRR in curriculum documentation for presentation at a UNICEF/UNESCO meeting of key project stakeholders. The meeting was held in Paris on 31 October 2011.

The review was organized into four sections:

- Global documentation (i.e., documentation covering examples of DRR in curriculums from around the world)
- Regional documentation (i.e., documentation covering examples of DRR in the countries of a specific region)
- Country-specific documentation
- Academic papers

For annotating each global and regional document, the following headings were employed for analysis and discussion:

- Policy
- Curriculum (grades, subjects)
- Learning and Teaching Materials (including hazards addressed)
- Pedagogy
- Assessment
- Professional Development
- Comments (i.e., additional points of a general nature)

For the annotation of country-specific documents and academic papers, each entry was accorded a single paragraph of annotation.

The bulk of country-specific annotation was employed in support of 'work in progress' case studies of 23 countries. The findings and insights from the case studies formed the focus of discussion at the 31 October 2011 Paris meeting. By the close of meeting suggestions for a further 24 case studies had been floated.

After the Paris meeting the researchers explored the feasibility of each of the additional case study suggestions (in terms of available documentation) and then proceeded to extend and elaborate upon the existing 23 case studies.

The overall research process involved 73 different approaches overall including 52 to UN regional and country offices and 21 to ministries and/or governmental bodies, eliciting 48 responses in total.

Three interviews took place by telephone or Skype facility. There were also email dialogs with key informants in nine countries to whom successive drafts of the case study in question were also shown in order for them to check for accuracy and offer feedback.

After the earthquake that hit Haiti on 12 January 2010 - The Saint Louis de Gonzague School Complex in Port-au-Prince.



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Where it did not prove possible to elicit further data in the case of existing case studies and where there was a sufficient but limited amount of data for new case studies, synoptic case studies were written. Extended case studies were organized according to the following headings:

- Overview
- Introduction
- Curriculum Development/Integration
- Pedagogy
- Student Assessment
- Teacher Professional Development/Guidance
- Learning Outcomes/Competencies
- Policy Development, Planning and Implementation Aspects

Altogether 30 case studies have been written, including five synoptic case studies. The case studies form Section 10. They are organized according to region:

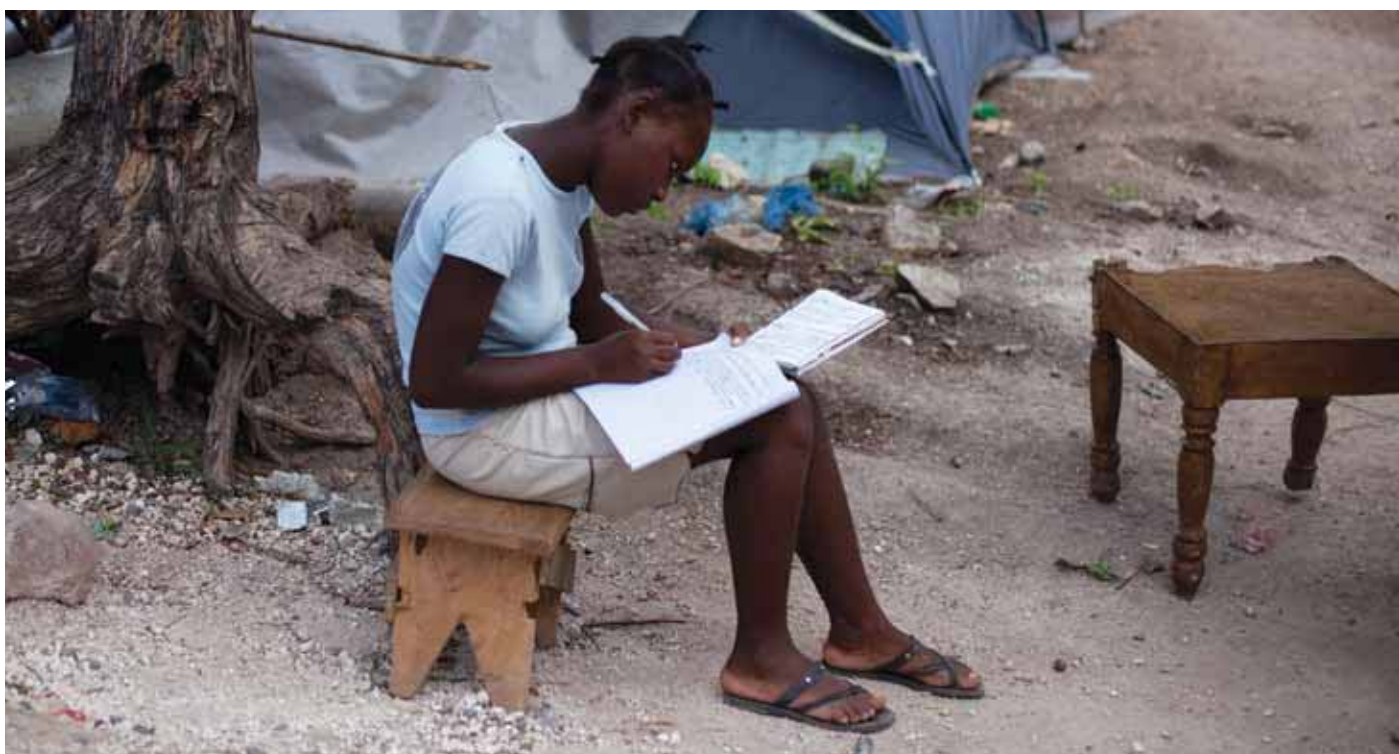
- *Central and Eastern Europe and the Commonwealth of Independent States:* Armenia, Georgia, Kazakhstan, Russian Federation, Turkey
- *East Asia and the Pacific:* Cambodia, Fiji, Indonesia, Lao PDR, Myanmar, The Philippines
- *Eastern and Southern Africa:* Angola, Lesotho, Madagascar, Malawi
- *Industrialized Countries:* France, Japan, New Zealand
- *Latin America and the Caribbean:* British Virgin Islands, Chile, Costa Rica, Cuba, Nicaragua, Peru
- *Middle East and North Africa:* Egypt
- *South Asia:* Bangladesh, Maldives, Nepal
- *West and Central Africa:* Benin, Nigeria

The review and annotation of DRR-related education literature forms the Annex to the internal version of this document.

The case studies as well as the literature reviewed have been drawn upon in writing the commentary chapters (Sections 3-9). In order to summarize the findings, a checklist for the integration of DRR into school curricula (Section 11) is offered.



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Section 3. Disaster Risk Reduction in the Curriculum

Disaster risk reduction should be systematically treated across the curriculum and through the grade levels. The treatment must extend beyond

the basic science of hazards and safety measures to consider prevention, mitigation, vulnerability and resilience building.

A review of DRR-related educational documentation and of the 30 case studies featured in this report reveals a range of approaches to the inclusion of disaster risk reduction in school curricula.

The most frequently found approach is that of *infusion* or *permeation* whereby DRR themes and topics appear within the curriculum of specific school subjects. This usually happens following a *curriculum review* whereby the curriculum is scrutinized for its DRR relevance and potential. The nature of the scrutiny ranges from the *literal* (i.e., a discussion of earthquakes in the Geography curriculum provides an opportunity for DRR) to the *holistic* (i.e., identifying opportunities for DRR not necessarily grounded in manifest disaster-related topics in a syllabus but in the intrinsic potential of the subject itself, e.g., seeing the opportunities for reinforcing a culture of safety through, say, drama, mathematics or music).

A *literal* reading of curriculum tends to result in *limited infusion*, i.e., DRR is integrated into a narrow band of subjects, typically the physical sciences (Geography and Science) in which study of natural hazards has a longstanding place. A *holistic* reading of curriculum potential opens up the possibility of DRR integration within and across all or most subjects.

Limited infusion is more likely to expose DRR to the cultural assumptions and confines of the restricted range of subjects in which it appears. With Geography and Natural Science the most regularly chosen carrier subjects, the culture of the classroom is likely to orient learning outcomes towards the acquisition of knowledge and limited skills (i.e., skills traditionally associated with those subjects). This in turn may well preclude

the realization of the practical and community-linked disaster mitigation and resilience goals and dispositions of DRR. Values and attitudes associated with DRR are also less likely to receive a thorough airing within a subject culture of 'objectivity'. Limited infusion more often than not relies on the presence of pre-existing disaster-related topics in the curriculum, thus lending an arbitrary rather than a holistic or goals-derived orientation to DRR curriculum development strategies.

Holistic infusion can help overcome the tramlines of specific subjects by giving the student a range of different lenses through which to perceive and articulate DRR. The question then follows as to how learning within different subject frames is interfaced. In the country case studies researchers have reviewed, little evidence has surfaced thus far that DRR learning in different subjects is happening in an interdisciplinary and systematic way in which what is learned in one subject is linked to, built upon and fed into what is being learnt in other subjects. There is, moreover, no evidence of student exposure to DRR being mapped, monitored and capitalized upon across the curriculum to ensure reinforcement of key messages, knowledge, skills and attitudes. A comprehensive and systematic approach seems absent⁵.

While *horizontal* synergies between subjects within one grade level are not being achieved, structured *vertical* reinforcement of DRR learning outcomes through the grade levels also appears to be a rare occurrence. A notable exception can, however, be found among countries reviewed such as France (case study 16). Nevertheless, the notion of a DRR spiral curriculum, the cumulative reinforcement, deepening and refinement of knowledge, conceptual understanding,

⁵ The same is also true of manifestations of limited infusionist curricular responses to DRR even though cross-fertilization between generally closely associated subjects might be readily effected.

Section 3. Disaster Risk Reduction in the Curriculum

skills and dispositions through the grade levels, has yet to be widely taken on board.

A further approach to integrating DRR into the curriculum is the *dedicated subject* approach. Under this heading a new subject area is developed within which DRR becomes the principal focus or a key strand. This has been the case with the 'Head of Class Hour' programme in Georgia (case study 2). The Russian Federation, too, has a stand-alone subject called 'Basics of Life Security' (case study 4). An alternative path is for centralized curriculum reform to create an enabling space for, *inter alia*, DRR curriculum, an option most likely to be taken up by schools in disaster-prone localities and by DRR enthusiasts. The 'period of integrated study' in Japan (case study 17) provides an example, as does the 'local content curriculum' in Indonesia and Lao PDR (case studies 8 and 9).

The *infusionist* and *dedicated subject* approaches are not mutually exclusive. A case can be made for linking the two approaches such as in Georgia in which the ongoing 'Head of Class Hour' programme is complemented by the pick-up of DRR themes in Science, Social Sciences, Geography and Civic Education. There can be positive reinforcement and, hence, greater impact when students encounter DRR consistently and continually within one curriculum space and periodically in other spaces.

Table 1 summarizes the frequency with which subjects are cited as carriers for disaster risk reduction curriculums across the 30 case studies featured in this report. The Natural Sciences are the most commonly cited carrier with Social Sciences/Studies, Geography and the (national) Language Studies well represented, if lagging some distance behind. Only two countries have

opted for a dedicated subject approach. Allowing for the arbitrary placement of variously named and combined subjects, having 12 countries listed against three or fewer subjects with only four countries listed against five or more subjects is indicative of the fact that limited infusion is a much easier proposition than holistic infusion. This is not surprising given that infusion across the curriculum requires 'high-level policy commitment and guidance,' dedicated resources and a broad alliance of curriculum and content experts (UNISDR, 2008, 26).

Lesotho (case study 13) offers an example of a nation in the process of completely re-configuring its curriculum away from a traditional subject-based academic model to one primarily built upon skills development. This seems to be opening up a range of promising opportunities for the integration of DRR into the curriculum. In a largely parallel way, Malawi (case study 15) has gone down the path of organizing its curriculum according to 'seven main categories of skills' that most likely will help embed climate change and DRR-related learning more thoroughly.

Many of the countries reviewed in the case studies emphasize the importance of *co-curricular* or *extra-curricular* dimensions of DRR, referring to activities delivered outside of the formal curriculum such as assemblies, after-school activities, student clubs, community meetings, exhibits, special events, competitions and safety drills. What is not apparent is how much, if at all, most co-curricular initiatives feed into and from the formal curriculum, something which the term co-curricular implies. There seems to be relatively little evidence of systematic and structured attempts to link students' DRR experiences within and outside the formal curriculum. One worries about

Table 1. DRR Curriculum Integration Strategies: Summary

DRR Carrier Subjects: Summary	Number of Country Case Study	Frequency
Natural Science Cluster (including Basic/General Science, Biology, Chemistry, Earth Studies, Earth and Life Sciences, Geology, Physics)	2, 3, 6, 7, 9, 10, 11, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 28, 29	20
Social Science/ Social Studies Cluster	2, 7, 9, 11, 15, 17, 18, 19, 21, 25, 26, 28	12
Geography [Note: included countries highlighted geography as a distinctive subject although its contents overlap with natural and social science clusters mentioned above]	2, 6, 7, 15, 16, 17, 22, 23, 24, 25, 29	11
Language Cluster (including Arabic, Bangla, English, English Literature, French, Nepali, Spanish, Spanish Literature)	7, 10, 14, 18, 21, 22, 23, 25, 26, 28	10
Civic and Citizenship Education	14, 16, 21, 22, 23	5
Health and Physical Education Cluster	7, 8, 17, 18	4
Technology Cluster	14, 17, 24, 29	4
Life Skills Cluster	3, 10, 15	3
Dedicated DRR Subject	2, 4	2
Pre-military Education	3	1
Civil Defence	22	1
Agriculture	15	1
All Subjects	4, 5	2

Notes:

- There is no subject information for three of the synoptic case studies (Armenia, Angola and Chile) and Lesotho, with its new skills-based curriculum is not included in this table. Carrier subjects for Nigeria are currently under consideration.
- The accuracy of the chart is reliant upon complete returns from each country - which researchers cannot guarantee to be the case.

Section 3. Disaster Risk Reduction in the Curriculum

the potentially diversionary nature of de-coupled co-curricular approaches while at the same time understanding the appeal of the 'low hanging fruit' of the co-curricular route when faced with 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 a diversion and distraction from negotiating the steep, often jagged slopes of curriculum change. The call for student engagement with the community from within the DRR curriculum necessarily involves a bringing together of the curricular and co-curricular.

A leitmotif in this brief curriculum overview is the relative dearth of comprehensive and systematic approaches to the integration of DRR into the school curriculum. Some further points might be made in this regard.

First and foremost, a great deal of DRR curriculum is limited to exploring the basic science of environmental hazards before moving on to instruction in safety measures. Often missing is systematic coverage of the hazard, its prevention, mitigation, and, finally, preparedness to confront it. Moreover, addressing the coverage of and preparedness for the hazard without considering its prevention and mitigation is insufficient. Understanding the science of a hazard alone does not develop the propensity for pro-action, while focusing exclusively on safety without examining prevention and mitigation implies the inevitability of what is to happen. Attention is therefore diverted from the social, economic and political dimensions of disasters, and from addressing vulnerabilities and building resilience. In other words, a basic disaster risk equation is not generally being followed through on in any systematic way in the development of curriculum and lesson materials, i.e.,

$$\text{Disaster Risk} = \frac{\text{Natural Hazard} \times \text{Vulnerability}}{\text{Capacity of Societal System}}$$

(UNESCO/UNEP, 2011, 63).

A curriculum that aims to build 'proactivity' in those facing risks must explore locality and community as well as wider societal, economic and political structures and dynamics through the inversely complementary lenses of vulnerability and resilience.

Second, in the cases reviewed DRR curricula vary in the range of hazards they opt to address. Most countries focus upon the natural hazards that are closest to their experience. For example, Kazakhstan covers earthquakes, fires, flows, landslides and floods; Cambodia focuses primarily on floods while also covering volcanic eruptions, earthquakes, hurricanes, drought and deforestation; the British Virgin Islands cover landslides, hurricanes, earthquakes and volcanic activity (case studies 3, 6, 19). On the other hand, a number of countries bring natural hazard and human induced and technological hazards together in their DRR curricula. For example, Lao PDR and Madagascar include, respectively, civil unrest and malnutrition alongside natural disasters, while New Zealand's programme stretches to 'non-natural disasters' such as pandemics, biohazards, terrorist bombs and threats (case studies 9, 14, 18).

In Western and Central Africa, there has been ongoing interest in conflating natural disaster-related DRR education with education against conflict, which has been termed 'DRR-plus' (UNICEF, 2011) and 'conflict and disaster risk reduction (C/DRR)' (UNESCO IIEP & UNICEF WCARO, 2011). Nigeria's emerging DRR curriculum framework reflects this trend by including civil unrest (case study 30).

Rebuilding schools after the 2010 earthquake, Haiti.



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In considering the thematic range of DRR national curricula, more often than not the 'elephant in the room' is climate change. Climate change is exacerbating both the frequency and intensity of disasters but relatively few DRR-related curricula incorporate climate change education⁶. The issue of climate change education raises the question of movement to a broader thematic base for DRR education. 'The integration of climate change adaptation and disaster risk reduction is a necessity that must be addressed at the national and local levels through integrated plans to enhance resilience of communities' (UNISDR, 2011,10).

Third, in what are predominantly centrally prescribed curricula, there seems to be little systematic attempt to capitalize on local and indigenous knowledge and wisdom concerning hazard and disaster prevention as well as long-proven local coping skills. Indonesia and Lao PDR are examples of locally focused DRR curriculum development through the vehicle of a 'local content curriculum' (case studies 8, 9). DRR curricula in the Russian Federation allow flexibility in adapting to local contexts and needs (case study 4).

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⁶ Trends in DRR curriculum development in Africa are the exception. In Lesotho, Madagascar, Malawi, Benin and Nigeria (case studies 13, 14, 15, 29, 30) climate change has been moved to centre stage.



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Section 4. Approaches to Integrating Disaster Risk Reduction in the Curriculum

There are a range of different approaches to integrating disaster risk reduction in the curriculum, each with its own merits and each with its own downsides.

Creating a hybrid approach out of the several approaches has much to commend it.

The 30 case studies featured in this report suggest some broad approaches, none mutually exclusive, for taking forward DRR-related curriculum development and integration. Each is critically reviewed below.

The textbook-driven approach

This approach usually involves the curriculum arm of the Ministry of Education, often working in conjunction with national and international non-governmental organizations, in revising textbooks of particular subjects to include, or broaden the pre-existing treatment of, hazard-related or disaster-related topics.

Advantages

- Textbook revision is undertaken centrally. The adoption of the revised textbook at the ministerial level ensures the treatment of hazards and disasters within identified subjects in all state schools.
- In countries in which a “textbook culture” already exists, teachers tend to readily take up the new hazard and disaster-related textual material.
- There is no challenge to teachers’ traditional understanding of their role and little need for teacher training going beyond familiarization with the new textbook material (unless there is a specific national intention to vivify the use of the text book by introducing innovative approaches to handling textual material).

Disadvantages

- It is very doubtful whether textbook-led curriculum development alone is able to deliver the skills, dispositional and behavioural

learning outcomes that disaster risk reduction education calls for. Textbooks tend to focus on explaining the causes and effects of hazards and safe behaviour and are unlikely to foster active disaster preparedness and mitigation skills development in and of themselves.

- A textbook-based classroom culture encourages student passivity and inhibits the interactive and experiential learning that is seen as a means of fostering engaged and participatory citizenship.
- A centrally driven textbook approach is a ‘one-size-fits-all’ approach that is insufficiently reflective of and responsive to local cultures and the need to address local hazard conditions.

Examples of textbook-driven disaster-related curriculum development are offered by Bangladesh and Nepal (case studies 26, 28).

The pilot project approach

This approach usually combines the production of new, often multi-media, learning materials, the development of training manuals developing new pedagogies and innovative forms of assessment, and the training of instructors. It also usually involves successive phases of pilot implementation in schools in a limited number of school districts allied with successive and widening waves of teacher training. Pilots may, in some instances, be nationally sponsored and orchestrated but at times are the brainchild of local and international non-governmental organizations with, in some cases, thin lines of communication with the central government.

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Advantages

- Pilot projects can offer fertile arenas for enthusiastic and inspired engagement, the emergence of committed leadership, a sense of ownership and space for innovation.
- Centrally driven pilots, involving partnerships of ministries responsible for education and emergencies, non-governmental organizations and academic institutions, have the capacity, and in many cases the governmental backing, clout and availability of financial resources, to move to scale incrementally but fairly quickly⁷.

Disadvantages

- Centrally launched pilot curriculum development projects can be smokescreens for avoidance of substantive curriculum change. When they end, what has been achieved is put in abeyance. Where DRR-related pilot initiatives are instigated and driven forward by a ministry or department of government other than the ministry responsible for education, the pilot outputs and outcomes may receive only passive or reluctant support when planning for movement to scale.
- Pilot projects led by organizations or institutions other than governmental ones can often tend to focus on pilot development only latterly and belatedly, addressing movement to scale and its underlying costs. This results in stalled development and the hiatus of the project. This happens just as funding is drying up.

Examples of countries in which pilot projects have been followed by movement to scale are Turkey, Madagascar, Maldives and Nepal (case studies 5, 14, 27, 28). Examples of national pilot projects that are still awaiting replication or follow-through at scale are Armenia, Kazakhstan, Angola and Benin (case studies 1, 3, 12, 29).

⁷ However, there are cases of funding drying up and impact being lost at the very point of full-scale implementation, with consequent reduced impact.

A variation on the pilot project approach is the local project approach in which a project, with no particular ambition or expectation on the part of the originators regarding moving to scale, attracts national attention, is widely replicated and becomes part of the national DRR offering. A case in point is the Memo'Risks initiative described in the France case study (case study 16).

The centralized competency-based approach

This approach begins with a central governmental body, usually working in conjunction with key stakeholders, identifying core messages of DRR, key concepts, key knowledge and, especially, key competencies and skills to be built into the curriculum. From this initial mapping of competencies, there follow decisions and actions concerning carrier subjects, the grade level at which to integrate curriculum development, module development, materials development and teacher training. Plans for expansion to further carrier subjects and grade levels are also laid out deliberately, or alternatively, evolve based on experience and evaluation.

Advantages

- Central government backing and commitment participate in the decision to launch the initiative, which leads to quick implementation, large-scale piloting with evaluation, and rapid movement to scale.

Disadvantages

- A focus on competencies and rapidity of development can lead to a 'quick fix' approach in which the more time-consuming aspects of DRR curriculum development (such as pedagogical development, attention to values-

School children on top of a dune/ Aral, Kazakhstan.



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related issues and incremental teacher training) are brushed over. Once curriculum is in place a sense of ‘fait accompli’ rather than ‘work in progress’ can set in.

Examples of centralized competency-base DRR development include the Phillipines (case study 11) and, to some degree, Cambodia, Indonesia, Lao PDR and Peru (case studies 6, 8, 9, 24).

The centrally developed special subject (dedicated space) approach

This approach creates a new stand-alone subject dedicated entirely to or allotting significant curricula space for disaster risk reduction learning within the formal curriculum. Key messages and skills of disaster risk reduction are core or pertinent to the subject.

Advantages

- Central government backing and commitment participate in the decision to launch the initiative, which leads to quick implementation, large-scale piloting with evaluation and rapid movement to scale.
- Creation of a distinct DRR subject attracts special attention and status, clear and strong message that disaster risk reduction learning is an important part of formal learning.

Disadvantages

- Creating a special disaster-related subject might be considered to be a ‘job done’ and further efforts to infuse disaster-related themes and topics elsewhere in the curriculum might be forgotten or seen as unnecessary.

- If a special subject is limited to specific grade levels and/or is an optional course, student exposure to disaster-related learning will be very limited.
- The cross-cutting nature of disaster-related learning might be under-valued.
- It could take time to help teachers become fully conversant in the newly created subject and to develop teaching and learning materials and assessment methods.

Examples of the dedicated space approach are Georgia and Russia (case studies 2, 4). It is important to note that in both cases the newly created dedicated subject is accompanied by the integration of disaster-related learning across a number of subjects.

The symbiosis approach

This approach to disaster-related curriculum integration relies upon the ‘family resemblance’ between DRR and other cross-curricular initiatives concerned with developing social awareness and empowering the individual for active citizenship that are already mainstreamed. In this way, a cross-curricular dimension that is already in place acts as a carrier for disaster risk reduction learning while at the same time is itself enriched. Examples across the 30 case studies include embedding DRR in Life Skills, Civic/Citizenship education, environmental education and education for sustainable development. In some African countries, DRR is also finding a home within nascent or rapidly developing climate change education programmes.

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Advantages

- It is a relatively easy matter to embed further strands within existing cross-curricular dimensions and in associated professional development
- Those dimensions can themselves lend additional depth, width and substructure to understandings of the purposes and scope of disaster risk reduction education

Disadvantages

- There is some danger that by being combined with other cross-curricular dimensions, the intrinsic purposes and imperatives of DRR may become dispersed or lost. For example, the notions of 'risk' or 'safety' could become so all-inclusive that they would begin to lose focus and meaning.

An example of Life Skills becoming the primary carrier for disaster-related curriculum can be found in Myanmar (case study 10). In countries in which there is a strong tradition of cross-cutting environmental education, DRR has been taken on within that tradition, for example in Madagascar, Costa Rica, Cuba, Nicaragua, Peru and Benin (case studies 14, 21, 22, 23, 24, 29). In Latin America there has been a growing recognition that 'risk management education is a specific application of environmental education' (UNISDR/ECHO/CECC/UNICEF, undated, 64) as schools are encouraged to adopt bioregional leadership as 'promoters of territorial safety' (Ibid. 75). DRR is thus identified as the offspring of place-based environmental education. In France (case study 16) DRR is carried within the well-entrenched provision of citizenship education and by the more recent, but equally well-entrenched emergence of education for sustainable development within the curriculum. Climate change and DRR are becoming increasingly conflated

in Africa; for instance, in Lesotho, Madagascar, Malawi, Benin and Nigeria (case studies 13, 14, 15, 29, 30).

The 'special event' approach

Recalling the cautionary note concerning the co-curricular approaches given in the previous section (pp.18,19), special DRR events can have a catalytic and galvanizing influence on formal curriculum development.

Advantages

- Special events can showcase DRR and therefore bring added momentum to curriculum, pedagogical and whole-school developments and to school/community partnerships.
- Special events offer a pragmatic solution when 'overloaded teachers' feel they cannot introduce disaster-related learning into an 'overcrowded curriculum'.
- Such events offer additional spaces in which students can apply DRR learning in practice.

Disadvantages

- If they stand alone and detached from the curriculum, teaching and learning developments, special events can be diversionary affairs cloaking lack of substantive progress.

An example of the 'special event' approach is provided by Fiji (case study 7) in which a National Disaster Awareness Week for schools feeds from and into classroom learning. In Turkey (case study 5) a primary school National Disaster Education Week takes place. In Bangladesh, there are some examples of using special events for awareness raising and skills-oriented DRR learning by non-governmental organizations (case study 26).

Primary School in Serelau, Lospalos, Timor-Leste. Primary school students lining up to get porridge. Study showed that many Timorese students come to school without having breakfast at home. The Ministry of Education of Timor-Leste implements the program Merenda Escolar to meet the challenge in order to support the children's academic, mental and physical development. Picture taken January 2011.



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Table 2: DRR Curriculum Integration Strategies: Summary

Strategy	Number of Country Case Study	Frequency
The textbook-driven approach	26, 28	2
The pilot project approach	1, 3, 5, 12, 14, 16, 27, 28, 29	9
The centralized competency-based approach	6, 8, 9, 11, 24	5
The centrally developed special subject (dedicated space) approach	2, 4	2
The symbiosis approach	10, 13, 14, 15, 16, 21, 22, 23, 24, 29, 30	11
The special event approach	5, 7, 26	3

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Section 5. Towards a Pedagogy of Disaster Risk Reduction

Disaster risk reduction curriculum delivery calls for active, interactive and action-oriented learning that places a premium on in-community learning experience and rescues emotional learning from the marginal position it presently occupies.

Disaster risk reduction education is about building students' understanding of the causes, nature and effects of hazards while also fostering a range of competencies and skills to enable them to contribute proactively to the prevention and mitigation of disaster. Knowledge and skills in turn need to be informed by a framework of attitudes, dispositions and values that propel them to act pro-socially, responsibly and responsively when their families and communities are threatened.

A pedagogy that brings knowledge to life, practices skills, challenges attitudes and scrutinizes values is a pedagogy that is active, interactive, experiential and participatory. Knowledge can be learnt from books but if it is to be internalized it needs to be drawn upon and tested within real life arenas. Skills need to be practised if they are to be honed (one would not trust the driver who had learned to drive from a book). Attitudes and values are optimally challenged, tested and rethought through dialog and debate.

Such considerations lie behind the emphasis on interactive and experiential learning approaches in the majority of case studies presented in this report. It is at root a *medium* and *message* question. If the *message* of disaster risk reduction education is that students should be made ready to actively engage in pre-empting and facing potential disaster, then the *medium* through which they learn should be one of active engagement. The curriculum's themes and topics are by no means the whole message received by the students; they are complemented (or detracted from) by the hidden curriculum of the learning process. The *medium* is also the *message*. A curriculum that calls students to action while they listen in a passive and sedentary manner will be received as incongruent. On the other

hand, a curriculum that calls students to action by having them actively participate in learning is of a potentially catalytic and enabling impact.

Across the case studies are examples of engagement with disaster risk reduction curriculum using the following (overlapping) learning modalities:

- **Interactive Learning:** brainstorming (i.e., spontaneously offering ideas on a given topic, all ideas being accepted, prior to the categorization, organization and evaluation of the ideas); discussions in pairs, small groups and with the whole group; interactive multi-media presentations (by students, teacher, DRR-related visiting speakers)
- **Affective learning:** sharing feelings about threats and disasters; empathetic exercises based upon those caught up in disasters
- **Inquiry Learning:** team case study research and analysis; Internet enquiries; project work
- **Surrogate Experiential Learning:** filmmaking, board games, role plays, drama (sketches, mime, puppetry), simulation gaming; school assemblies on disaster topics
- **Field Experiential Learning:** field trips to disaster support services; hazard mapping and vulnerability assessment in schools and in communities; community hazard transects; reviewing emergency plans; interviewing local community members on hazards and hazard/disaster memories
- **Action Learning:** student community partnerships to raise hazard awareness, develop risk maps and risk reduction plans; poster campaigns; street theatre; risk reduction campaigns (e.g., tree planting)

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Of the above modalities, affective learning (i.e., learning that addresses feelings and emotions) is the least visible in the case studies. This is both strange and understandable. It is strange given that consideration of actual and potential hazards and disasters can elicit strong emotions in the learner: to learn that a disaster once ravaged one's community and that there might be a recurrence can be frightening, if not nightmarish unless pre-emptive steps are taken. However, a low premium seems to be set on affective learning within disaster-related curriculum and pedagogical development so far. This is understandable given that the facilitation of emotional learning requires special skills that, as will be discussed in Section 7, are rarely developed as part of DRR-related teacher training and guidance.

The problem is compounded by the often unspoken assumption in disaster risk reduction discourse that the focus is exclusively on disaster risk reduction. Given the increasing incidence and severity of disasters globally, the sad fact is that pre-disaster learning will increasingly occur within a post-disaster environment. This insight strongly emerged from the research into the New Zealand case study. The devastating February 2011 earthquake in Christchurch led to the sudden dispersal of children to schools in other parts of New Zealand, in some cases schools with periodic disaster risk reduction learning programmes. Teachers, often themselves experiencing post-trauma stress, felt ill-equipped and ill-prepared to address the psycho-social needs of the dispersed children in facilitating DRR learning, and also to meet the needs and sensitivities of children from outside Christchurch who were nonetheless deeply affected by what had happened to their fellow citizens. 'No research has been conducted on the effectiveness of a school-based disaster education programme for children following a disaster' (Johnson, 2011, 47).

The low prominence given to affective learning in the DRR classroom must also be addressed because a key component of such learning, self esteem building, is vital for developing responsible, responsive and active citizen. There is a high correlation between sense of personal self worth on the one hand, and a level of altruism and willingness to take action for the good of the community, on the other (Selby, 1995, 36-40). In this sense, Malawi's Life Skills curriculum, in which self-esteem building is a key element, offers potentially fertile ground for the intended embedding of disaster risk reduction and climate change issues and themes (case study 15).

What is also in the learning modalities covered in the case studies is *imaginal learning*. This modality entails using one's imagination to envision positive and negative outcomes, to reach into past times of hazard and learn from them, to mentally walk through what to do in crisis circumstances, to envision the impact a hazard might have on a community (prior to working on pre-emption). Under this heading, guided visualization activities and circle storytelling (i.e., telling stories sitting around a circle) might figure in the DRR pedagogical repertoire.

In some of the cases, relatively little is reported under the pedagogical heading. This occurs in cases of textbook-led curriculum development. There are clear blocks and obstacles to developing an interactive learning culture within a textbook-driven curriculum development culture. In this regard, the cases of Madagascar and Nepal (cases 14, 28) are especially interesting in that they illustrate how efforts are being made

School children,
Florida Valle, Colombia.



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Table 3. DRR Pedagogies: Summary

Learning Modalities	Number of Country Case Study
Interactive Learning	1, 2, 3, 4, 7, 8, 9, 10, 12, 14, 15, 16, 17, 18, 23, 25, 29, 30
Affective Learning	7, 15, 18
Inquiry Learning	2, 15, 18, 23, 25, 29
Surrogate Experiential Learning	1, 2, 3, 4, 6, 7, 8, 9, 11, 12, 17, 21, 25, 26, 29, 30
Field Experiential Learning	2, 4, 9, 17, 18, 19, 30
Active Learning	2, 4, 6, 9, 10, 14, 16, 18, 21, 26

to integrate textbook approaches to curriculum delivery with the adoption of interactive learning.

DRR-related curriculum developments that have placed significant emphasis on active forms of learning have had a positive impact on students, teachers, families and communities in a relatively short amount of time (see Georgia and Lao PDR, case studies 2 and 9).

Active learning methods often run counter to the cultural norms of both schools and communities. In this regard, processes of making parents and adult community members aware of the new practices, and allowing them to experience those practices, is one that DRR curriculum development initiatives have yet to take on.

Notes:

1. In some cases, it is not clear from the data available how much a recommended pedagogical approach (for example, in a teachers' guide or manual) is in fact being used by teachers. The above table is thus a combination of the intentional/aspirational and the actual/implemented.
2. Identification of a case study in the above table does not necessarily mean that the pedagogy is used throughout the whole country. In some cases, it is only manifest in a geographically restricted project.
3. Although the Turkey case study (5) does make general mention of active learning, this country does not appear above due to a lack of further detail.

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Gender sensitivity is another element missing within DRR pedagogical development although the intentions expressed in Nigeria (case study 30) may bode well in this regard.

Furthermore, what has yet to be addressed in any thorough and research-informed way is the how the different sets of disaster risk reduction learning approaches to be called upon in the case of rapid onset disasters--such as a hurricane--and slow onset disasters⁸, such as drought and climate change (two forms of disaster that affect each other) will be determined.

Another way to conceive of interactive learning is that of the pedagogical manifestation of the participatory rights of the child as put forth in the Convention on the Rights of the Child. In alignment with the precepts of the rights of the child the learner is both beneficiary and active agent with a voice in the flow and direction of learning. To best realize the agency of the child, her/his learning must be viewed holistically which, in turn, calls for a diverse array of engaging learning approaches.

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⁸ A slow-onset disaster is 'one that does not emerge from a single, distinct event but one that emerges gradually over time, often based on a confluence of different events' (OCHA PDSB, 2011, 3). This issue does not figure in any of the case studies.



A girl clutches a book and slate at the Pachim Gumdandi School in Boalkhali Subdistrict, near the southern port city of Chittagong, Bangladesh.



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Section 6. Disaster Risk Reduction Learning: Assessment of Students

Assessing learning brings curricular status but assessment of disaster risk reduction learning is, so far, an incomplete project.

Imaginative forms of assessment that match with active, action-oriented and competency-based learning are largely notable by their absence.

The student assessment sections of the extended country case studies are mainly notable for their thinness. This alone is indicative of one of this study's conclusions: assessment of student learning is the least considered and least developed element of disaster risk reduction education.

In some cases assessment is restricted to tests of knowledge of hazards and of what to do if a disaster threatens or strikes. Such tests usually involve students writing answers to a set of questions; in a few cases, students are asked to respond to a series of multiple-choice questions. Such forms of assessment fall short of illuminating the level of disaster-related skills and behavioural learning of students, although skills and behavioural development is held to be of core importance to DRR.

Across the set of case studies, there are a few examples of the imaginative use of a range of diverse and combined forms of assessment that seek to illuminate what knowledge students have acquired, what skills they have developed and the degree to which their attitudes and dispositions have shifted through exposure to DRR-related learning programmes. Fully elaborated, this approach is referred to as portfolio assessment in which a portfolio of different kinds of data is developed based on the performance of each student. In terms of DRR curriculum development, *portfolio assessment* remains at the level of good intentions rather than practical implementation. Malawi (case study 15) is already applying this approach to the primary curriculum overall and intends to apply it to DRR and climate change curriculum development. Drawing, miming, teacher observation (using a checklist), oral questioning, essay and report writing, singing, and comprehension of written texts will be used to assess students' ability to draw upon on acquired

knowledge and skills as well as to illuminate their attitudes, dispositions and behaviour.

DRR-related assessment in several of the countries studied here is used primarily for *summative* purposes, i.e., to gauge what students know relative to prescribed learning outcomes at milestones in a learning programme, principally upon its conclusion. Summative assessment is generally used as part of a grading process and usually involves written tests of the type described above. The countries studied in which summative assessment through tests and exercises remains the predominant form of evaluation include Turkey (case 5), Cambodia (case 6), Lao PDR (case 9), The Philippines (case 11) and Egypt (case study 25). Testing of disaster-related knowledge is often subsumed under a test for the carrier subject.

In other countries, assessment is used primarily for *formative* purposes, i.e., to highlight what is and what is not being learned and therefore enable programmatic and pedagogical adjustments to be made in a timely fashion. They include Madagascar (case study 14) in which simulation exercises are used to assess levels of student understanding, Nicaragua (case study 23) in which observations of skills and behaviour are used to determine student progress towards acquiring a culture of prevention, and, potentially, Lesotho (case study 13) in which skills-oriented forms of assessment have been promised under the new national curriculum.

Some disaster-related national curriculum programmes use a balanced assessment system in which both formative and summative assessments form an integral part of information gathering on student development and achievement.

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In Georgia (case study 2) a mixture of what are called *determining assessment* and *developing assessment* are used for DRR learning in formal learning programmes but only the latter is used to determine student needs and progress in the informal but nonetheless mandated Head of Class Hour programme. In Kazakhstan (case study 3) self-assessment and peer assessment are used for formative purposes and multiple-choice tests for summative purposes. A balanced assessment system combined with recommended portfolio style diversity in assessment approach is on hand in New Zealand (case study 18) but teacher feedback suggests minimal take-up.

Clearly, there is a case to be made for the development of more imaginative and innovative forms of assessment of student learning under DRR curricula. If knowledge, skills, attitudinal/dispositional and behavioural learning outcomes matter then appropriate assessment forms need to be considered in order to illuminate the actual extent of the realization of these outcomes. This is suggestive of the widespread application of the portfolio approach as described above, used for both formative and summative purposes. Formative assessment modalities, such as self- and peer assessment, are also consonant with the embrace of interactive and participatory learning and the child participation dimensions of the Convention on the Rights of the Child.

Potential challenges in the introduction of portfolio assessment are its time and resource implications; it takes longer and costs more, as Malawi has experienced (case study 15). Time and resource investment in assessment merits more attention by DRR education proponents. Ways to integrate assessment into the flow of the learning process should, in particular, be explored as a way forward.

Disaster risk reduction curriculum development and integration will remain an incomplete project unless student learning assessment is more comprehensively addressed. The choice of what to assess expresses a curriculum's priorities both explicitly and implicitly

Table 4. Student Assessment: Summary

Assessment Mode	Assessment Purpose	Formative	Summative
Written tests (including a computer-based exam and multiple choice questions)		15	2, 3, 4, 5, 6, 11, 25
Written essays		15, 17	
Self/peer assessment		2, 3, 15, 17, 18	
Oral questioning		11, 15	
Simulation		14	
Observations		15, 23	
Artefacts (e.g., drawing)		15	
Questionnaires		2	
Oral/written comments		2	
Homework		(5)	(5)
Demonstration, miming, singing, storytelling		15	

Notes:

- In some cases, it is not clear from the data available how much a recommended assessment type (for instance, in a teachers' guide or manual) is in fact being used by teachers. The above table is thus a combination of the intentional/aspirational and the actual/implemented.
- Identification of a case study in the above table does not necessarily imply that assessment occurs throughout the country. In some cases, it is only manifest in a particular geographically restricted area.
- It is not clear whether the homework assignment in Turkey (case study 5) was used for formative or summative assessment.



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Section 7. Teacher Professional Development in Disaster Risk Reduction Education

Upskilling teachers for effective delivery of disaster risk reduction curriculum involves a combination of training in hazard- and disaster-related content and training in facilitation of active forms of learning.

This is happening in some cases. However, thus far such training happens as a one-off event with no follow-up or teacher aftercare.

All the extended case studies featured in this report make reference to the training and/or guidance of teachers in facilitating disaster risk reduction learning in the classroom. Approaches differ. In some cases, no training event has been held but a teachers' guidance manual has been developed and, finances permitting, widely distributed. In other cases, training has taken place at only a localized piloting stage with no movement to scale of either the curriculum or associated professional development. In other cases at-scale teacher training has often taken place according to a cascade model, i.e., the training of trainers, who then proceed to train other teacher trainers or to train teachers in their own jurisdiction. In yet other cases teacher professional development is primarily made available through a website or widely circulated professional journal. Across the case studies there is considerable variation in who else, beyond the teachers receives training. There are a number of examples of principals and local/national educational administrators receiving training, separately from or attending the same workshop as the teachers. Officers of local and international non-governmental organizations oftentimes join, and contribute to, the training.

Examples of DRR professional development that is entirely or almost exclusively guide-driven DRR professional development include Nicaragua, Egypt, Bangladesh and Nepal (case studies 23, 25, 26 and 28). Primarily website-led teacher support is a feature of developments in Japan, New Zealand and Peru (case studies 17, 18, 24) while the Russian Federation (case study 4) has a professional journal with features on best practices and local experiences in DRR teaching.

Teacher training at the pilot or pre-scale level has taken place in

Armenia, Cambodia, Fiji, Lao PDR, the Philippines, Japan and Costa Rica (case studies 1, 6, 7, 9, 17 and 21). At-scale cascade training is taking place in Kazakhstan, Turkey, Indonesia and Madagascar (case studies 3, 5, 8, 14). In France (case study 16) at-scale training takes place with the agreement of the Ministry of Education through trainers of a national institute who are spread throughout all school districts. In Georgia (case study 2) at-scale training occurs through the offices of experts in education and emergency management attached to national bodies.

Forms of delivery of teacher training differ as do the nature and purposes of the training. Some training is content-focused, with the expectation that teachers will leave the training having acquired a general sense of the content they are meant to impart. It can be safely said that most training is of the 'recipe book' genre, i.e., teachers learn how to manage lessons step-by-step according to a guidebook. However, the training does not appear to develop their ability to handle and develop the material provided flexibly and creatively. The content-focused and recipe approaches are reflected in the teacher guides that accompany the training. In the former case the guide is more or less restricted to disaster-related content, with little or no reference to pedagogy, and is usually laid out to parallel the chapters of the student textbook. In the latter case, there are 'how to' instructions that offer no encouragement to creatively stray from the recipe.

Rather more holistic approaches to professional development are offered in a few of the countries featured in this report. The to-scale training in Georgia (case study 2) pairs learning about disaster risk reduction with learning how to facilitate

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interactive lessons in a one-day programme. The training offered in the pre-scale phases of development in Armenia and Kazakhstan (case studies 1, 3) has placed facilitation of interactive learning at the core of DRR professional development. Pedagogy is also central to at-scale DRR training in Turkey (case study 5).

Even in these more advanced cases, the organization of the training raises concerns. In most cases, DRR-related teacher education is characterized by a one-off event. Participating teachers receive just one training session prior to introducing the new material. There seem to be significantly few cases in which the teachers appear to have experienced facilitating DRR themselves before sharing and internally processing their classroom experiences with the trainers. There appear to be equally few occasions in which the teacher is supported by follow-up visits to the school. In short, DRR teacher training remains insufficiently reinforced. It lacks aftercare. While recognizing the funding implications of systematized and sustained training in DRR for teachers, it must be said that such training is essential if teachers are to become reflective practitioners of rather than technically adept deliverers of a prescribed curriculum. A DRR reflective practitioner is one sufficiently imbued with DRR principles and practices so as no longer to be guidebook-reliant but instead able to apply DRR thinking to his/her learning processes and environment in an agile and flexible manner (Pike & Selby, 1999, 126-7). The types of DRR assessment proposed in the previous section require reflective practice for their successful management. It is also worth mentioning cascade training, an approach often favoured as cost-effective and time-saving. The question that must be asked is: 'what is being cascaded?' It seems that the cascade is primarily one of knowledge, although a more holistic and sustained cascade approach also designed build pedagogical skills and reflective practices could be developed.

Thus far, there has been very little evidence of DRR teacher training engaging with the socio-affective sphere. As discussed in Section 5 (p. 30), there is a potentially significant emotional element to DRR learning that calls for teachers to handle students' concerns and fears in a sensitive and supportive manner. As has also been discussed, disaster risk reduction education will increasingly occur in post-disaster contexts with children with psychosocial needs to be addressed. In light of the Christchurch earthquake, New Zealand teachers spoke of the need for special training in how to raise the topic of disasters with children (Johnson, 2011, 21). Although addressing the psychosocial needs of learners and teachers facing natural and human induced disasters is recognized at the policy/guideline level (e.g. INEE 2010a, 2010b, UNESCO IIEP & UNICEF WCARO, 2011), with due reference to cultural appropriateness (UNISDR/ ECHO/CECC/UNICEF, undated), practical application at the school/classroom levels seems to lag behind. There is concern that the offering of 'fun games' in a number of resource packs is a diversion from addressing fears, thus avoiding having to work through them sensitively and constructively.

In Section 8, the current lacuna of attitudinal learning outcomes in DRR taxonomy of such is discussed and a taxonomy of such outcomes developed. DRR training that enables teachers to facilitate socio-affective learning around hopes, concerns and fears are a pressing need. Inversely, effective action learning in which children acquire self-assurance in the case of a hazard is an antidote to fear (but not one that obviates the need to work through negative emotions in the classroom).

The training of principals in DRR also remains to be developed. While there are examples of principal training in the case studies

The Maldives Islands - Some school books spared by the tsunami (26 December 2004) are slowly sun-drying.



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(for instance, Armenia and Lao PDR, case studies 1, 9), the questions pertaining as to the aims and nature of their training remain. Do principals attend the training so as to become familiar with new curriculum that will soon manifest itself in their school? Are they being trained in the leadership and management of DRR development in their school? Do they come away from the training equipped with the skills to nurture the new curriculum development and, endow the development with legitimacy through what they say and do? Do they come away with the leadership and management skills to foster an overriding culture of safety in their schools?

There are some examples of the DRR training of local school administrators and school inspectors in the case studies (for instance, Lao PDR, The Philippines, Madagascar and Maldives, case studies 9, 11, 14, 27) but, again, the question still arises as to whether the training concerns topic familiarization or equipping personnel with the professional management and monitoring skills to support the integration of disaster risk reduction in the curriculum and in schools on the whole.

Across the thirty cases, the researchers have found nothing as thorough as what is happening under the Save the Children project in Timor-Leste that targeted fifty schools in two school districts. Under the project inspectors were trained in using DRR educational materials and developing lesson plans. They also took part in a Teacher Disaster Response Group (TDRG) whose role was to monitor DRR lessons in schools and to train teachers. During their visits to observe DRR lessons, they completed monitoring forms with sections on pedagogy, children's responses and the usefulness of the learning materials. At monthly TDRG review meetings they shared feedback on

their monitoring of DRR lessons and were involved in end-of-project advocacy for DRR with the Ministry of Education⁹.

Only one example of inter-sectorial training in which teachers are trained alongside other professionals with a communication and educational function (for instance, media personnel) has been identified (France, case study 16). Programmes of training for officers of relevant non-governmental organizations so they can conduct in-school teacher training in their locality are not in evidence¹⁰ and the use of virtual DRR-related learning communities of teachers is an idea thus far unrealized¹¹.

Continuing professional development is vital to the mainstreaming and sustainability of DRR curriculum development and integration and remains an undeveloped area. There are only a few examples in the featured case studies of universities and other higher education institutions offering DRR-related professional development and only one case found (Russia, case study 4) of DRR being integrated into tertiary initial teacher training programmes. However, the sustainability of DRR education 'relies upon embedding (teacher) competencies in higher education programmes for teacher training' (UNISDR, 2008, 38).

⁹ Lydia Baker, Save the Children Australia, to David Selby & Fumiyo Kagawa, 16 December 2011.

¹⁰ The researchers are grateful to Oliver Schick, Association Prévention 2000, France, for this idea.

¹¹ The researchers are grateful to Gabrielle Elkhili, UNESCO, for floating this idea.

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Table 5. Teacher Professional Development: Summary

Nature of Training, Delivery Modes, Target Groups		Number of Country Case Study
Teacher training on DRR content and pedagogy*		1, 2, 3, 4, 5, 6, 8, 11, 14
Training of trainers/ cascade approach		1, 3, 5, 6, 8, 9, 11, 14, 16, 17, 27
DRR training target groups other than teachers	Principals	1, 5**, 6, 9, 18, 27
	Parents	5
	National, provincial and/or local education officers	6, 8, 9, 11, 14, 15, 17, 27, 28
DRR teacher guides/ manuals/ handbooks with accompanying training		2, 3, 5, 6, 7, 8, 14, 18
DRR teacher guides/ manuals/ handbooks without accompanying training***		1, 4, 10, 11, 12, 17, 21, 23, 24, 25, 27, 28, 29, 30

Notes:

- * In some case studies, the precise nature of the training is not known; cases listed here are ones where there is evidence of training in both DRR content and pedagogy
- ** In this case study, the training for 'non-teaching school personnel' might have included principals.
- *** In some case studies, the existence of training accompanying new DRR teacher support material(s) has thus far not been unearthed. In some cases (1, 27, 29, 30), the DRR teacher support materials are currently at a pre-distribution stage or under development.

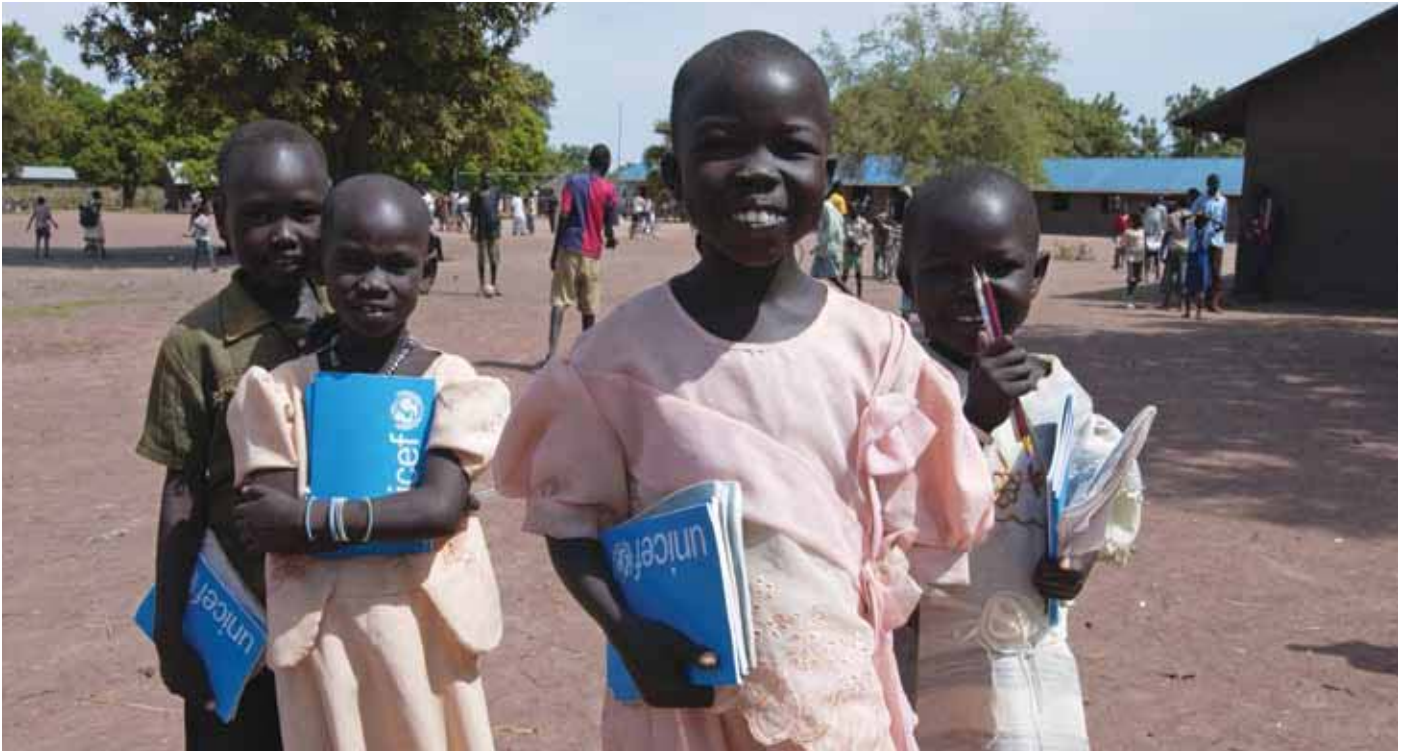
UNDAC and UNESCO Bangkok teams visiting Baan Khem (Phang Nga province), one of the hardest hit villages during the tsunami of 26 December 2004.



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Section 8. Disaster Risk Reduction Education: Learning Outcomes

The global picture of disaster risk reduction curriculum provision reveals a failure to engage comprehensively with the question of learning outcomes. Learning outcomes are heavily weighted

towards knowledge with little attention given to skills and attitudes. A comprehensive enumeration of learning outcomes is a prerequisite of quality DRR education.

In their review of the documentation and development of the case studies, the researchers encountered no comprehensive list of DRR-related learning outcomes. Lists of outcomes connected to specific subject-based courses are in evidence in a few cases, usually couched in the lexicon of the carrier subject and informed by the prevailing learning outcome expectations of that subject. Brief lists of broadly formulated learning outcomes can also be found. What comes across in the case studies is a hazy global picture in which no internationally agreed upon taxonomy of disaster risk reduction learning outcomes is discernable.

An analysis of the learning outcomes featured in the *Learning Outcomes* and *Competencies* sections of the thirty case studies reveals a heavy predominance of knowledge-based outcomes. The level of ambition mostly stops at *knowledge*. *Skills*-based learning outcomes feature in the literature and case studies but are often restricted to practical skills that fall short of preparing students to realize the ambitions laid out for DRR in education, such as engagement in community action. Throughout the study it becomes clear that treatment of learning outcomes addressing *attitudes* or *dispositions* is tokenistic. There may be a passing nod to, say, 'respect' but little else. Across the field, there is confusion concerning what are knowledge, skills and attitudinal outcomes.

The researchers had previously decided to prepare lists of generic and hazard-specific learning outcomes. The latter quickly appeared suspect not least because multi-hazards are present in many different contexts; thus, after due consideration, only a generic list was produced, a list that can easily be converted to the hazard-specific if required. It is the researchers'

view that there are knowledge/understanding, skills and attitudinal/dispositional learning outcomes that are generic to the entire DRR in the education field. These, as they see them, are set out below.

The knowledge and understanding section of the list more or less follows a classic concentric circles model with local and community knowledge and understanding outcomes extending to national, regional and global outcomes. While linear, the list should be read systemically, with the local conceived of as part of the global and the global manifest in the local. Similarly, skills outcomes are organized on a continuum ranging from cognitive to affective to action with a final systemic skills section partially intended to signal that the development of all skills are inextricably linked. The attitudinal and dispositional learning outcome section retains an arbitrary element in its organization in that attitudes and dispositions, even more than skills, blend into each other and are not, in the final analysis, divisible.

The learning outcomes include both the disaster specific and the more general consequences. For example, there is a knowledge and understanding outcome that 'learners know of disaster-vulnerable local spots and populations' while there is another call for learners to understand ecosystems and understand that 'the reverberations of environmentally unfriendly behaviours will work through the system to harm humans'. This mix is predicated on the idea that there are immediate and also more profound or sub-structural dimensions to disaster risk mitigation. In this example, being familiar with disaster-vulnerable locations and populations is of vital and immediate importance to students and their communities while fostering understanding of the human impact upon ecosystems

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and consequent eco-systemic impacts on human society is of potentially transformative and long-term benefit in curtailing the escalating incidence of disaster.

A number of the skills and attitudinal/dispositional learning outcomes in the list can be construed as DRR-related expressions of what constitutes a sound education for the twenty-first century. There are clear linkages between a comprehensive disaster risk reduction education and quality education (Aguilar & Retamal, 2009; Anderson, 2010).

The process of developing the list is described by the researchers as a 'mapping and gapping' exercise. General and case study literature was scrutinized for explicit or implicit learning outcomes. Gaps in learning outcomes and how they were filled were then examined in detail. The list is thus more than a reflection of DRR-related learning outcomes. It is reflective of what learning outcomes ought to be present given the ambitions of the field. It is also aspirational and, as such, provocative.

Knowledge and Understanding

Knowledge of self and others

- Learners understand their personal roles and responsibilities in times of hazard and disaster
- Learners know their personal needs, concerns, hopes, aspirations, fears and preferred futures concerning hazards, disasters and disaster risk reduction
- Learners have an understanding, grounded in practice, of personal attributes and competencies they can each call upon in times of hazard and disaster
- Learners know of the special contribution that women in the

community can make before, during and after a hazard has struck, and the particular roles they can play in social organization.

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)
- Learners know of past local disasters
- Learners know of locally and bio-regionally specific hazards and potential sources of disaster
- Learners know of disaster-vulnerable local spots and populations
- Learners know of the seasonality of particular hazards
- Learners have a knowledge of local, national and global hazard and disaster trends

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
- 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.20)
- Learners understand the idea of a 'culture of safety' and how it applies to everyday personal and community life
- Learners understand the economies of disaster risk reduction and the cost-effectiveness of forestalling disaster
- Learners have a practical understanding of key DRR practices (e.g., hazard mapping and monitoring, early warning, evacuation, forecasting)

Mullaitivu, a town in the Northeastern Sri Lanka ravaged by the tsunami of 26 December 2004. Toys and pictures lying in the debris of what was once a school.



© UN Photo/ Evan Schneider

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
- Learners know of warning systems in place to alert people to impending hazard
- Learners know of first aid procedures

Knowledge of disaster management mechanisms and practices

- Learners know of local, regional, national and international disaster response infrastructures and mechanisms
- 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
- Learners know of locally-valued indigenous disaster risk reduction and disaster coping behaviours and mechanisms

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 reverberations of environmentally unfriendly behaviours will work through the system to harm humans
- Learners understand the specifics of how human behaviours and practices can harm the environment
- Learners know of environmental issues impacting on their community; their causes, effects and amelioration
- Learners know of local and global examples, of how damage to the environment aggravates the incidence and severity of hazards
- Learners understand the meanings and principles of conservation and know of practical conservation measures in their locality

- 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)
- Learners understand the negative interface between sustainable development and disaster

Knowledge of climate change

- Learners understand the difference between 'weather' and 'climate'
- Learners understand the dynamics of climate change
- Learners understand that climate change is generally human induced and they can identify patterns of behaviour, practices and lifestyles that are causing the climate to change
- Learners understand that climate change is exacerbating the incidence and severity of disasters
- Learners know how to apply climate change learning to their own lives and to patterns of behaviour in their community

Knowledge of differential and disproportionate impacts of hazards on people

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

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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
- Learners understand that climate change and other looming and imminent hazards can trigger violent conflict, and know about mechanisms and processes, interpersonal and international, for managing conflict and pre-empting violence

Knowledge of human rights/child rights aspects of disasters

- Learners know of internationally agreed upon human and child rights and their implications for and applications in disaster scenarios
- Learners know of rights likely to be curtailed and undermined by disasters, including the rights lost through disaster- and environment-triggered migration
- Learners know how to apply a rights and responsibilities lens to disaster risk reduction and mitigation measures and procedures

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 information gathered on disaster risk reduction
- Learners have the ability to determine the quality, probable 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

Skills of discernment and critical thinking

- Learners have the ability to discern and interpret signs and signals of impending hazard
- Learners have the ability to assess the level of danger presented by impending hazards
- Learners have the ability to think creatively and divergently and to move beyond their established frameworks of reference in response to changing environments and emerging and evolving threats
- Learners have the ability to think creatively and laterally so they can identify and facilitate opportunity within crisis
- Learners possess the skills to pre-empt and circumvent threat and hazard through effective information management, thinking outside the box and relying on intuition
- Learners have the ability to make ethical judgments about present and looming disaster situations
- 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 required for them to take all necessary measures for personal safety and self-protection before, during and after a disaster
- Learners have the skills required to collaboratively undertake hazard mapping and vulnerability assessment exercises
- Learners possess first aid and other health-related skills

In the aftermath of the tsunami of 26 December 2004. Destroyed homes in Galle.



© UNESCO/ Nigel Swann

Skills of communication and interpersonal interaction

- Learners have the ability to communicate warnings of impending hazard clearly and effectively
- Learners have the ability to communicate what they have learnt about hazards and disasters to families and members of the community
- Learners can communicate messages about risk, risk management options, environmental protection to family and community members, and can receive messages through careful listening
- Learners have the ability to engage in dialog 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
- Learners have the ability to communicate effectively about disasters and disaster risk reduction with people from different socio-cultural backgrounds
- Learners have the ability to build and maintain the trust required from family, school and community that will enable them to play a part in disaster risk reduction
- Learners have the ability to work collaboratively and cooperatively with others towards reaching disaster risk reduction goals
- Learners have the skills to negotiate to mutual satisfaction with others and manage conflict productively as they work towards disaster risk reduction
- 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)

Skills of affect (responding to/with emotion)

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

Skills of action

- Learners have the ability to make informed action decisions based on data available, observation, dialog and discussion and intuition
- 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 behaviours
- 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 in which ideas are shaped and shared and decisions made
- Learners have the necessary skills set to implement precautionary and safety measures against hazard in the classroom, school, home and community
- 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)
- Learners have the skills necessary for participating in early warning and evacuation drills
- Learners have the skills necessary for emergency responses in times of hazard (e.g., light search, swimming, evacuation and creating an emergency shelter)

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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 well-being (or lack thereof) and community well-being and development (or lack thereof)
- Learners have the ability to identify patterns, commonalities and relationships between different hazards and risks as well as different prevention and response mechanisms

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 wish to protect the special place in which they live
- Learners value the global community of humankind and the 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 care and compassion for those threatened or affected by disaster
- Learners commit to an ethic of mutual help in times of hazard and disaster
- 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
- Learners apply a precautionary principle and risk awareness in their daily decision making and behaviour
- 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 are beset with threat and disaster

Commitment to fairness, justice and solidarity

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

A Congolese girl concentrates on her assignment in a half finished classroom at the Mugosi primary school close to the Kahe refugee camp in the north eastern part of the Democratic Republic of Congo.



© UNESCO/M. Hofer

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

The above list of generic learning outcomes offers a way of to develop 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 attitudes and values. In any context the list needs to be broken down and reconstituted according to appropriate subject area(s) without losing sight of the whole curriculum learning outcomes picture. Each learning outcome also needs to be recast as a succession of finely tuned age- or grade-appropriate renditions that, cumulatively, lead the maturing learner towards the full realization of the generic outcome¹². In some cases this will be a matter of applying the learning outcome to a wider arena of experience and engagement through the grades. In some cases; the notion of curriculum foreshadowing will come into play, i.e., the idea that student should optimally internalize a simple idea or concept at one age or level so as to internalize a more complex idea or concept at a subsequent age or level more easily. Four indicative examples of learning outcome progression are given in Table 6.

¹² The age ranges used in Table 7 broadly align with the development stages of the child (see, for example, Vialle, W.Lysaght, P & Verenikina, I. (2002). *Handbook on Child Development*. Tuggerah NSW: Social Science Press).

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Table 6. Four Indicative Examples of Learning Outcomes Progression

<p>Generic outcome: <i>Learners understand key disaster risk reduction concepts, their application to specific hazard circumstances, and their concrete applications in the local community</i></p>		<p>Generic outcome: <i>Learners know of internationally agreed upon human and child rights and their implications for and applications in disaster scenarios</i></p>	
Ages 4-7	Learners understand ideas of risk, danger and safety and are aware of hazards in the classroom and at home, and ways of being careful and staying safe	Ages 4-7	Learners understand the difference between needs and wants and can recognize concrete examples of both
Ages 7-11	Learners know about risks and dangers in the local community and environment and what they can do individually to reduce danger and stay safe	Ages 7-11	Learners understand what a right is, know what rights they have as children, and can identify what basic rights are under threat in real or imagined disaster situations
Ages 11-14	Learners understand the ideas of vulnerability and resilience and can apply them to specific potential hazards	Ages 11-14	Learners can distinguish different categories of child rights and can understand how each category can be important and useful but also potentially under threat in different hazard situations
Ages 14-18	Learners understand the interrelationships between disaster risk, hazard, vulnerability, resilience and societal capacity as manifest in the local and wider community	Ages 14-18	Learners understand the content of the <i>Universal Declaration of Human Rights and the Convention on the Rights of the Child</i> and the implications and applications of the rights listed in local, national and global hazard and disaster situations
<p>Generic outcome: <i>Learners know of local, regional, national and international disaster response infrastructures and mechanisms</i></p>		<p>Generic outcome: <i>Learners have the ability to perceive relationally and identify interrelationships and interactions within ecosystems and between nature and human society, between eco-systemic well-being (or lack thereof) and community wellbeing and development (or lack thereof)</i></p>	
Ages 4-7	Learners know what to do and who is responsible at home and in school should a hazard threaten	Ages 4-7	Learners acquire the ability to cooperate with others on tasks that cannot be completed without cooperation
Ages 7-11	Learners know about risk reduction procedures that the community has ready should there be an impending hazard	Ages 7-11	Learners acquire the ability to apply the notions of interdependence and inter-relationship to local ecosystems and their local community
Ages 11-14	Learners know what disaster risk reduction mechanisms are in place locally, regionally and nationally, what steps will be taken should disaster threaten, and what their personal role is in the event of such an occurrence	Ages 11-14	Learners acquire the ability to identify inter-relationships between nature and human communities
Ages 14-18	Learners understand how international disaster relief works and know of the organizations responsible for its operation (and of their presence locally, regionally and nationally)	Ages 14-18	Learners acquire the ability to look at the world systemically and to interpret phenomena, developments, issues and trends as manifestations of a complex web of (often asymmetric) relationships

Kosovo Primary School
Emin Duraku.



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The list of learning outcomes might provide a useful means for countries and other jurisdictions with DRR curriculum initiatives already in the works to identify both strengths and gaps in current provision through a matrix exercise. Setting the list against local context and local needs might also be a fruitful exercise as could following through on the student assessment implications of the learning outcomes set out. We still await, too, the development of a disability-specific listing of learning outcomes for disaster risk reduction education.

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Section 9. Integrating Disaster Risk Reduction in the Curriculum: Other Aspects of Policy, Planning and Implementation

Proponents of disaster risk reduction education need to be clearer about the roadmap they will follow in movement to scale. To start a journey without

thinking through the route to follow and the obstacles to avoid can be exciting, but carries the risk of the journey never being completed.

Going to Scale

The ambition of disaster risk reduction curriculum developers across all the cases reviewed in this study has been to reach as many students, teachers and schools as possible and as expeditiously and effectively as possible. In some cases, plans for 'going to scale' have been well established; in others they have been more an 'act of faith' or afterthought. In other cases, initiatives have had a head start in that they have been engineered from within the national authority responsible for schools rather than by, say, a non-governmental organization looking to gain a foothold in the curriculum. But proximity to the decision-making centre is no guarantee of movement to scale. As long ago as 1984 Robert Myers wrote of 'the growing frustration within organizations whose small scale research, pilot or demonstration projects have failed to have impact on policy and programming over the years, often despite their successful outcomes'. He added: 'frustration is not confined to organizations with small budgets that depend on others to pick up and utilize ideas and methods on a small scale. Rather, governments and larger development organizations have also experienced problems repeatedly, as they have tried unsuccessfully to bring pilot projects "out of the hot-house"' (Myers, 1984, 2).

A number of avenues for going to scale have been identified. Perhaps the most well-trodden avenue is that of *scale by expansion* or *planned expansion*. This encompasses the pilot development of new ideas and new ways of doing things on a relatively small scale or within a contained area with incremental expansion to large-scale. Adjustments are made along the way based on lessons learned (ibid, 7-8; Smith & Colvin, 2000).

A second avenue is that of *scale by explosion*. This involves an initiative being applied suddenly and ubiquitously through national diktat. 'Programmes are centrally conceived and organized, even though community participation and popular education may be considered central elements of the programme philosophy' (Myers, 1984, 8). Attendant dangers are those of sacrifice of quality for coverage, implementation without capacity building, resource and personnel overload and fuzzy accountability (ibid. 9).

A third avenue is that of *scale by association*. Here scale is achieved by a fusing together of previously independent projects or initiatives with similar or overlapping characteristics, thereby creating a larger whole. A variant of this approach is *scale by grafting*, i.e., blending new elements into an already institutionalized and compatible programme (Smith & Colvin, 2000).

The avenues are by no means mutually exclusive and, in practice, the seemingly hard conceptual edges between the different avenues become blurred. In most countries' case studies in section 10 there has been movement to scale employing a mix of the three avenues. Georgia and Turkey (case studies 2 and 5), for example, offer a hybrid mix of explosion and expansion. Myanmar and Madagascar (case studies 10, 14) pair expansion with association or grafting (i.e., respectively, with life skills and environmental education). In Japan and Nepal (case studies 17 and 28) expansion is also taking place through association (i.e., with the 'period of integrated study' and subject text book reform respectively).

Section 9. Integrating Disaster Risk Reduction in the Curriculum: Other Aspects of Policy, Planning and Implementation

Diagram 1. Approaches to Scale

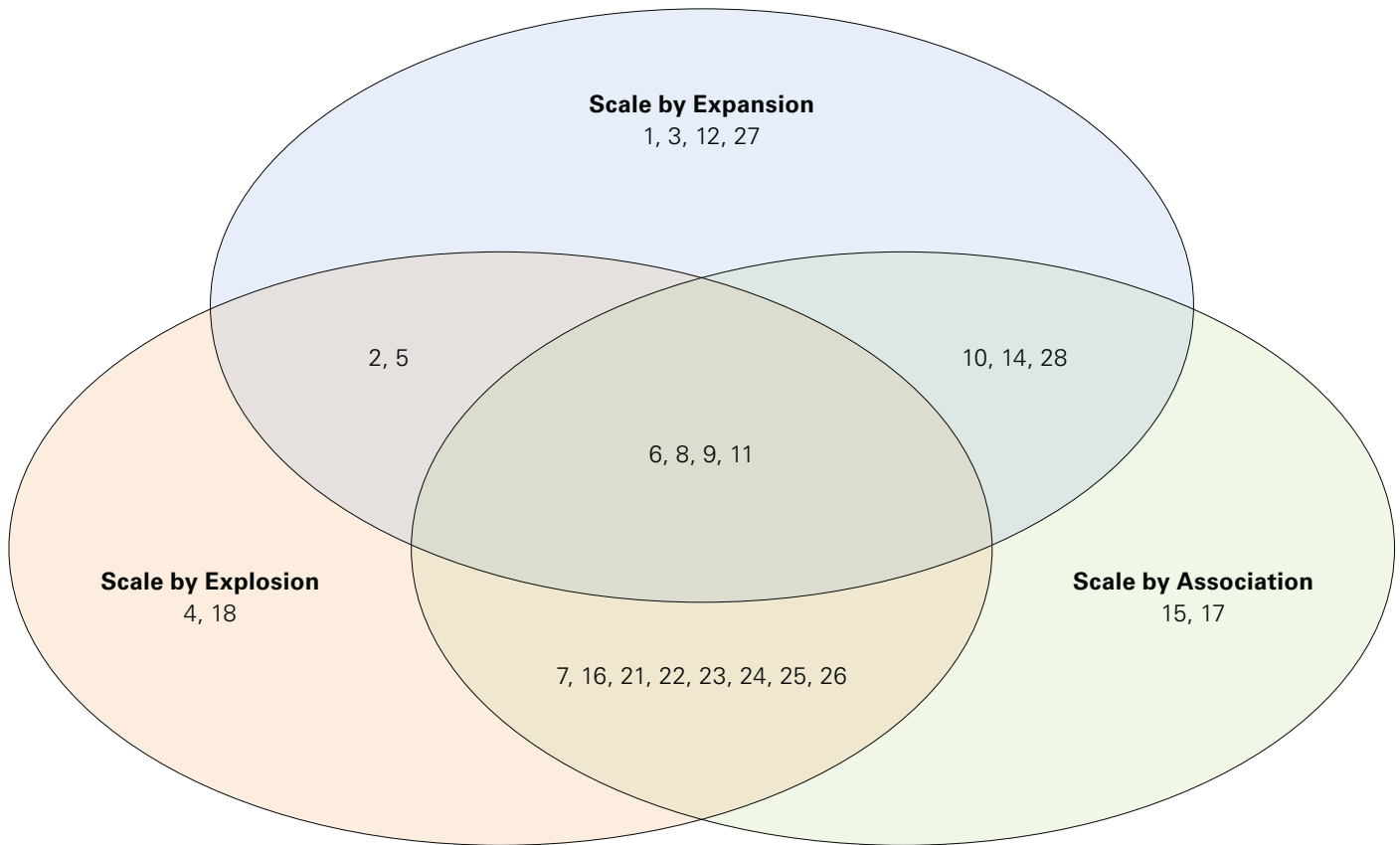


Diagram 1 maps some case study examples according to the three intersecting approaches to scale of expansion, by explosion and by association/grafting.

The primarily documentary meta-research approach adopted for this study means that the researchers can only speculate about whether scale has been achieved at the cost of some erosion or surrender of initial intentions and vision. One issue proponents of disaster risk reduction curriculum may well have to confront is whether it is important to achieve scale at any price and, if so, where the line would be drawn.

Table 7 below lays out some key enabling and disabling factors informing whether or not DRR curriculum development and integration initiatives described in the case studies have enjoyed relative success or failure in translating to scale with their original vision intact. The *Table* draws in part on the discussion in previous sections.

Table 7. Going to Scale with DRR Curriculum: Enabling and Disabling Factors

Enabling Factors	Disabling Factors
Sustained funding flow	Funding for scale not available or cut off
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
Broadly conceived (professional development oriented) and sustained active capacity building	Narrowly conceived (i.e., technical tips) and one-off event capacity building or no active capacity building
Quality and commitment of pre-scale leadership mirrored at all stages of movement to scale	Failure to translate pre-scale quality of leadership into supporting and guiding scaling-up process
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
Essential resources/information made available to all stakeholders in appropriate form at all key points in movement to scale	Essential resources/information not delivered to stakeholders in appropriate form at key moments in movement to scale
Challenging nature of DRR innovation embraced at successive levels during scaling up process	Challenging nature of DRR innovation becomes threatening, leading to softening, at the larger (political cadre) scale
At-scale initiative signals that local and regional divergence to reflect context can be accommodated and is welcomed	A 'one-size-fits-all' approach to curriculum development not allowing for local and regional divergence
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., lessons learned through pre-scale monitoring, data gathering, 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
Legal/ regulatory systems and educational policies to mainstream DRR curriculum in place	No legal/regulatory system and educational policies exist to mainstream DRR curricula
Coordination and dissemination mechanisms for good practices are in place	Initiatives remain in isolation and there is a lack of 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

Section 9. Integrating Disaster Risk Reduction in the Curriculum: Other Aspects of Policy, Planning and Implementation

Table 8. Some Examples of Successful Partnerships

Country (case study number)	Description
Georgia (2)	DRR Education Working Group comprising experts from the National Curriculum Centre (NCC) of the Ministry of Education and Science, the National Centre for Teacher Professional Development, the Emergency Management Department of the Ministry of Internal Affairs, the Ministry of Environment Protection and UNICEF.
Cambodia (6)	Mainstreaming Disaster Risk Reduction Education Project the co-joint responsibility of the National Committee of Disaster Management and the Ministry of Education, Youth and Sports; Implemented by Project Technical Working Group; support from the Asian Disaster Preparedness Centre (ADPC).
Lao PDR (9)	National Disaster Management Office and National Research Institute for Educational Sciences of the Ministry of Education jointly undertook the integration of DRR in the secondary school curriculum with support from ADPC.
The Philippines (11)	Mainstreaming DRR in the Education Sector initiative in its first phase brought together a Technical Working Group involving the Department of Education, the National Disaster Coordinating Office of Civil Defence and ADPC. In phase two, the group expanded to include representation from, inter alia, the Department of Science and Technology, the Department of Environment and Natural Resources, the Department of Public Works and Highways, the National Economic Development Authority.
Madagascar (14)	Ministry of Education chairs an Education Cluster including representation from the Ministry of Home Affairs, UNICEF, UNESCO, the NGO community, the Malagasy Red Cross and meteorological experts.
France (16)	Ministries of National Education, Ecology and Sustainable Development, Health and Interior and Regional Planning have co-responsibility for school risk reduction plans (that include a teaching and learning function).

School overtaken by the dune/ Aral, Kazakhstan.



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The Importance of Evaluation and Research

Evaluation of pilot curriculum has been reported across many of the case studies with evaluation-informed adjustments happening in its wake.

The researchers have come across only sporadic anecdotal evidence of the development of evaluation mechanisms to determine the efficacy of disaster risk reduction curriculum when hazard threatens or disaster strikes. This is an important but problematic area. It is important in that school systems know whether its disaster risk reduction initiatives have guided children's actions and protected them, their families and communities. It is problematic in that developing evaluation mechanisms and having trained personnel on standby to undertake the evaluation may be costly. It is even more problematic in that it can feel counter-intuitive to make such an evaluation at the time of a threat or disaster. For such reasons, New Zealand National Hazards Research Platform imposed a two-month social research moratorium in Canterbury in the two months following the February 2011 earthquake and thereafter called for well-coordinated research that 'respects the needs and capacities of the local affected population' (Johnston, 2011). Not only do evaluation mechanisms need to be put in place but ethical codes and protocols developed to guide and monitor evaluation in such circumstances must also be implemented.

DRR-related curriculum, pedagogical and institutional/community change research is still emerging as a field of academic study. It is clear that another thread of national or regional DRR curriculum development is the funding of educational research centres or units within higher education institutions that have a remit to explore processes of curriculum development and implementation and their impacts. Building a 'culture of safety' needs to be a research-informed work in progress.

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Section 10. The Case Studies

List of Country Case Studies

Section 10.	The Case Studies	Case No.	Country	pg	synoptic case
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Section 10. The Case Studies

Case 1: Armenia (synoptic case)

Overview

Armenia offers an example of noteworthy pedagogical and curriculum materials development in DRR through the vehicle of a relatively small-scale pilot project. The translation to scale and question

of location of DRR within the national curriculum are issues to be addressed following the determination of the place of education within the still gestating national DRR strategy.

Armenia participated in the DIPECHO five-phase 2010-11 *DRR in Education* project jointly led by UNICEF and the State Academy of Crisis Management (CMA).

The first phase involved the establishment of an expert group (EG) composed of two DRR specialists and two education specialists, and the hiring of a project manager and project coordinator to take forward implementation. The EG proceeded to develop a 'comprehensive and integrated' training module for pre-school/school teachers, and to collect and organize existing materials into 'a comprehensive mixture of DRR and contemporary pedagogical approaches' (CMA/UNICEF, 2011, 1).

The second phase involved the October 2010 training of some 24 teachers and principals drawn from four marzes (districts) participating. The training emphasized 'up-to-date teaching methodologies' (Ibid).

In the third phase, those who had received training proceeded to develop thematic units for pilot delivery in their respective

schools in spring 2011. Experts (no specifications) visited each school to consult on unit development and to observe lessons.

The fourth phase involved a further round of training in December 2010 in four regional centres in which some 70 teachers in addition to the 24 original teachers and principals participated. 'The agenda of the trainings included teaching of specific disasters capitalizing on different methodologies, such as the Jigsaw method, Gallery method, role-playing method, brainstorming method, Prism method, story-writing and puzzle method' (Ibid. 2). While the evaluation revealed that the teachers were very satisfied with their training, 40% anticipated difficulties in translating the methods used into their schools and classrooms.

In the fifth phase, the EG worked on adjusting materials collected and developing further materials as they produced the following: *DRR Education: a Resource Handbook for Pre-School and School teachers; I Can*, a Handbook for Pre-School children; *I Know, I am Prepared, I Can*, learning materials and assignments for elementary level students;

Boy attends after school lessons
in the earthquake-affected town
of Gyumri, Armenia.



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and *It's a Joke but a Serious One*, a handbook for middle school children (Ibid).

The *DRR in Education* project has developed noteworthy practices, especially in terms of the pedagogies employed, but it has thus far not translated into a national curriculum (although certain topics in certain subjects are pointed to as evidence of DRR in the curriculum).

Available data does not indicate serious proactive Ministry of Education and Science (MoES) involvement in the project although during its course a National Coordinating Board (NCB) for the DIPECHO programme was established involving a partnership between MoES, the Ministry of Emergency Situations (MES), the State Academy of Crisis Management, the National Institute of Education, the Armenian Rescue Service and UNICEF. This is not as yet working in conjunction with the National Disaster Risk Reduction Platform that was established in December 2010 by government decree and tasked with elaborating a national DRR strategy¹².

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¹² 'UNICEF and NCB partners are advocating the full inclusion of education in the upcoming National Strategy and, at the same time, working for the establishment of the NCB as a Working Group dedicated to Education within the current DRR National Platform, with a particular focus on three main

components: infrastructures, curriculum and DRR management. This will provide a permanent forum in which initiatives for DRR and education can be discussed, planned and coordinated' (European Commission/UNICEF, 2011, 4, 8).

Section 10. The Case Studies

Case 2: Georgia

Overview

Georgia offers an example of the systematic enrichment and vivification of DRR treatment in existing core curriculum through the introduction of two special initiatives: the addition

of DRR themes to a new, mandatory Civil Protection and Safety course for grades 4 and 8, and the introduction of DRR learning into the mandatory Head of Class Hour programme for grades 5 to 9.

Introduction

The incorporation of disaster risk reduction in the National Curriculum of Georgia is a recent development that has taken place 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).

Curriculum Development/Integration

In preparing for the new initiatives, existing primary and secondary curricula were reviewed for the presence of disaster-related themes by a DRR Education Working Group comprising experts from the National Curriculum Centre (NCC) of the Ministry of Education and Science, the National Centre for Teacher Professional Development, the Emergency Management Department of the Ministry of Internal Affairs, the Ministry of Environment Protection and UNICEF. Themes and issues were found at the primary level in Natural Science (emergency, safety-related and health-bringing life skills, grades 1-6 environmental protection, human impact on nature, environmental impact of disasters, grade 6) and Social Science (humans and nature, environmental issues, sustainable development grades 1-6). At the secondary level, DRR themes and issues were identified in Geography (hazards and their cause and effects), Civic Education (active participation for a safe environment) and Natural Sciences (ecosystems, environment and health). (European Commission/UNICEF, 2011b, 9-10, UNICEF, 2011, 2).

The stand-alone Civil Protection and Safety programmes for grades 4 and 8, dealing with everyday safety, security and life skills, began in January 2011. UNICEF's contribution to drawing up the topic list led to the addition of disaster prevention and risk reduction and safety in emergencies themes (European Commission/UNICEF, 2011b, 10). DRR remains, however, 'relatively modest in scope' (UNICEF, 2011, 2) within the programme.

More ambitious has been the Head of Class Hour programme covering grades 5-9. In the programme, the Head of Class, the coordinator of teachers of each grade level is essentially given the responsibility of conducting a one-hour lesson each week on cross-curricular topics not easily accommodated within core subjects. The programme encompasses not only discussions in the classroom but also a range of practical activities such as excursions and environmental campaigns. As part of the Head of Class Hour programme children also participate in the mapping of school hazards, risk and vulnerability and in developing school disaster preparation plans, giving them opportunities to learn by doing as well as to test their newly acquired knowledge in practice¹⁴.

The Head of Class Hour covers, *inter alia*, natural hazards and global disaster trends, climate change, multiple natural hazards in Georgia, disaster mitigation, developing the concept of volunteerism among students, and community involvement (UNICEF, 2011, 4). 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,

¹⁴ Nino Gvetadze, UNICEF Georgia, to Fumiyo Kagawa & David Selby, 20 November 2011.

Simulation exercise at school in Metla,
a mountainous village of Georgia.



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the Earthquake topic has activities for grades 5, 6 and 7, while the Climate Change module covers grades 8 and 9. Multiple opportunities for parental and community involvement and fieldwork are offered.

Pedagogy

The teaching of disaster risk reduction in the Head of Class Hour employs interactive methods. The Head of Class guidebook reviews the following methods: mini-lectures, discussions, brainstorming, excursions, interactive presentations, case studies, role-plays, the Socratic Method, learning by doing. The teacher guidance offered is supported by schematic drawings (for example, a sample community hazard map) and by various checklists to be completed by school children together with their families (for example, a quake-safe home checklist, family disaster plan and safety checklist). Teaching implies not only teacher-student engagement, but also the involvement of parents and the community at large, with the activities to be undertaken co-jointly provided.

Below are pen portraits of two Head of Class lessons:

Example 1: The teacher asks students to give their definition of a 'hazard'. Then s/he writes on the blackboard: 'which are the safest and the most dangerous places in our classroom in case of an earthquake?' and asks students to name such places. All responses are recorded on the flipchart. During the exercise, the teacher explains to the class that in case of an earthquake the most dangerous places are those where things can fall down, get broken and cause traumas, e.g., heavy bookshelves, unfastened cabinets. In the next step,

the teacher asks students to discuss what the room design should be and what changes should be made in the classroom in order to make it safer during an earthquake. If the class finds it necessary, items can be relocated in the classroom to ensure its safety.

Example 2: The teacher divides the class into groups of four and asks each group to prepare brochures and posters with illustrations that will help in the dissemination of information about potential landslide hazards, prevention/mitigation measures and the safety rules among the local population. This exercise is done after the class has studied the thematic module on landslides thoroughly with the help of the Head of Class teacher¹⁵.

Student Assessment

According to the National Curriculum of Georgia, there are two types of learning assessment used in schools: *determining* and *developing*.

Determining assessment is applied in grades 5 and above and focuses on control of the quality of learning, determining the level of achievement of students in relation to learning outcomes defined by the National Curriculum.

Developing assessment focuses on controlling the dynamics of the development of each student and supports improvement of the quality of learning. It is based on the following means of assessment: oral/written comments, advice, self-evaluation schemes.

¹⁵ Ibid.

Section 10. The Case Studies

Case 2: Georgia

Table 9. Two Types of Learning Assessment in Georgia

Objectives	Determining assessment	Developing assessment
	<ul style="list-style-type: none"> - Control of the quality of learning; - Determining the student achievement level in relation to the objectives defined by the National Curriculum - Determining the level of academic achievement 	<ul style="list-style-type: none"> - Improvement of the quality of learning; - Support for the development of the student
What do we assess?	Learning outcome / result	Learning process
Decision made based on the assessment	Decision on whether to allow the student to pass the current step and to move to the next grade	<ul style="list-style-type: none"> - Selection of a different activity for supporting student advancement - Changing the teaching strategy - Providing the student with advise on ways of improvement, etc.
Definition of the success / progress criteria	Based on the extent to which the student has achieved standard defined outcomes	Based on the progress made by each student in terms of personal development (comparison of pre- and post learning situation)
Means of assessment	1-10 grading scale	<ul style="list-style-type: none"> - Self-evaluation rubric; - Questionnaires; - Oral or written comments; - Description of the level of the skill development

Table 9 above¹⁶ describes in more details the two types of learning assessment.

¹⁶ Extracted and translated from *National Curriculum 2011-2016* (p.14)
<http://www.ncac.ge/index.php?m=854&lng=geo>

In terms of DRR student learning, for the Civil Protection and Safety programme, both genres of learning assessment are applied. For the Head of Class Hour, an informal but mandatory programme, only developing assessment is used, the teacher proffering comments and recommendations to students with the aim of supporting them in improving their knowledge and practical skills in disaster risk reduction¹⁷.

Teacher Professional Development/Guidance

Head of Class Hour DRR-related teacher training involves a one-day (7 hour) workshop of two constituent 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 behaviour 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).

Experts from the National Curriculum Centre (NCC), the National Centre for Teacher Professional Development and Emergency Management Department (EMD) facilitate the training, employing a variety of practical exercises and interactive learning modalities. Teachers are assisted in the use of the *Teaching DRR with Interactive Methods* guide for Heads of Class and receive

an educational kit for students, *Let's Learn to Prevent Disasters* as well as the *Riskland* educational game.

Anticipated learning outcomes from the training are as follows:

- Understanding the importance of teaching disaster risk reduction and the teacher's fundamental role in creating a safe environment for children
- Mastering the key concepts of disaster risk reduction
- Being able to learn and apply interactive methods of learning during the Head of Class Hour¹⁸.

Learning Outcomes/Competencies

For the Head of Class Hour programme goals are set for each of the sixteen thematic modules but knowledge, skills and attitudinal learning outcomes are not specified (UNICEF/NCC, 2011).

For the Civil Protection and Safety programme two broad learning goals are set:

- To ensure that students acquire relevant knowledge and practical skills on how to behave during disasters
- To ensure that students are able to protect themselves in case of a disaster¹⁹

There is no elaborated specification of knowledge, skills and attitudinal learning outcomes.

¹⁷ Nino Gvetadze, UNICEF Georgia, to Fumiyo Kagawa & David Selby, 20 November 2011

¹⁸ Ibid.

¹⁹ Ibid.

Section 10. The Case Studies

Case 2: Georgia

Policy Development, Planning and Implementation Aspects

As a first step towards incorporating DRR in the Georgian National Curriculum a technical working group on DRR in education was established to conduct a comprehensive review of the National Curriculum. The review process identified elements of DRR in a number of subjects but found no comprehensive approach in the curriculum to disaster prevention and hazard mapping.

At that time (fall 2010), the National Curriculum Centre was developing a Head of Class Hour programme for grades 5-9 drawing together a number of themes and topics (for instance, citizenship) that could not be easily accommodated by other subjects. NCC proposed the development of a DRR component in the Head of Class Hour programme which, given a successful pilot testing, would be formally incorporated into the programme and introduced in all schools nationwide.

The MOES decided that DRR should become an integral component of the Head of Class Hour programme following well-received 2010 pilots in 17 schools and spring 2011 pilot training of 180 Head of Class Hour teachers in 25 schools located in Tbilisi and natural hazard-prone areas of Georgia.

In order to assess how the new programme was implemented at the school level and to identify any potential deficiencies in the methodology, joint monitoring of randomly selected pilot schools by NCC, EMD and UNICEF took place during the month of June 2011. The feedback from the monitoring was very positive overall as pilot teachers by and large demonstrated skilful facilitation of interactive DRR lessons.

Feedback from the monitoring led to NCC finalizing the process of formal integration of DRR principles and practices into the Head of Class Hour for the academic year 2011-2012. The decision to move to scale should have triggered further rounds of training but this has not happened because of lack of financial resources. For the NCC, training at scale is both a key gap and key priority that needs to be addressed to ensure the effective implementation of the programme nationwide²⁰.

Georgian developments are noteworthy on a number of counts.

First, there is a clearly expressed recognition among principal stakeholders that while core or traditional subjects have a contribution to make to DRR education, there is a limit to what they can offer given the academic and more or less insular and sedentary culture that has grown up around the teaching of each subject, coupled with the time constraints of a full curriculum. The three-pronged approach adopted in Georgia of linking sporadic core subject treatment of DRR to innovative additions to the curriculum is one way to circumvent the problem.

'The Head of Class Hour programme aims to go beyond the generalities of DRR taught in core subjects and the focus on life skills of the Civil Protection subject, and improve recognition and understanding of natural hazards, including the potential impacts on environment and sustainable development.

This will benefit not only students, but also families, schools and communities at large' (European Commission/UNICEF, 2011a, 5). '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*' (European Commission/UNICEF, 2011b, 18).

²⁰ Ibid.

Second, the nexus between effective DRR-related education and interactive learning is strikingly present and visible. The teacher manual, *Teaching DRR with Interactive Methods* (UNICEF/NCC, 2011), flags the catalytic role that interactive learning needs to play, while the teacher in training learns that teaching DRR is as much about being a good facilitator as acquiring knowledge of disasters.

Third, although in its early days, the Head of Class Hour approach, with its emphasis on interaction, action and practice, appears to be succeeding in ways not achieved within core subjects by galvanizing links between school and community, with students playing a significant, empowered part in disseminating DRR messages across the community (UNICEF, 2011, 7).

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'I remember, on our first Head of Class lesson, the teacher wrote: "what is a hazard"? After the live discussions in the classroom, we identified an earthquake as the major hazard endangering our community. We also learned that preventing hazards from turning into real disasters is possible and we can actually reduce disaster risks.

These lessons are special in a way that our teacher always uses interactive methods which make the learning process very interesting and entertaining. We also practice what we learn by participating in simulation exercises and organizing environmental campaigns, such as planting trees, cleaning riverbanks, etc.

On 9 October 2011, nature put us to a real test. After the lessons my classmates and I were supposed to go to the theatre; however, in the nearby town of Dmanisi, a 5.5-magnitude earthquake was reported. After hearing the school alarm bell, we started to evacuate the building in an organized manner, without panic. In two minutes all of us were able to move to the safe location – to the school football stadium, thanks to the knowledge and vitally important skills we have acquired during the head of class hours."

Imeda Mosidze,
7th grader of the Atskuri Village Public School

Section 10. The Case Studies

Case 3: Kazakhstan

Overview

Kazakhstan is an example of a materials-led and training-led approach to integrating DRR within the formal school curriculum that seeks to capitalize upon existing windows of opportunity for integration rather than systematically opening up further opportunities or developing

a thoroughgoing whole curriculum approach. The peer-to-peer learning and assessment approaches are noteworthy. The Ministry of Education does not appear to be offering proactive leadership in DRR curriculum development and wider integration.

Introduction

The Kazakh Law on Emergency Situations of 1991 established that 'DRR principles and practice must be taught in pre-schools, primary and secondary schools'. The approach followed thereafter was one of utilizing opportune spaces in the national curriculum for treating disaster-related topics; that is, aspects of biology curriculum at grades 8, 9 and 11, the safety and life skills *Basics of Life Security* programme, grades 1 to 11, and pre-military education, grades 10 and 11. This somewhat ad hoc response to the DRR imperative was also mirrored in learning and teaching materials which 'many stakeholders' reported to be 'inadequate' (UNICEF, 2011, 1-2).

Kazakhstan became a partner in the 2009-11 UNICEF DIPECHO regional programme for DRR for South Caucasus and Central Asian countries. In Kazakhstan, the programme involved a partnership between the Ministry of Emergency Situations, the Republican Institute for Developing the Qualifications of Staff in the Education Sector (RIPSKO) and UNICEF, sealed by Memorandum of Understanding in March 2009 (Ibid, 2-3).

There are two arms to the programme: materials development and teacher training.

Curriculum Development/Integration

Materials development took place in both Kazakh and Russian languages, the approach being one of creating materials from ones that already existed, often from regional and international agencies, and that had, in most cases, not yet not been aligned with the Kazakh context and culture. The developments included: the preparation of two texts of training materials on safety in the face of natural disasters for grades 4 to 5 and 5

to 11 (*What to do During Fire, Earthquake, Flow, Flood or Landslide?*); the preparation of a methodology manual for DRR teachers; the creation of multi-media sets (including DVDs, animated cartoons using puppets, videogames) for use with children by drawing on the available stock of video footage, supported by accompanying guidance notes for the teacher; the adaptation of the board game *Riskland* for use in Kazakh schools (UNISDR/UNICEF, 2009,48-52).

The student training manuals have chapters on earthquakes, fire, flows and landslides and floods. Each chapter offers a description of the natural phenomenon and step-by-step guidelines on what to do if confronted by the hazard in question.

Proposals in the 2008-9 *Country Action Plan* for initial pilot testing of materials in 500 schools in three regions of significant natural hazard risk was, wisely, adjusted to 12 schools in 2010, allowing for deeper and richer evaluation.

Pedagogy

The chosen pedagogy for the programme is an interactive 'peer to peer' approach. Guidelines on interactive learning facilitation are central to the *Teachers' Manual on the Issue of Disaster Risk Reduction* (UNICEF et al, 2009) with emphasis on employing pair, small group and whole group discussion, board games, role playing, simulations and on the use of multi-media stimulus materials. True to the letter and spirit of 'peer to peer', approaches to peer assessment are also itemized in the *Manual* (see below). The extent to which the student's manuals offer an enriching resource for interactive learning is a moot point.

Earthquake preparedness exercise,
at Elementary School No. 148
in Almaty, Kazakhstan.



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Student Assessment

The *Teachers' Manual* is very innovative in its advocacy of modes of self-assessment for DRR learning (Ibid. 114) but is, in contrast, less imaginative in its proposal that formal student end-of-module assessment be undertaken through simple multiple-choice assessment tests (Ibid. 115-20). The self-assessment approach is one of individual students filling in a pro forma after each module/topic in which they assess themselves against a series of statements to which they can respond 'always', 'sometimes' and 'never'; for example 'I pay attention to details which would allow me to act better in an earthquake' (Ibid.114). Self-assessment serves as the springboard for peer assessment. 'The purpose of the self-assessment is to involve the schoolchildren (in) active discussions and to develop better skilled collocutors. Schoolchildren are supposed to fill out the table and discuss their answers in groups' (Ibid). The *Manual* also suggests peer interviewing, peer appraisal of essays, groups observing each other's role play, peer assessment of project outcomes and peer teaching as other potential modes of assessment (Ibid).

Teacher Professional Development/Guidance

The *Teachers' Manual* offers background information on DRR education, basic teaching principles, guidance on interactive learning, the five modules in the students' book, advice on monitoring and evaluating programme outcomes as well as advice on working on risk assessment with parents. 'DRR was a new concept for many in the education sector so it was important to make it attractive and easy-to-grasp for teachers. For ease of use, the guidelines also include guidance for teachers to incorporate teaching materials into the curriculum and the suggested number of hours to spend on each subject' (UNICEF, 2011, 4).

A cascade method of DRR training for teachers has been adopted. With 54 teachers involved in initial national level training, 150 more at oblast (regional) level, a further 2432 in cities and towns (UNICEF, 2011, 4). Ambitious plans for the training of over 50,000 teachers by teachers trained during the initial rounds of workshops have been floated (UNICEF/Republic of Kazakhstan, 2011; UNISDR/UNICEF, 2009, 52).

Learning Outcomes/Competencies

No comprehensive list of DRR-related learning outcomes has been developed but outcomes can be divined from the specifics of three levels employed to assess student achievement (level 1: below average; level 2: average; level 3: above average). Hence, in the category of 'definition of earthquake, a level 1 student would 'know in general the characteristics of an earthquake,' while a level 2 student would be 'able to name all the actions happening during an earthquake,' and a level 3 competence would be the ability to 'tell of earthquakes from other sources.' (Ibid.11-13).

Policy Development, Planning and Implementation Aspects

The critical issue is whether the materials and training-led approaches adopted in Kazakhstan can translate into curriculum change. Thus far, teachers have been restricted to employing their training and the materials developed in the spaces in the national curriculum noted in the introduction to this case. Materials development and training initiatives can become diversionary to substantive curriculum change or they can generate the impetus for change.

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Case 3: Kazakhstan

A national workshop for ministries, institutions and members of parliament held in Astana in June 2011 to review the DIPECHO project as it came to an end recommended the following: 'include DRR issues into the (new) 12-year school education curricula; integrate DRR into (an) existing school subject in accordance with the education plan and extra-curricular hours; continue teachers' training in disaster risk reduction at the advanced teacher training courses'.

The report for the workshop noted that 'it is to a great regret of the organizers and participants of the workshop, representatives of the Ministry of Education were not represented at this important meeting' (National Workshop, 2011). All partners in the DIPECHO process agreed that 'the new DRR materials should become integrated in the mandatory school curriculum in Kazakhstan' (UNICEF, 2011, 7).

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Aruzhan, 6, learns about earthquakes and how best to respond in the event that one should occur, at Kindergarten No. 53 in the city of Almaty. Her school is one of the first in Kazakhstan to implement the Disaster Risk Reduction (DRR) Programme.

Section 10. The Case Studies

Case 4: Russian Federation

Overview

Russia offers an example of the systematic inclusion and enhancement of DRR at full scale in the core curriculum through a carrying subject and also through infusion in all other subjects. Russia also features strong regional adaptation strategies. Basics of Life

Security is the main carrier subject matter, with cooperation between the Ministry of Education and the Ministry of Emergencies to define curriculum content. Clear cross-curricular DRR knowledge, skills and learning outcomes are also included in other subject matters.

Introduction

The Russian Federation is a Federal State with 83 members of the Federation, all having a high level of autonomy in local adaptation of Federal programmes, including in the education system.

Regarding DRR, the full integration of DRR into school curricula is supported by the Federal Programme *Risk Reduction and Mitigation for Natural and Technological Disasters in the Russian Federation by 2015*. The programme is the third phase of programme development following an initial one from 2000-2005, and a second phase from 2005-2010. The Federal Ministry of Emergency Situations is the overall coordinator of this federal initiative while the Ministry of Education is responsible for implementing its education component (Government of Russia: Integrated Federal Programme Information Service).

The programme is based on a legal and regulatory federal framework (compulsory) and has the full support of the federal governmental level for local implementation by municipal and regional education structures (recognition of better implementation by local authorities being a lesson learned from earlier phases). The key objective of the programme is the 'increased capacity of students, in full obedience with regional particularities, in the area of life security and organisation of the protection of the population' (ibid, 8, 30, 40, 47, 75, 79, 97).

There are eleven school years in Russia, the cumulative impact of grades 1 to 11 is considered to comprise a full secondary education. Primary education can be compared to grades 1 to 4, while secondary education can be compared to grades 5 to 11.

The compulsory subject matters taught to pupils throughout the full secondary education cycle are the following: Basics of Life Security; Biology; Civic Education; Chemistry; Fine Arts; Foreign Languages; Geography; History; Literature; Mathematics; Physical Education; Physics; Russian Language; Social Studies; Technology.

DRR has a key carrying subject and is also infused across other subjects. The key carrier is *Basics of Life Security*, taught at least through grades 7 to 9 but from grades 5 to 9 in some regions (equivalent to secondary education). An additional facultative programme is also available for grades 10 and 11. Basics of Life Security is mainly managed by the Ministry of Emergency Situations. As infused in other subjects such as Fine Arts, Technology, Physical Education, Geography and Physics, it is managed by the Ministry of Education. There are specific learning outcomes that must be addressed in some subjects but there are also cross-curricula learning outcomes (General Russian Curricula Standards)²¹.

Curriculum Development/Integration

Basics of Life Security is a subject in its own right but is included in other subjects. As outlined in Ministry of Education documentation²² its organization is as follows:

- Informative and methodological function: allowing all students to receive common training on the goals, contents and main strategies of DRR.
- Organization and planning function: allotment by moments throughout the learning of the subject matter with teaching materials by modules organised in chapters and themes with specific evaluations involving cross-curricula references

²¹ <http://standart.edu.ru/catalog.aspx?CatalogId=2659>

²² Methodological Letter on education of the education subject matter Basics of Life Security <http://www.edu.by/modules.php?name=News&file=categories&op=newindex&catid=272>

Aleksandr Pogrebnoy, 14,
photographs the remains of his
classroom in Beslan, Russia.



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to reinforce the logic of the teaching process and the attention to the age specificities of the learning cycle.

The minimum compulsory basis for all regions and all schools is 105 hours to be taught in classes 7 to 9 for one hour per week. For regions and schools with high disaster risks, it is possible to adopt an alternative basic teaching plan with 175 hours covering classes 5 to 9 for one hour per week. An additional, facultative programme is available for grades 10 and 11, but a draft law might make Basics of Life Security compulsory also for grades 10 and 11 in addition to the above-mentioned obligatory basic teaching plan²³.

Basics of Life Security goes beyond natural hazards to cover technological hazards, road safety, conflicts, and terrorism. Present as a discrete subject, it is also infused in other subject matters as a cross-cutting dimension. Reflection on Basics of Life Security programme is encouraged in other carrying subject matters (Ministry of Education of the Russian Federation, 2009, 2011a).

The organisation of the teaching of Basics of Life Security is modular with an overall objective of building a culture of safety (Russian Federal Ministry of Education, *Suggested Programme of the General Education, Basics of Life Security*)²⁴.

The first principle of modularity is that each region organise the course as appropriate to its regional context, and with regard to regional capacities in the domain of population safety (Ibid.).

The structuring of the programme in Basics of Life Security revolves around classes 5 to 9, in 2 main modules, each comprised

of 2 sections and 6 themes. The weight of the themes and their inclusion or deletion can be freely determined by regional educational institutions and schools in the light of their own specificities and needs, and taking into account the relative importance of all subject matters in the regional curricula.

Module 1: Main dangers for the individual, the community and the country.

Aims at providing a culture of daily safety to students to enable them to respond to different dangerous situations and emergencies.

Section 1: Background on emergencies (can be taught in classes 5 – 9)

Section 2: Protection of the population of the Russian Federation from Emergencies (can be taught in classes 7 – 9)

Module 2: Healthy way of life and medical first aid

Aims at encouraging a healthy way of life for students, and training them to provide first aid medical support.

Section 3: Background on healthy way of life (it is not DRR per se, but some themes contained in this section are relevant to DRR)

Section 4: First aid

Pedagogy

Regarding learning materials, much has been produced in Russia. There are two main manuals covering the modules of Basics of Life Security and that are recommended for use with classes alongside the exercise books, *Life without Danger and Attitudes for Security*. There is also a supplementary optional series of leaflets, *Alphabet of Security*, along with four flexible course

²³ Article Argumenty I Fakty, Ekaterina Dubanidi <http://www.argumenti.ru/education/n272/90975>

²⁴ <http://standart.edu.ru/catalog.aspx?CatalogId=1083>

Section 10. The Case Studies

Case 4: Russian Federation

resources available for use in classes by teachers in Basics of Life Security, and also in other subject matters:

- *Green Home*: 25 hours at primary level focusing on ecology and the need to protect the environment in order to protect oneself and one's family
- *Nature and People*: 20 hours focusing on the interaction between people and nature.
- *The World Surrounding Us*: 25 hours focusing on the dynamics of nature.
- *World and Human Beings*: 25 hours focusing on how human settlements are organised and how nature can have an impact on them.

The journal *Basics of Life Security*²⁵ (see below) offering professional guidance to teachers also contains materials for using with students in class. In addition, there a series of learning cartoons for children available in Russia concerning Basics of Life Security and covering natural hazards that teachers are encouraged to show in class and/or engage parents in showing them to children at home:

- *'Lessons of the Aunt Owl': Lessons of Prudence, ABC on the Road, Lessons of Nature*²⁶
- A further series of learning cartoons produced by the Ministry of Emergency of the Russian Federation, *'Spasik and his friends'*

These series cover the following topics and issues: rules of conduct (behaviour) in the town, rules of conduct during fire, rules of conduct for household activities, rules of conduct in nature, household appliances, sharp objects, underground

places and wells, altitude, reservoirs, medications, strangers, electricity, hot objects, stray animals, fire, microbes (Ibid).

Teachers of Basics of Life Security are also encouraged to use diverse pedagogical approaches in their courses:

- Introductory presentational overviews on the principles
- Semi-directed internet searches by the children themselves to make sense of the legal infrastructure in Russia concerning DRR and of institutional support they can get from governmental, regional, and local structures in times of emergencies, and the rules of behaviours in different types of emergencies, followed by class discussions.
- Video games, board games and role games for engaging the child and placing him/her in surrogate experience situations.
- Class and home-based exercises aimed at assessing and researching risks, followed by consultations with the teacher, members of the family, and with external participants e.g., officials or retirees from the Ministry of Emergency) on the results obtained by the children
- Focus group discussions after viewing of cartoons, videos, or photos.
- Organisation of class events of advocacy to the community during the "Federal day of child protection"
- Excursions to places of potential danger to see the reality on the ground and undertake local assessments
- Participation in the Federal competition "The most secure school"
- Organisation of exhibitions of artistic works done by the children on the thematic of DRR (Ministry of Education of the Russian Federation, Federal Institute for Development of Education, 2007).

²⁵ <http://school-obz.org/>

²⁶ These series are part of the educational-entertaining online club for children and parents "U Tetyshki Sovy" <http://www.usovi.com.ua/>

Student Assessment

Children are assessed throughout the year in their learning in Basics of Life Security. For the regular assessment, children are evaluated through tests composed of 11 questions opened by children on a computer. Each question is preceded by a multimedia presentation. Children reply in a limited time in paper form through essays and short answers during which time they may also have access the internet (Ministry of Education of the Russian Federation, 2011b).

Children are also assessed throughout the years with controls that can take various forms such as a jeopardy (i.e., children are assessed based on the number and rapidity of their replies), a board game (children are assessed based on how well they conduct themselves in the situations described during the game). Teachers are encouraged to be inventive in designing these tests, to make them interactive and not just knowledge-oriented (Ibid).

In addition, children of grade 9 are all assessed formally to obtain a lifetime certificate in Basics of Life Security. The examination is composed of 3 parts: 15 questions with multiple choices; 5 questions to be responded to with short essays; 5 situational analyses²⁷.

Teacher Professional Development/Guidance

About 40 higher pedagogical institutes throughout Russia have programmes to train teachers in Basics of Life Security, and they provide official federal diplomas for qualified teacher of Basics of Life Security up to the Doctoral level (Ibid, 2)²⁸. In addition, supplementary requalification teacher training courses are also available in Basics of Life Security, and each

year a learning programme is organised as non-formal (additional) teacher training²⁹.

The Ministry of Emergency Situations also offers specific training sessions for teachers to update them on new teaching methodologies and new elements of DRR³⁰.

In addition, an academic journal, *Basics of Life Security*, is co-edited by the Ministry of Emergency Situations and the Ministry of Education and oriented at schools and higher education institutions. Professors and schoolteachers form the main readership but parents also draw upon it to help them increase their children's awareness of risks. It contains the latest information on DRR and relates experiences from Russian regions on best practices and local experiences in teaching DRR. It is distributed to all teachers of DRR as well as all school directors in Russia. Teachers and schools are encouraged to adapt their lessons as inspired by the teaching approaches and methodologies featured in the journal. Tips are offered on cross-curricular integration in other subjects. The journal has existed for twelve years³¹.

Learning Outcomes/Competencies

DRR-related knowledge, skills and attitudinal learning outcomes have been systematically developed for Basics of Life Security as a subject (at secondary level) and as a cross-cutting dimension. There are also DRR learning outcomes within specific subjects, most comprehensively for primary and secondary Geography (Ministry of Education of the Russian Federation, 2009, 2011a).

²⁷ <http://pedsovet.su/load/149-1-0-16256>

²⁸ mon.gov.ru/work/obr/dok/obs/obz.doc

²⁹ www.school-obz.org, Example: <http://mon.gov.ru/files/materials/4498/kvalif.pdf>

³⁰ school-obz.org

³¹ <http://school-obz.org/>

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Case 4: Russian Federation

The Basics of Life Security subject learning outcomes are as follows:

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 on 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 organisation of the population in reacting to disasters; first aid in critical situations; rights and duties of the citizens in hazardous situations.

Skills:

- Independent determination of one's own goals in DRR and the 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
- Predisposition to reducing human activities that can have a negative impact on the security of the individual, the community, or the country.

- Engagement in the promotion of a culture of safety
- Predisposition to promote all necessary norms for the reinforcement of safety in the event of a disaster

Cross-curricular learning outcomes are as follows:

Knowledge:

- Understanding of the notion of safety and of what lies behind dangerous and disastrous situations.
- Knowledge base sufficient to generalise and compare the consequences of disasters and to determine causal linkages between disasters and their determinants of human security.
- Formation of a knowledge base for understanding and processing information, for generating ideas, and for envisaging options so as to improve daily safety and reduce risks in emergency situations.
- Knowledge of advisable courses of action to take in situations of natural, technological or social disaster

Skills:

- Ability to determine aims and behaviour in situations of disasters by assessing the situation and local conditions.
- Ability to handle, research and analyse information for risk reduction using various resources and new information and communication technologies
- Ability to convey the results of individual assessments, to participate in discussions related to disasters and to convey one's own opinion to adults

Attitudes:

- Development of the disposition to express one's own mind and of the disposition to listen to key informants, understand their point of view, and decide upon the right course of action
- Formation of a disposition to interact and cooperate with the community and to take up different social roles in times of disasters and in their immediate aftermath (Ministry of Education of the Russian Federation, 2009, 2011a).

Examples of DRR learning outcomes in specific subjects are as follows:

- Understanding of the unity of the surrounding world and the importance of the ecological whole, of elementary rules and norms of engagement between nature and people (knowledge learning outcome, primary geography)
- Understanding of basic principles of safeguarding of the environment and of rational use of natural resources (knowledge learning outcome, secondary Geography)
- Basic ability to assess the level of danger in the surrounding environment, to identify possible adaptation policies for territorial inhabitancy as well as security measures in case of natural disasters or technological catastrophes (skills leaning outcome, secondary Geography)
- Disposition to preserve the integrity of the natural world (attitudinal learning outcome, secondary Fine Arts)
- Aptitude to understand possible dangers, linked to the wrong utilization of technological items, and the exploitation of technologies possibly leading to environmental pollution (attitudinal learning outcome, secondary Technology)
- Development of useful physical skills in situations of disasters

(skills learning outcome, secondary Physical Education)

- Understanding eco-systemic models and their application to making forecasts on ecological risks to the population due to natural hazards (knowledge learning outcome common to secondary Biology, Chemistry and Physics) (Ministry of Education of the Russian Federation, 2009, 2011a).

Policy Development, Planning and Implementation Aspects

Basics of Life Security has existed since 1991 and DRR has been infused in all subject areas since 2000. The movement to scale is thus quite long-standing.

The existing curriculum framework, with the expected outcomes detailed earlier has been in place at primary level since October 2009 and at secondary level since November 2010. The framework is laid out in the form of two governmental decrees from the Federal Ministry of Education, which can be adapted for local content through local decrees of implementation by regional government (Ministry of Education of the Russian Federation, 2009, 2011a). It is implemented at school level monitored by governmental auditing bodies with power of sanction for those not complying with minimum standards.

In addition to the minimum requirement on the main subject matter (Basics of Life Security) mentioned above, which can vary from one hour per week for classes 7 to 9 (105 hours overall) to a minimum of one hour per week for classes 5 to 9 (175 hours), and the subject specific minimum requirements as evidenced in the learning outcomes of other carrier subject matters, each region is also encouraged to develop its own context, notably in relation to the risks they face (Ministry of Education of the Russian Federation, 2009, 2011a).

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Case 4: Russian Federation

Here, it is important to emphasize the regional peculiarities in Russia to be considered when implementing a school programme. There are 83 regions in Russia, and the suggested programme could be flexibly adjusted according to the cultural and geographical particularities of the region. Potential dangers that exist in Russia vary from region to region. For example, in the Caucasus there is a high danger of earthquakes, whereas in the Volga River region there is a potential danger of flooding. The emphasis made on DRR will in these regions cover those risks most probable in the regional context. At the school level, there is also flexibility to adapt to local contexts. In particular, indigenous knowledge is sometimes considered to be part of learning programmes³².

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³² Interview by Guillaume Simonian, UNICEF, with UNESCO Moscow office

http://www.allbusiness.ru/BPravo/DocumShow_DocumID_39193.html

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http://www.lawrussia.ru/texts/legal_456/doc456a350x242.htm

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http://www.lawrussia.ru/bigtexts/law_443/page19.htm

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Case 5: Turkey

Overview

Turkey offers a singularly well-developed example of a structured interdisciplinary approach to primary level DRR curriculum. It is also remarkable in its thorough and systematic approach to teacher training

that preceded the programme by two years, thus helping to pave the way for the launch of a reformed primary curriculum with a cross-cutting DRR dimension.

Curriculum Development/Integration

Prior to the 2005 primary school curriculum reform, disaster-related topics in the Turkish national primary curriculum were restricted to one Science topic per year in grades 1, 2 and 3 and one Social Science topic in grade 4. The focus of the lessons was earthquakes and earthquake protection (Türkmen & Tüzün, 2010, 14).

In school year 2005-2006 a reformed national primary curriculum was introduced. The new curriculum aimed to reflect developments in science and technology as well as in pedagogy, increase both quality and equality in education, respond to economic and democratic imperatives, and develop personal and national values within a framework of global values. Emphasis was also placed on the 'need for integrated curricula' and on meeting the 'demand for conceptual integrity between lessons on the horizontal axis and within each lesson on the vertical axis' (Ibid. 4).

Central to the new curriculum, then, was the idea of the interdependence of subjects and topics, teachers being enjoined to consider 'association within the lesson' as well as 'association between lessons' (Ibid. 5). Catalytic to the process of association was the earmarking of eight interdisciplinary focuses: disaster training and safe life; entrepreneurship; human rights and citizenship; special education; counselling and psychological consultation; health culture; sports culture and Olympic training; career development. 'Inter-disciplines do not exist as stand

alone lessons' but instead 'are an approach to help establish relations between lessons (subjects)' (Ibid). Disaster training and safe life thus gained significance in the new national primary curriculum, binding and blending through and across all the grades.

The outcome has been that disaster risk reduction now appears as a focus within a range of subjects in the new curriculum. In grade 1 it appears in the Introduction to Sciences programme helping students to learn about how harmful natural disasters are, to understand safety measures and how to behave accordingly in school and at home in order to be protected from the effects of natural disasters, and to appreciate how natural disasters transform the environment. In the grade 2 Introduction to Sciences programme students learn what is essential for people to maintain their lives. In grade 3 they investigate hazard reduction in the home and are familiarized with the experience of an earthquake. Grade 4 Mathematics lessons on measurement focus in part on comparing and averaging earthquake durations while other work on numbers utilizes technical information on earthquakes. Grade 4 Social Sciences coverage of 'People, Places and Environments' includes a thorough investigation of earthquakes (what is needed in an earthquake, correct courses of action and conduct during an earthquake, potential hazards, raising public awareness through posters). Exploration of soil erosion and loss in grade 4 Science and Technology includes studying courses of action to minimize the effects of disasters. Listening and reading in grade 5 Turkish Language includes dealing with data on potential

Children examine a globe at their school in the village of Karaali in Ankara Province, Turkey.



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hazards during an earthquake (Ibid. 15-17). In grade 6 the learning is extended to natural disaster related practices in the local environment.

The study of numbers in grade 6 Mathematics includes comparing and arranging data on the effects of wind while work on probability and statistics uses potential flood hazard data. In grade 7 pie charts are drawn and interpreted around the causes of forest fires while work on algebra and exponential numbers involves calculation of Richter magnitudes. Work on speaking in grade 6 Turkish Language is used to profile the correct course of action during landslides while reading tasks are used to look at protection from tornadoes. This work is built upon in grade 7 during which students focus on tornadoes as they practice using definitions, associations and numeric data in speech and in which they also practice making speeches about the causes of landslides. Research through reading exercises in grade 7 explores measures to be taken indoors and outdoors during a landslide (Ibid. 17).

Finally, there is a summative-like focus on DRR topics in grade 7 and 8 Science and Technology. Seventh graders acquire information on and skills in presenting, discussing and generating solutions to Turkey's environmental problems. These students learn about forest fires (causes, prevention and counter-measures), avalanche risk prevention, flood protection, landslides (causes, pre-indicators and protection behaviours and measures), and natural electrical disasters.

In the study of 'Planet Earth' in grade 8, students consider the impact, outcome and protection measures against volcanoes, earthquakes, cyclones and hurricanes (Ibid. 17-18).

In their evaluation of the disaster training and safe life 'interdisciplinary' based on a detailed review of primary school books, grades 1-8, Turkmen & Tüzün (Ibid) make, *inter alia*, the following observations:

- There is a need to assess the disaster-related terminology employed across the new primary curriculum to ensure internal coherence as well as alignment with international terminology. Working textbook definitions fail to include DRR concepts such as 'risk,' 'risk assessment,' 'hazard,' 'vulnerability,' and 'capacity building' (Ibid. 8).
- Given that the most frequent disasters in Turkey are earthquakes leading to injury and death through collapsing buildings, awareness of structural (building) hazards should be built into the texts and curriculum (Ibid. 10)
- The curriculum should also provide practical responses to other potential disasters in addition to earthquake emergency response (Ibid)
- The curriculum insufficiently cultivates post-disaster basic response skills (Ibid. 11)
- There is 'rather too much emphasis on the devastating outcome of disasters' with the danger of provoking hopelessness and fright. This needs to be balanced by a complementary emphasis on both the naturalness of disasters and on how their impacts can be minimized or prevented through appropriate actions (Ibid).

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Case 5: Turkey

'The primary message demanding emphasis in scope of disaster awareness and safe life,' they conclude, is that 'not all emergencies or natural events need to lead to disaster... It is fundamental for primary school programmes to emphasize that "disasters" happen when the emergency or natural event exceeds the capacity of the individual, family or society. And when available resources and the system becomes inadequate.' The curriculum, they argue, does not address these issues as clearly and adequately as necessary (Ibid. 12-13).

In addition to the subject-based DRR curriculum, a primary school National Disaster Education Week is held annually with students taking part in special activities (BU KOERI & TR MoE, 2005, 4).

Pedagogy

The cross-cutting skills called for under the new primary curriculum include: critical thinking skills, creative thinking skills, communication skills, problem-solving skills, research-questioning skills, information technology skills and skills associated with entrepreneurship (Turkmen & Tüzün, 2010, 4).

This strong skills orientation allied with the practical, hands-on, nature of the disaster training and safe life 'inter-discipline' calls for active learning. Thus far, some eighty classroom activities have been developed³³. The importance of 'association' in curriculum delivery also concerns an associative pedagogy that recalls and revisits what has been learned earlier and/or

elsewhere (the challenge of revisiting a DRR topic or theme through a different subject lens being laden with potential). The teachers' guidebook identifies points in which cross-curricular associations should be made (Ibid. 6-7).

Turkmen & Tüzün write: 'Compared to the previous curriculum, information and skill is better balanced in the new version. Underlining the fact that all information has an application to daily life, activities have been linked with gains in a way that supports skills. Project work offers the opportunity to use information and skills in conjunction (and) therefore receives extra emphasis in this programme. Adopting an on-the-spot approach, the student is given the opportunity to compare the topic of disasters within (the) context of different lessons' (Ibid. 8).

Student Assessment

Different forms of assessment are employed, the most regular being written tests in class. Homework requiring the involvement of family members is also given in order to test students' understanding and ability to apply their learning; for example, drawing up a family disaster preparedness plan or undertaking an earthquake hazard hunt³⁴.

Teacher Professional Development/Guidance

Prior to the inception of the new primary curriculum, a 'Basic Disaster Awareness in Turkish Schools' project took place between 2003 and 2005. A collaboration of the Ministry of Education, Bogazici University, Kandilli Observatory and the

³³ Zeynep Turkmen, Bogazici University Centre for Disaster Management, to David Selby, 23 November 2011.

³⁴ Zeynep Turkmen to David Selby, 26 November 2011.

Earthquake Research Institute, the goal of the project was to create a basis for the institutionalization of a more thorough disaster awareness education programme through the development of curriculum materials and the training of 15,000 school-based basic disaster awareness instructors (BU KOERI & TR MoE et al., 2005, 1).

Under the curriculum development heading, an Instructor's Handbook, an instructor CD-ROM, an audio-visual slide presentation with instructor notes, an instructor's skills guide and guidance materials for monitoring and evaluation were developed. The Ministry distributed 25,000 copies of the Handbook and CD-ROM to teachers. Nationwide training for instructor-candidates became available on the Internet by means of a 'rich distance learning self-study programme' (Ibid. 2).

More than 2,000 teachers have successfully completed the Basic Disaster Awareness Distance Learning Programme. From some 700 applicants, 118 teachers were selected to be instructor-trainers (two from each of the 41 provinces and four from each of the nine most populous provinces). They received a five-day training session. By the close of 2005, 114 active instructor trainers had trained more than 22,700 school-based instructors. An estimated 190,000 teachers received some disaster awareness training using the Internet portal in 2005 with the five-year total (as at 2010) standing at 294,000 teachers (Ibid. 2-3).

Alongside the cascading involvement of educators, it is estimated that 5.9 million students, 107,000 non-teaching school personnel and over one million parents received some in-person or distance training between 2005 and 2010 (Ibid.). Evaluations of the 2003-2005 project show a very positive impact with significant gains in teacher and student knowledge and 'dramatic increases in family household hazards adjustments and school hazard adjustments' (Ibid 3).

Learning Outcomes/Competencies

No fully itemized and stand-alone listing of DRR-specific student learning outcomes has thus far been developed but disaster-specific 'lesson gains' are present in the new curriculum whenever a disaster issue is the main focus for learning rather than a carrier resource for other learning. To illustrate the difference, when grade 1 students investigate how natural disasters transform the environment as part of the Introduction to Sciences curriculum (see above), there are clear DRR-related learning outcomes such as the ability to 'ask and answer questions on earthquakes' and to 'take basic measures against earthquakes within the classroom'. On the other hand, when grade 4 students use data on earthquake durations to practice measurement (see above) then the learning outcome, i.e., explaining the relation between minutes and seconds, bears no direct relation to DRR.

Section 10. The Case Studies

Case 5: Turkey

Policy Development, Planning and Implementation Aspects

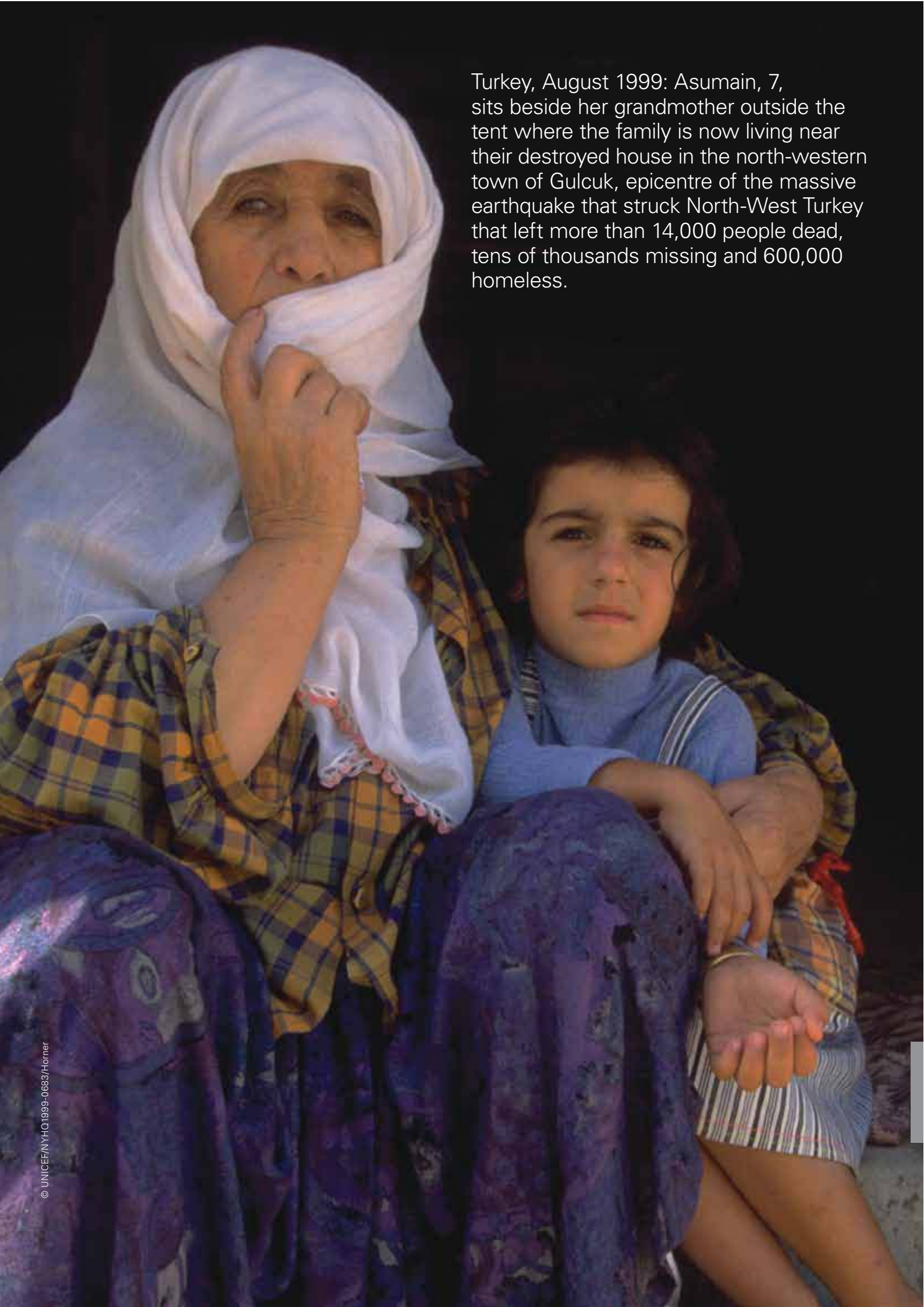
The Turkish Ministry of National Education is responsible for educational activities concerning disasters and emergencies. It 'ranks first in influential institutions working to spread disaster awareness in Turkey,' approving and supporting all DRR-related activities in the education sector. The Ministry is a member of the Turkish Prime Minister's Disaster and Emergency Management Presidency (BU KOERI & TR MoE, 2005, 4).

The disaster training and safe life strand in the new primary curriculum was a direct response to the call for DRR programmes to be updated in Turkey's *Emergency Action Plan* of 2005. The Ministry established expert commissions in 2005 to modernize the primary school curriculum. The new curriculum was piloted at 120 schools during school year 2004-2005, before moving to scale with national implementation in 2005-2006 (Turkmen & Tüzün, 2010, 4, 6).

The Executive Summary of the Basic Disaster Awareness in Turkish Schools' project report calls for the national disaster awareness programme to be extended 'from pre-school through high-school in public and private schools nationwide' (BU KOERI & TR MoE et al, 2005, 3).

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Turkey, August 1999: Asumain, 7, sits beside her grandmother outside the tent where the family is now living near their destroyed house in the north-western town of Gulcuk, epicentre of the massive earthquake that struck North-West Turkey that left more than 14,000 people dead, tens of thousands missing and 600,000 homeless.

Section 10. The Case Studies

Case 6: Cambodia

Overview

Cambodia offers an example of curriculum development according to a strategic ministerial decision 'that integration of DRR topics into subjects already taught would be more effective than creating a new subject' (ADPC, 2010). It also provides an example of lower secondary

level curriculum development focused on the physical science subjects that, in turn, provides a springboard for the development of DRR-related curricula in another secondary grade and one primary grade.

Introduction

The Mainstreaming Disaster Risk Reduction (MDRD) Education Project, Phase 1, 2004-8, initiated the first curricular response to disaster risk reduction in Cambodian schools. There 'was no major educational programme or curriculum related to DRR in Cambodia before this project' (ADPC, 2008: 19). Phase 2 of the Project followed in 2008-9.

The Project is the Cambodian arm of a three-country initiative of the Regional Consultative Committee (RCC) on Disaster Management to assist Ministries of Education integrate DRR in the secondary school curriculum (ibid: 10). In each country, the project developed lower secondary curricula: in Lao PDR and the Philippines in Science and Social Science in grade 7 and in Cambodia in Geography and Earth Studies in grade 8, the topics covered being floods, storms, drought, earthquakes, volcanic eruptions, prevention/mitigation and safety measures (ibid: 11, 12; ADPC, 2010)

The Cambodian initiative was the co-joint responsibility of the National Committee for Disaster Management (NCDM) and the Ministry of Education, Youth and Sports (MoEYS) and was implemented by a Project Technical Working Group who drafted the educational materials. The piloting took place in 10 schools spread out over four districts in four provinces and involved 847 students (of whom 239 were girls) in phase 1 alone, and some 1,200 students in phases 1 and 2 (ADPC, 2008, 2010). The provinces were chosen by the government according to 'perception of risk and priority,' each province

being among those most affected by the 2000 flooding of the Mekong delta (ADPCb, 2008, 24, 56). There were three training sessions of trainers (TOTs) in addition to the instruction of 109 teachers and 18 officials (ibid: 13).

Curriculum Development/Integration

DRR was integrated into the pilot curriculum through the insertion of chapters into the standard textbook for Geography and Earth Studies; the writing of a separate student textbook covering a range of potential hazards; a *Teacher's Manual* for grade 8 Geography and Earth Studies giving details of duration, resources required, student activities and teaching methods (MoEYS, 2008). The lessons focus primarily on floods, but also include some coverage of volcanic eruptions, earthquakes and hurricanes, drought and deforestation.

Specific lesson topics added to the Geography and Earth Studies curriculum include: flood disaster in Asia, flooding and child protection measures, flooding risks, flood risk reduction through forestry protection, types of flood and protection from each type, school flood mitigation measures, avoiding flood risk, coastal flooding, causes of floods and drought, impacts of floods, starvation caused by floods and drought, volcanic eruptions, earthquakes and hurricanes (ibid). Some lessons focus on Asia in general, some on regions of South East Asia and East Asia, some on Cambodia or other specific Asian countries (ibid).

A boy listens as his parents discuss the removal of landmines in the village of O Chheukram, Cambodia.



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Pedagogy

The learning and teaching methodology proposed is primarily a combination of whole class and large group discussion following the writing of workbook answers so as to bring factual data to the surface. Through such modalities, knowledge outcomes are predominant over skills development and attitudinal outcomes. The 'use of songs, competitions, posters and plays' referred to in a 2010 report (APDC, 2010) is not yet reflected in the teacher's manual (MoEYS, 2008).

Student Assessment

The module offers 'exercises for the children to test their understanding' (ADPC, 2008, 19). There is no indication of assessment of DRR-related skills or behaviour.

Teacher Professional Development/Guidance

The *Teacher's Manual* offers guidance on the facilitation of nineteen short lessons based on and also extending what is in the textbook. For each section the *Manual* offers lesson objectives (see below), text pages and materials to be used, duration (always 10 minutes), teaching methodology, questions for students to respond to in their notebooks prior to discussing their answers in whole class sessions with the teacher.

Instruction in using the curriculum materials was given to the teachers participating in the pilots. Provincial and district education officers and school principals of the pilot schools also attended the training sessions. The sessions: 'provided guidelines for writing lesson plans, participants practiced teach-

ing in the classroom in a simulation exercise; feedbacks on teaching techniques and methodologies in the delivery of the DRR modules were provided'. A training of trainers approach was also used to help cascade training to teachers in the four provinces in which pilot implementation occurred. Curriculum specialists from MoEYS, NCDM staff and Technical Working Group members as well as school principals monitored the teaching of the DRR lessons (ADPC, 2010, n.p.).

Learning Outcomes/Competencies

Each of the nineteen lessons in the *Teacher's Manual* includes a list of learning objectives for the additional ten-minute teaching section. The learning objectives enumerated primarily concern acquiring disaster-related geographical knowledge, for example, 'the students will be able to identify the types of flood hazards in Cambodia' and 'the students will be able to identify environmental issues that impact negatively on Cambodian society and economy'. In addition, some dispositional learning outcomes are included such as 'the students will be cautious and prepared before and during floods' and 'the students will be interested in contributing to natural disaster preparedness' (MoEYS, 2008). Throughout the lessons, however, there is a dearth of DRR-related skills learning outcomes. Overall, there is something of a contradiction between the Project's larger goals of fostering proactive student engagement with disaster preparedness, prevention and mitigation and a programme that is solely oriented towards knowledge acquisition.

Section 10. The Case Studies

Case 6: Cambodia

Policy Development, Planning and Implementation Aspects

In March 2008 a two-day National Workshop reviewing Phase 1 of the MRDP Project was held in Phnom Penh. Following presentations made, four groups worked on different issues.

The first was asked to consider the next steps to take in the full integration of the DRR module into the national curriculum. Suggestions included:

- The need to offer devolved TOT at regional and provincial levels
- The need for greater use of pictures (child-friendly)
- The need to incorporate bomb threats, land mines, snake bites, floods and droughts into existing curricula
- The need for the pictures used in teaching materials to be more gender-balanced

The second group considered learning and teaching materials from governmental and non-governmental organizations that might supplement the DRR curriculum while a third reflected upon how DRR could be applied to other classes, highlighting:

- The need to integrate DRR in all classes
- The need to develop VCD and posters
- The use of storytelling and pictures as child appropriate
- The teaching of DRR at all primary grades

A fourth group concerned with teacher training proposed that the Pedagogical Department of the Ministry be involved in developing the training materials.

The responses outlined above (ibid: 30-1; 83-4) flag important issues surrounding the development of DRR curriculum in Cambodia up to 2008. The most significant concerns the decision of the MDRD Project originators to provide a spring-board for DRR curriculum development at the secondary level. This, in retrospect, seemed not to be the best strategy, as a National Workshop recommendation makes clear:

The primary sections are the most important to deliver the message of DRR to the students. Students in the primary classes are the most vulnerable to disasters. Of significance is the fact that in Cambodia there is a high drop out rate after primary school. If DRR is not taught at primary level then a substantial number of potential targets are missed (ibid: 84).

It might have been added that upper primary and middle school students (ages 8 to 13) are most responsive and flexible in terms of rethinking their attitudes and taking on new perspectives on the world, a phenomena that has been called the 'plasticity principle'.

Clearly missing at this stage, too, is a sense of how DRR learning outcomes might be consolidated and built upon through the primary, then secondary, grade levels.

Within the choice of secondary level as the initial locus of curriculum development is the choice of science and geographical subjects for creating the new curriculum. This brought both advantages and disadvantages. While there is a clear affinity between understanding natural disasters and science and physical geography, the culture of both subjects tends to have a strong knowledge transmission orientation with less emphasis on life skills, attitudes, values, social implications, and action for change. The child-friendly storytelling approach to DRR called for at the National Workshop would happen more comfortably within an alternative carrier subject.

The calls for more pictures and storytelling, as well as the evidence from the teacher manual, suggests that, as was the case in 2008, the delivery of Cambodian DRR curriculum was somewhat lacking in pedagogical diversity, a point reinforced by the National Workshop recommendations for complementary extra-curricular provisions such as board and CD games. Questions might have been asked as to why such modalities for learning were considered to be 'extra-curricular'.

At the March 2008 National Workshop recommendations also called for 'the integration of DRR in the senior secondary and technical school curriculum' and 'development of curriculum for students and teachers with disabilities' (ibid: 84). The second day of the workshop was given over to safe school construction but the curricular and learning potentials of a retrofitting process were left unexplored.

By 2010 there was a clear ministerial will to institutionalize DRR in the school curriculum more fully, as part of an effort to upscale DRR module development to three further secondary grades. 'The Department of Secondary Education is now responsible for developing a DRR module for Grade 7. The Curriculum Framework Plan for DRR integration also recommends further development of curriculum materials for one grade in primary education' (ADPC, 2010). A clearer appreciation of the need to hone the skills of teachers in facilitating DRR education was also recognized. 'Capacity also needs to be strengthened on the teaching and pedagogical strategies and skills used to effectively deliver the curriculum materials to students, considering varied learning intelligences of students and other factors such as gender and disability' (ADPC, 2010).

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Case 6: Cambodia

Curriculum materials development in Cambodia has also been actively supported by a number of non-governmental organizations (ADPC, 2010).

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A girl holds a poster showing different signs that warn of the presence of landmines, at Boeng Prolith Primary School near the western town of Pailin in Cambodia, as part of landmine awareness efforts. The two bottom images on the poster show broken twigs and crossed sticks - landmine warnings used by villagers when they encounter possible mine-contaminated areas, until official warning signs can be put up.



Section 10. The Case Studies

Case 7: Fiji

Overview

Fiji is notable for the development of a range of highly innovative student-centred approaches to DRR that seek to integrate students' own experiences into learning (although the ideas developed have not been taken to scale). It also offers an example of DRR curriculum development

complemented by a 'special event' approach. It is also noteworthy, too, in the conscious efforts currently being made to salvage and revive indigenous knowledge and practices with regard to hazards and to embed these practices and knowledge in learning.

Introduction

Fiji was a participant country in the *Reducing Vulnerability of School Children to Earthquakes* project of the School Earthquake Safety Initiative (SESI) of the United Nations Centre for Regional Development (UNCRD). Launched in 2005, the project had four key components: school retrofitting, disaster education, community capacity building and awareness-raising. Its disaster education component aimed to provide 'education to students, teachers, and communities on disaster preparedness in order to raise awareness and self-reliant capacities' (Ando et al, 2009, 13-14).

Centrally and actively involved in the project was the National Disaster Management Office (NDMO) of Fiji, an offshoot of the Ministry of Defence. Also pivotal in the implementation were the UNCRD Hyogo Office, Japan, and the UN Department of Economic and Social Affairs (UNDESA). Some ten schools in and around Suva city participated in the project (Ibid. 21, 24).

Curriculum Development/Integration

As part of the disaster education component of the *Reducing Vulnerability of School Children to Earthquakes* project, a one-day international workshop organized by NDMO and UNCRD on Disaster Education and School Safety was held in association with the Ministry of Education in Suva in February 2007. Representatives of other project countries (India, Indonesia, and Uzbekistan) participated. At the workshop, officers from the curriculum department of the Ministry of Education reported on the disaster risk content review of the Fijian curriculum

undertaken as part of the project, which was further developed in a subsequent comprehensive review of primary and secondary school curricula (Pandey, 2007).

Pandey's review found that there was 'no systematic approach to [introducing] disaster education in primary and secondary education' and that 'curriculum officers and experts in the Ministry of Education acknowledge that there is no thought of comprehensive disaster risk management while developing current school curriculum and text books'. That said, he found sporadic disaster-related content in Health Science, Social Studies, Basic Science and Geography in primary grades 4 to 6 and secondary grades 7, 8 and 12 (ibid. 69).

At the time of writing, DRR is incorporated in the school curriculum at both primary and secondary grade levels in a number of subjects: Health Science, primary classes 3-8 (sanitation, safety and first aid in emergencies, infectious disease prevention, a 'safety week' for class 3); Basic Science, primary classes 7-8 (thunderstorms and tropical cycles, rocks and soil, including earthquakes, volcanoes and tsunamis); Social Science, primary class 8 (decision making skills, including risk management strategies, place and environment); Geography, secondary class 6 (detecting and monitoring hazards, hazard mitigation and prevention³⁵); Biology, secondary class 6 (human influences on ecosystems). Addressing DRR through essay writing and project work in English lessons across all primary and secondary grades has also been encouraged³⁵.

³⁵ A problem with the treatment of disaster mitigation and prevention mainly taking place at secondary level in Geography is that the subject at this level is optional and hence not all students are exposed to the learning

³⁶ Nemani Drova, Curriculum Advisory Services/Technical Vocational Education & Training, Ministry of Education, to Fumiyo Kagawa, 19 October 2011 (attachment).

A girl in traditional dress, Fiji.



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Pedagogy

Principal curriculum outputs of the *Reducing Vulnerability of School Children to Earthquakes* project were student and teacher handbooks. Other educational materials included pamphlets and posters for children (Ando et al, 2009. 26).

The *Students' Handbook on Disaster Management* (NDMO, 2008) contains classroom activities on regularly occurring hazards in Fiji (cyclones, floods, landslides, fire) as well as less frequent hazards (earthquakes, tsunamis) for use with students from grade 1 to 7. Many of the activities include posing questions for student discussion groups but there is also a section on using drama, mime and skits. Interestingly, all work done in class is brought together in a 'Disaster Corner,' a booklet in which students post and review their posters and written reflections as well as relevant newspaper articles they are invited to cut out and bring to school. The booklet also includes emergency drill practices, to be undertaken three times per term.

The *Teachers' Handbook: Disaster Management and Earthquake Preparation* (NDMO, 2008) gives detailed advice on utilizing the 'Disaster Corner' to its full advantage ('encourage the students to think of other ways of using the "disaster corner"') and facilitating group work and group discussions. There is also advice on using essay writing, dramas and skits, poems, chants, songs and *make* (traditional dance) and drills in diversifying and enlivening DRR learning. A wide range of DRR learning activity potentials in a diversity of disciplines is also

highlighted as means of helping students integrate their own experiences into their learning, including:

- *Journalism* (having students write stories that cover different aspects of disaster')
- *Science* (including exploring physiological responses to stress and coping mechanisms)
- *Psychology* (exploring emotional and behavioural responses to disaster, including having students develop a mental health brochure)
- *Peer-counselling* (students helping each other internalize experiences)
- *Health* (discussing emotional reactions to disaster as well as health implications)
- *Art* (having students portray their own experiences graphically)
- *Mathematics* (having students solve mathematical problems linked to disasters, e.g., how many cubic feet of soil move in a mud slide)
- *History* (having students report on natural disasters that have occurred in their community)
- *Civics/Government* (having students learn about governmental agencies and visiting emergency operating centres)

The *Teachers' Handbook* concludes with a range of earthquake preparedness activities; for example, conducting a class 'hazard hunt' and building a hazard inventory of the school.

Student Assessment

No evidence has been uncovered.

Section 10. The Case Studies

Case 7: Fiji

Teacher Professional Development/Guidance

Some 40 teachers were trained to use the *Students' and Teachers' Handbooks*, presumably teachers from Suva and environs (Ando et al, 2009, 26).

Learning Outcomes/Competencies

No systematic enumeration of DRR-related learning outcomes has been developed but for each disaster-related intervention in the curriculum, concepts, attitudes and skills to be addressed have been specified (Pandey, 2007, 71). For example, a grade 7 Health Science topic on floods includes the attitudinal outcome of 'appreciation of the need for proper planning and action before, during and after a flood' and the associated skills outcomes relate to explaining, planning and taking proper action (Ibid.).

Policy Development, Planning and Implementation Aspects

A national review workshop on the *Reducing Vulnerability of School Children to Earthquakes* project's educational materials took place in December 2007 prior to more widespread dissemination (Ando et al, 2009, 37).

Resolutions from a *Workshop on School Safety and Disaster Education*, jointly organized by UNCRD and NDMO on 9/10 September 2008, called for 'mainstreaming disaster risk reduction education in the formal curricula of schools' and 'creating an interface between disaster awareness activities of schools with the communities' (UNCRD/NDMO, 2008, 3).

Driven by NDMO, the role of the Ministry of Education in the *Reducing Vulnerability of School Children to Earthquakes* project has been of an enabling rather than proactive nature. 'The aim after this SESI pilot project will be to institutionalize and sustain the efforts. Engagement with government agencies will be a key part of this initiative. An increased engagement with the Ministry of Education will be targeted, and the work done on this issue by the NDMO will also be aimed for transfer to the Ministry of Education for greater ownership' (Ando et al, 2009, 26).

The Fiji national progress report on implementing the Hyogo Framework for Action Priority 3, Core Indicator 3.2, intimates a somewhat more proactive engagement on the part of the Ministry of Education (UNISDR, 2011, 78-9).

As of November 2011, the Ministry of Education has developed an *Emergency in Education* policy that is awaiting final approval but may help encourage greater commitment to more systematic, national-scale DRR curriculum integration³⁷.

An important catalyst for DRR developments in Fiji, involving teachers, administrators, and primary and secondary students, has been the holding of an annual National Disaster Awareness Week (NDAW) managed by NDMO. In-class and in-school student activity connects with the week (UNISDR, 2011, 79).

³⁷ Ibid.

Another important development has been the focus on recovering indigenous knowledge and practices with respect to natural disasters. 'Knowledge in traditional practices is thin and in danger of complete loss as it is not included in training materials nor in school/institution curricula. For this reason SPC [Secretariat of the Pacific Community] is conducting community training on preserving traditional knowledge and practices to support the revival of traditional means of DRM' (Ibid).

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Section 10. The Case Studies

Case 8: Indonesia

Overview

Indonesia offers an example of infusing DRR into formal curricula using a 'local content curriculum' (LCC) space together with infusing DRR related themes and topics into existing subjects.

Its decentralized curriculum framework allows for locally driven DRR curriculum developments that are sensitive to the specific local needs and contexts in the world's largest archipelago. There is great potential to mobilize the LCC space.

Curriculum Development/Integration

Integration of disaster risk reduction in school curricula occurs in three ways.

First, DRR themes and topics are integrated into existing subjects. The formal Indonesian school curriculum at the primary, intermediate and higher secondary levels has subjects which are roughly grouped into the following five categories: Religion and Culture; Language and Arts; Social Studies; Science and Technology; Physical Education and Health. Disaster-related curriculum content is restricted to Social Studies, Science, and Physical Education, in which it appears at all grade levels. Of these three subjects, Physical Education and Health contains the largest number of sections and units relating to disasters and safety, topics and themes including: sanitation, traffic safety, safety from physical surroundings (grades 1-3); safe outdoor activities, first aid, preservation of healthy environment, mutual help, cooperation and support (grades 7-9). In general, DRR-related topics are more fully present in the lower-grade levels than in the higher-grade levels (Pandey, 2007).

Steps for the integration of DRR into subjects are as follows: identifying learning materials on DRR; analyzing DRR-related basic competencies to be integrated; developing integrated DRR syllabus; developing lesson plans (Harianti, 2011).

Second, DRR is taught as a special subject within the Local Content Curriculum (LCC). Indonesia introduced the new

curriculum system, called the Education Unit Curriculum (*Kurikulum Tingkat Satuan Pendidikan/ KTSP*) in 2006 for primary and secondary schools through the *National Education Minister's Regulation No 22/2006*. The new curriculum system provides a significant level of autonomy and flexibility to each school³⁷. They can develop or adapt their own textbooks and curricula by taking into account the local and school context (including locally specific disaster risks), local culture, and the needs and conditions of learners (Pandey, 2007). Steps in developing LCC are: analyzing local social, cultural and natural needs; developing standard and basic competencies; developing guidelines, a syllabus and lesson plans (Harianti, 2011).

Third, DRR is taught through a self-development programme that takes place during the academic school year. Examples include support counselling activities and extracurricular activities (Harianti, 2011).

Hazard-specific textbooks are available at the primary, junior, secondary and tertiary levels, and cover disaster knowledge, preparedness and recovery. To support teachers, a training manual, DRR modules, and reference materials have been developed in local languages. Teachers also are encouraged to develop their own textbooks (ASEAN/UNISDR, 2011). For example, the Bangung city school adapted a localized textbook for Social Science (grade 4) including a text with exercises that address earthquakes, volcanoes, floods and precautionary measures (Pandey, 2007).

³⁷ Practically speaking, although each school can develop its own curriculum, it is still obliged to follow the Content Standard (*Sandar Isi/ SI*) and the Graduate Competence Standard (*Standar Kompetensi Lulusan/ SKL*) (Putrawidjaja, 2008).

Boys sort through school books and salvaged educational materials at destroyed Elementary School 17 in Padang, Indonesia.



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Pedagogy

One of the challenges in DRR curriculum development in Indonesia is the fact that teachers are often poorly trained and have 'a very narrow range of teaching methodologies' available to them. They tend to think of students as passive receivers of information and expect them to memorize facts passed down to them (UNISDR, 2007, 17). In Indonesia, a number of child-led and/or child-centred DRR programmes and materials have been developed by NGOs and UN organizations. Some examples include the Disaster Awareness in Primary School (DAPS) project and the Yogyakarta earthquake response programme (see below for further details).

In the wake of the 2004 Tsunami, UNESCO developed two supplementary learning materials on natural disaster preparedness for junior and senior high school students (*Folding Picture Kit* and *Disaster Master-Natural Disaster Preparedness Game*). They paid attention not only to improving cognitive understandings of the six most devastating and common hazards in the country (i.e., earthquakes, tsunami, floods, landslides, volcanic eruptions, hurricanes) but also to using principles of 'joyful learning.' The *Folding Picture Kit* includes 12 different pictures explaining what is to be done before, during and after a natural disaster. In the classroom, students are divided into small groups to discuss one disaster before plenary exchange session is held. The *Disaster Master* is a board game which also focuses on the same six common and most serious hazards. The game was designed to help students understand concepts concerning disasters and appropriate actions to

reduce disaster risks. A key skill to be developed through those activities is oral communication (UNESCO, 2007).

Student Assessment

Research thus far has revealed very little evidence on DRR student assessment.

Teacher Professional Development/Guidance

There are some successful examples in integrating child-centred pedagogies into formal school curriculum by mobilizing teacher training opportunities.

The Disaster Awareness in Primary Schools (DAPS) project was implemented by the Science Education Quality Improvement Project, Indonesia, and the German government from October 2005 to December 2008. DAPS aimed at developing understanding of natural hazards as well as disaster prevention and mitigation knowledge and skills. It was implemented in eight provinces involving 58,000 primary school students (Department of Interior and Local Government et al., 2008). DAPS first trained key people (e.g., local consultants in targeted provinces) on major hazards (earthquakes, landslides, floods, and tsunami) who then spread information on what they had learned to school directors, teachers and other key stakeholders. The number of those attending each training event was limited to 20 so as to maximize active participation. Understanding the government authorities' reluctance to introduce new topics into the crowded curriculum and to further overburden teachers' workload, the emphasis was on integrating topics on hazards

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Case 8: Indonesia

into existing subjects: Indonesian Language, Science, Social Studies, Physical Education, and Art. For example, some teachers addressed flood disaster preparedness within the curriculum activity on 'reading and discussing its contents' in Indonesian Language. Child friendly pedagogies, group work and raising meaningful questions were encouraged (UNISDR, 2007).

What is particularly noteworthy about this project was that it confronted the foreseeable key obstacles from the beginning of the project. In Indonesian society, there is a superstition which says that natural hazards are 'supernatural'. The project helped teachers to handle fatalistic attitudes among students by asking them 'whether they would rather try to protect their families or simply leave it to fate' (Ibid, 19). To address the poor qualification of many teachers, the project prioritized the most important messages, and avoided scientific language and formulas whenever possible, using simple language and visual aids (e.g., pictures, videos, role play). Finally, the teachers were provided with materials requiring minimal preparation so as not to overburden them (ibid).

Another example in integrating child-centred DRR into the formal school curriculum (at the elementary level) emerged through the Save the Children Yogyakarta earthquake response programme which supported 99 elementary schools in Bantul and Klaten districts. It included components of teacher training, curriculum development (including pilot testing), and advocacy. This project partnered with the government education office at sub-district level and four NGOs implemented the Emergency

Education Preparedness and Psycho-Social Support (EEPS) that trained teachers using a cascade approach. A total of 642 teachers were trained from 99 affected schools. Based on the success of the EEPS, teacher training and taking into account the expressed needs of teachers, a further training programme was offered to help teachers facilitate active learning approaches closely linked to the national curriculum. In terms of curriculum development, after receiving School Based Curriculum Development Training, the selected 30 teachers from 30 schools drafted *Samples of Lesson Plans on Integrating Disaster Preparedness into Elementary School Subjects*, which were fully in line with the national curriculum. After field tests in two schools for two months, this was finalized and printed as a manual. It was distributed to all teachers in the 99 target schools during a one-day workshop introducing the use of the manual. This initiative gained support from the Ministry of National Education on Education in Emergencies. After the training of 48 staff members from the Ministry, 14 Ministry staff, 14 teachers from different provinces and two Save the Children staff members analyzed and revised the initial manual to adapt it to the national level³⁹.

In 2009, *Samples of Lesson Plans on Integrating Disaster Preparedness into Elementary School Subjects* was published by the Curriculum Centre of the Research and Development Office of the Ministry of National Education. The document is organized according to each of six elementary grade levels. Grades 1-3 are organized thematically (Grade 1 on floods and earthquake hazards; Grade 2 on endemic diarrhoea, tsunami,

³⁹ A problem with the treatment of disaster mitigation and prevention mainly taking place at secondary level in Geography is that the subject at this level is optional and hence not all students are exposed to the learning

and volcano eruptions; Grade 3 on the Chikungunya epidemic, forest fires, and landslides). Grades 4-6 address different types of hazards across the following subjects: Islamic Religion, Civic Education, Mathematics, Indonesian Language, Science, Social Science, Arts, Physical and Health Education. Teaching activities, syllabuses and teaching implementation plans are included (Ministry of National Education Research and Development Office Curriculum Centre, 2009).

Save the Children's ongoing teacher training further accumulated materials and inputs from teachers, which then informed the revision of the manual that was completed in March 2010. One thousand copies were distributed to participating schools and the Curriculum Centre⁴⁰.

One of the challenges in the integration of DRR into school curriculum includes the lack of 'proper guidelines in integrating DRR into school curriculum in effective and joyful approach' (Sardjunani, 2010).

Learning Outcomes/Competencies

Pandey (2007) has analyzed disaster and safety related competencies in key subject areas that address disaster and safety issues within the Indonesian curriculum. In Physical Education and Health, basic competencies for grades 1 to 3 are the ability to practice safe and hygienic daily life (i.e., sanitation, traffic safety, safety from physical surroundings). For grades 4 to 6, the ability to conduct safe outdoor activities (e.g., camping) and practice healthy ways of life are expected. For grades

7-9, students are expected to practice safety procedures and first aid for light injury. A lived demonstration of the values of responsibility, cooperation, tolerance, mutual help and decision making in a group is also expected. For the upper secondary level, mountaineering and rescue skills, understanding of mutual help and support as well as a humanitarian ethic are expected outcomes.

In Social Studies, there are very few references to disaster types in and around Indonesia at primary level, while grade 6 basic competencies include 'to know how to face natural disasters' (Ibid, 79). Pandey observes that 'in (the) middle school, human interaction with natural environment is to be explained, though there is no direct reference to disaster and risk' (Ibid, 79).

In terms of Science curriculum, Pandey points out the overall lack of competencies relating to the science of specific hazards: 'Being a disaster hot spot country, Indonesia faces multiple hazards and students are ideally supposed to have fundamental knowledge [on] how and why it happens. However, there is no scientific reference and knowledge towards this in current school curricula' (Ibid, 79).

Concrete examples of competencies for the local content curriculum have not been unearthed.

⁴⁰ Ibid.

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Case 8: Indonesia

Policy Development, Planning and Implementation Aspects

The national legal framework includes the *Disaster Management Law* (year unknown) and *Act No 24 of 2007 on Disaster Management*. The Ministry of National Education launched the *National Strategy for Disaster Risk Reduction Mainstreaming in School System* (year unknown). Key elements of this strategy are: the empowerment of educational institutions and stakeholders, such as head masters, teachers, and students; the integration of DRR into formal and extra curricula learning; the development of partnerships and networks to sustain the implementation of DRR in schools (Harianti, 2011). To regulate the *Strategy*, the Minister of National Education issued a *Circular Letter* (year unknown) to all governors, regents, and mayors throughout the country to support DRR curriculum implementation for major hazards at primary and secondary levels. *The National Action Plan (NAP) for DRR 2010-2012* acknowledges education as one of the priorities (ASEAN/UNISDR, 2011).

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Section 10. The Case Studies

Case 9: Lao PDR

Overview

Lao PDR offers an example of DRR curriculum integration into selected subjects at a particular secondary grade level (i.e., grade 6). It is an example of a pilot project with a strong emphasis on child-led/child-focused pedagogical

approaches and illuminates their positive influence on developing students' broader DRR competencies. It is also an example of centralized curriculum development that creates space for localized DRR, which could be further mobilized.

Curriculum Development/Integration

From 2001 to 2003, the first DRR curriculum development initiative took place in Lao PDR. The National Disaster Management Office (NDMO) and the National Research Institute for Educational Sciences (NRIES) of the Ministry of Education, with support from Asian Disaster Prevention Centre (ADPC), implemented a project on DRR communication strategies. The project included DRR school curriculum development in which grades 3, 4 and 5 textbooks (subject areas unknown) were developed and pilot tested (ADPC, 2010).

Under the Regional Consultative Committees Programme on Mainstreaming Disaster Risk Reduction (RCC MDRD), Lao PDR was one of three South East Asian RCC member countries that took up the implementation of a Priority Implementation Partnership (PIP) in order to mainstream DRR in the education sector (MDRD-EDU). Working with NDMO, The Ministry of Education undertook the integration of DRR into the secondary school curriculum, as well as the promotion of hazard resilient school construction. Phase one of the project took place from January 2007 to April 2008, and phase two from September 2008 to December 2009 (ADPC 2008, 2010).

During the MDRD-EDU, DRR curriculum integration took place in two subjects, Natural Science and Social Science, both at grade 6. After being piloted in schools, DRR was integrated into chapters in Natural Science (i.e., disasters, landslides, earthquakes, floods, drought, fire, pollution problems) and chapters in Social Science curriculum (i.e., road accident, civil unrest). During the first phase of the project

the DRR modules were taught to a total of 738 students in 15 schools from four provinces (ADPC, 2008).

Pedagogy

There are fleeting allusions to pedagogies used in teaching the DRR modules developed under the MDRD-EDU project: songs, competitions, posters and plays, picture-related activities, and group discussions (ADPC 2008, 2010). However, DRR pedagogical development does not feature strongly in the literature examined.

A notable exception is an AusAID-funded pilot project entitled Disaster Risk Education for Children (DREC). With technical support from ADPC⁴¹, Save the Children Australia implemented this pilot project⁴² in the Sayaboury District from July 2007 to December 2009 and in Xieng Hone District from July 2007 to December 2009. It introduced not only the concept of DRR but also a child-led and child-focused approach based on Save the Children's extensive expertise. The project aimed at promoting awareness of DRR among teachers, parents and school children; supporting children and youth to play a leading role in their community for DRR; addressing the cross-cutting themes of HIV/AIDS prevention, gender and the environment. The project made a concerted effort to link both formal curricula and extracurricular activities so that children could develop both the knowledge and skills necessary for DRR. For the formal curriculum, DRR modules and materials were integrated into the 20% local content allowance for local schools. Extracurricular activities were organized through the after-school DRR club for both boarders and day students of

⁴¹ ADPC and Save the Children Australia entered into a consortium for the AusAID-supported Laos Australia NGO Cooperation Agreement (LANGOCA) Programme in the theme 'reduce the impact of national disasters' (Vanaspong, 2011).

⁴² The project built upon the ongoing DRR curriculum development efforts of ADPC and MoE. Previously developed modules, text books and teacher guidelines were adapted to the local contexts for the DREC project. The project was implemented in partnership with national, provincial and local Department of Education staff to ensure the integration of project outputs into the formal curriculum on a wider scale upon the completion of the pilot project (Ibid).

Women discuss landmine awareness in Vientiane, the capital of the Lao People's Democratic Republic.



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all ages. DRR curricula predicated upon the participatory and child-centred approach challenged traditional lecture-based teaching methods (Vanaspong, 2011).

The project evaluation reports the positive impact of child-centred pedagogies on both students and teachers. Even though general life skills improvement was not an intended project objective, teachers noticed that children learnt 'skills in daily life such as being more responsible, punctual and cooperative' and also 'learnt to listen to their friends and think more of others and about issues faced by their communities' (Ibid). Parents also noticed that children had developed 'more social skills and communicate better in daily life' (Ibid). The participating children themselves reported an increased sense of confidence in expressing themselves and 'thinking and doing things by themselves', which are significant achievements insofar as they defy traditional cultural norms. In terms of knowledge and skills, students gained an understanding of the causes and impact of disasters, thus better understanding their own communities through risk analysis, and teamwork and leadership skills (Ibid). The participating teachers 'applied child centred approach in their classes', although they always provided lectured beforehand (Ibid, 46). One of the unexpected findings was 'the teachers directly linked the DRR modules with increase in school attendance. This was due to the teachers being training in child-centred teaching and learning and this learning was used in other classrooms which made children enjoy class more!'⁴³.

⁴³ Danielle Wade, Save the Children Australia, to Fumiyo Kagawa, 20 October 2011.

The project report notes that in children's capacity building, it is important to work more with adults to facilitate meaningful child participation (Ibid, 20).

Student Assessment

No details of DRR-specific student assessment have been found within available MDRD-EDU documentation.

Teacher Professional Development/Guidance

A teacher's guide accompanying the student modules and six supplementary story booklets on hazard related topics (e.g., road accidents, pollution, fire and storm, drought and landslides) were developed (ASEAN/UNISDR, 2011). There were capacity-building training opportunities in both phases of MDRD-EDU project. During phase one, two training sessions were provided to participants including principals and teachers of the selected pilot schools, district and provincial educational officers, and district pedagogical advisors (32 participants for the first and 18 for the second). During phase two, teacher-trainers from eight provincial training centres took part in the training (ADPC, 2010). A series of teacher training and instruction in trainer events was also conducted in order to build the capacity of teachers and of regional centre training officers of the MoE National Teachers Training Institute. The specific purpose of ToT was to enable them to lead the integration of the DRR training module into the existing annual programme of training of teachers in their jurisdiction⁴⁴.

⁴⁴ Alex Fowler, ADPC, to Fumiyo Kagawa 23 November 2011.

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Case 9: Lao PDR

Learning Outcomes/Competencies

Examination of the *Textbook on Disaster Education in Secondary School: Integrated into the Natural and Social Sciences* (Education Science Research Institute, Ministry of Education, 2007) illuminates some DRR learning goals. Knowledge-based goals are predominant in the book, e.g., obtaining knowledge of different kinds of risks, causes and effects of disasters, and prevention. Students are also expected to understand what to do during and after natural hazards such as earthquakes, floods and drought. However, skills-based competencies are restricted to first aid skills and monitoring water sources (linked to drought). Attitudinal learning goals are also scarce. Attitudes towards such concerns as conserving natural resources and avoiding anti-social behaviour are briefly mentioned.

In the DREC project mentioned above, there were a number of knowledge, skills and attitudinal learning outcomes. Examples include: developing knowledge of disasters, analytical and problem solving skills (through, for example, research, hazard-risk mapping, developing contingency plans), active participation skills, dispositions of self and mutual help in case of a disaster, concerns with conserving nature, effective risk communication (informing parents and community members) among others⁴⁵.

Policy Development, Planning and Implementation Aspects

In Lao PDR, the policy of integrating disaster concepts in the curriculum is based on the *National Disaster Management Strategy* (date unknown) (ASEAN/UNISDR, 2011).

At the beginning of phase one of MDRD-EDU, a project Technical Working Group (TWG) was formed, which then played a key role in strategizing and overseeing project activities. An advocacy workshop led by TWG in 2008 aimed at raising awareness and commitment amongst MoE and other ministries. During phase two of the project, TWG expanded to include key stakeholders from MoE (i.e., Director of Cabinet Office, Department of General Education, National Research Institute for Educational Science, Department of Teacher Training, Department of Finance, Division of Design and Construction Management), NDMO (i.e., Ministry of Labour and Social Welfare) and ADPC. TWG liaised with the Lao PDR's Education Sector Working Group (ESWG) consisting of the education donor groups, UNICEF, and UNESCO in order to ensure DRR integration in the broader education agenda (ADPC, 2010).

The use of student modules, the Teacher's Guide and teaching aids developed under MORD-EDU has been approved and endorsed by the MoE, which is an important step in mainstreaming DRR in formal education (Ibid).

In February 2008, a national advocacy workshop took place for MoE and other related ministry officials to showcase the project's achievements to date and to make recommendations for the next steps for integration of DRR in the education sector. At the end of phase two of the project In December 2009, a workshop to review the curriculum in order to identify DRR integration points took place. An important outcome of this workshop was the development of a *Curriculum Framework Plan* for DRR integration to guide further DRR integration steps.

⁴⁵ Danielle Wade to Fumiyo Kagawa, 25 November 2011 (telephone).

Its recommendations were to include DRR in 'appropriate subjects in all grades from 6 to 9 and the development of specific curriculum materials, including one grade in primary education' (Ibid, no pagination). There were a number of consultation workshops involving participants from various levels of the Ministry of Education and the NRIES, which their input and recommendations were sought. An important process for gaining input from national curriculum development experts, these consultation opportunities were also considered vital for ensuring ownership of DRR curriculum development among key government officials, something considered central to the long term success of the project⁴⁶.

The Lao PDR's education system has a 20 percent adjustment in curriculum design allowing curriculum to be more adaptive to local needs and contexts. Curriculum development using this space also needs to undergo the normal approval processes by the National Research Institute for Educational Science⁴⁷. Lack of financial support from the government makes it difficult for local education stakeholders and NGOs to take a full advantage of this space for localized DRR education (ASEAN/UNISDR, 2011).

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⁴⁶ Alex Fowler to Fumiyo Kagawa, 23 November 2011.

⁴⁷ Ibid.

Section 10. The Case Studies

Case 10: Myanmar (synoptic case)

Overview

Myanmar offers an example of using the life skills curriculum as the primary carrier of DRR curriculum

The Myanmar *Action Plan on Disaster Risk Reduction* (MAPDDR), 2009-15, includes public awareness, education and training as a major component while the *Strategic National Action Plan* identifies education as key to building a culture of resilience (ASEAN/UNISDR, 2011, 8). Thus far, this has not been followed by a Ministry of Education order to mainstream DRR into the education system and school curriculum (ASEAN/UNISDR, 2011, 27).

A Disaster Preparedness and Response Education (DPRE) Working Group with representatives from the Department of Educational Planning and Training, the Ministry of Education, UN agencies and non-governmental organizations, was formed in August 2008. It is responsible for collecting, organizing and developing learning and teaching materials, distributing them to schools, and training teachers in their classroom use (Ibid. 9; UNISDR, 2010, 14).

Myanmar embraces a subject-based approach to introducing DRR in the curriculum (ASEAN/UNISDR, 2011, 27). Life Skills is the principal subject carrier across the primary and lower secondary grade levels, mainly within one of the subject's five main areas, Environmental Education. Grade 5 Life Skills includes a unit on *Caution in Emergencies* (primarily covering floods, tsunami, earthquakes and forest fires); grade 6 Life

Skills has a unit entitled *Emergency! It's Flooding!*; grade 7 Life Skills addresses *Disaster Preparedness*; grade 8 has a topic covering earthquakes, landslides and safety in the event of fire. In addition to the Life Skills contribution to DRR at these grade levels, a recently revised General Science curriculum includes topics on *Thunderstorms* in grade 6 and *Storms* in grade 8. (Ibid, 2011, 10).

At the upper secondary level the grade 10 English curriculum includes a reading unit with comprehension exercises on *Earthquakes*, while Geography in grade 11 includes a topic on *Earth Surface Processes*. It remains to be seen whether these two subjects are optional or required at the levels concerned.

An activity book, *Let's Be Prepared for Disasters* has been made available for primary level use. It uses 'interactive tools and fun-based activities for children to work individually and in groups' and 'can be used for different age groups as deemed suitable by their school teachers' (UNESCO, undated). A secondary level student manual, *Ready~Set~Prepared!*, offers guidance in making disaster preparedness plans, family communications plans in time of disaster and planning disaster supply kits and also gives advice on recognizing looming disaster danger signs and steps to take if disaster strikes (UNICEF, undated).

Children attend class for the first time since the cyclone, at Primary School No. 32 in Hlaing Thar Yar Township in Myanmar.



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In conjunction with UNESCO, the Ministry of Education has developed and delivered a training package for teachers and principals in hazard-prone areas since 2009 (Ibid. 16; Myanmar National Progress Report, 2010, 14). While this falls short of systematic national training, 'Myanmar' is moving towards attaining sustainability by way of considering the integration of (the) DM training course in the usual teacher training system' (Ibid. 27).

The *Myanmar National Progress Report on Implementation of the Hyogo Framework for Action* (UNISDR, 2010, 14) refers to the inclusion of DRR in the national education curriculum as 'not complete' but refrains from specifying its completion as a challenge to be addressed. 'Due to the tight school routine, there is little time to practice DRR in schools. Insufficient DRR related teaching aids to stimulate students' interest and participation is also a challenge. The three-month summer holiday limits DRR programme implementation' (Ibid).

Building further on the DRR threads within the Life Skills curriculum may well be the optimal way forward. Life Skills is a learning area free of the cultural baggage and well-worn furrow of traditional subjects and hence well-placed to address the skills and attitudinal learning outcomes of a fully-fledged DRR curriculum.

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Case 11: The Philippines

Overview

The Philippines offers an example of DRR curriculum mainstreaming initially at the secondary level through a centralized and competency based approach predicated upon strong governmental commitment to and priority in advancing DRR practices in the education system.

After targeted integration of DRR into Natural Science and Social Studies subjects in one secondary grade level (i.e., grade 7, first year high school), further integration of DRR into other grade levels is currently ongoing.

Introduction

As one of 26 Asian countries within the Regional Consultative Committee (RCC) on Disaster Management (see also case 6, Cambodia, and case 9, Lao PDR), the National Disaster Coordinating Council Office of Civil Defence (NDCC-OCD) of the Philippines expressed an interest in taking up a priority implementation project (PIP) to mainstream DRR in the education sector through two avenues: integrating DRR into the school curriculum and ensuring hazard-resistant construction in schools. The Mainstreaming DRR in the Education Sector (MDRD-EDU) project was led by the Department of Education (DepEd) together with NDCC-OCD, the Asian Disaster Preparedness Centre (ADPC), and UNDP with support from the European Commission Humanitarian Aid Department (EHCO). The first phase of the project took place from January 2007 to April 2008, followed by a second phase from September 2008 to December 2009 (DepEd et al, undated, Centre for Disaster Preparedness, 2008).

Curriculum Development/Integration

It was the Department of Education and a Technical Working Group (TWG)'s (see below) decision to integrate DRR topics into existing school subjects rather than creating a new subject. The Philippines' strategy of DRR integration has been competency-based: 'There is a given list of competencies determined by the school curriculum committee. In line with this, the committee first develops core messages about DRR,

followed by the development of key concepts, and, finally the development of the module. The committee determines which hazards should become part of the content. The DepEd then develops the exemplar' (ASEAN/UNISDR, 2011, 28).

DRR components have been integrated into Natural Science (grade 7) and Social Studies (grade 7) mainly by making teaching and learning support materials available (i.e., lesson exemplars and modules developed by the TWG, see DepEd, 2009 a, b).

Mainstreaming Disaster Risk Reduction in the Education Sector in the Philippines: Teacher/Student Modules Science 1 (DepEd, 2009b) is a reference book which includes definitions and causes of hazards most relevant to the national context (i.e., heat waves, fire, landslides, earthquake, volcanic eruptions, tornados, tropical cyclone, floods, storm surges, tsunamis, global warming and climate change). It explains what to do before, during and after disasters and also includes chapters about disaster supply kits and family disaster plans. The *Teacher/Student Modules* booklet states that 'the transfer and acquisition of knowledge between teachers and students is vital in the creation of a culture of prevention, safety, and resilience that extends to communities as students are transformed from being victims of disasters to agents of disaster risk reduction' (Ibid, no pagination).

A girl inside her school in the city of Cagayan de Oro in Northern Mindanao Region of the Philippines. The school was damaged by floods.



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During the first phase of MDRD-EDU, 2,600 students were taught in pilot schools with a further 2,600 students being taught during the second phase (DepEd, undated).

In the Philippines, DRR mainstreaming in the school curriculum has run alongside and complementary to the integration of other governmental initiatives on global warming and food security into the school curriculum (Ibid).

Pedagogy

As mentioned above, the TWG developed teaching and learning support materials and lesson exemplars. The booklet of lesson exemplars is a guide for teachers in their lessons. Chapters are organized according to different hazard types, each chapter including key information, activity instructions and discussion questions.

There are other teaching aids to complement Natural Science and Social Studies subjects. Existing materials developed by government agents and NGOs were reviewed and some have been adapted as teaching aids.

There are more general DRR materials. For instance, *Tales of Disasters* (DepEd, 2009c) is for children (with no mention of target grade levels and subject areas). This guide contains a complete lesson plan breakdown with a range of amusing activities that can be used with two films (*Tales of Disasters*

and *Peace Building Two Gardens*) shown to a group. For an amusing and imaginative way of teaching and learning, using puppets is suggested (Ibid).

Save the Children developed the primary level workbooks under the title *My Little Book on Disaster Preparedness* (Save the Children and DepEd, 2007a, b, c, d, and e). They aim to help children understand how to stay safe before, during and after disasters. This series of workbooks covers locally relevant hazards such as fire, typhoon, earthquakes, floods, mudslides, and tsunamis. The mixture of learning methods includes: drawings, poems, quizzes, songs, riddles, role play, pantomime (Ibid.).

Throughout the two phases of the MDRD-EDU project, teaching effectiveness was evaluated, and observation forms to evaluate teachers were developed by DepEd (DepEd, undated).

Student Assessment

There are some examples of DRR student learning assessment tools in the *Lesson Exemplars* booklet on Science (DepEd, 2009a). At the end of most of the chapters (each focusing on one specific hazard), there is a section entitled 'evaluation'. For example, the chapter on global warming and climate change asks students 'to explain how the following greenhouse gases enter the atmosphere because of human activities: 1. carbon dioxide; 2. methane; 3. nitrous oxide; 4. fluorinated gases' (Ibid, 5). The chapter on landslides asks students to 'write your

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insights about landslide' (Ibid, 13), while the chapter on tsunami asks students to 'write an essay on the topic: "When tsunami strikes" ' (Ibid.17).

Tales of Disasters (DepEd, 2009c) includes a monitoring quiz report form for each lesson. Following viewing of a film the same questions is asked before and after the discussion in order to see how effective the session was. For example, for the typhoon/tropical cyclone lesson, the following questions and alternative answers (with answers put forward correct in italics) are used:

- During tropical cyclone season, how soon can you find out if a storm is heading your way?
 - A. *Several days or more beforehand so you have some time to prepare*
 - B. Less than an hour beforehand so you have to act very quickly
- What is THE SAFEST thing to do when a major tropical cyclone is about to hit?
 - A. Stay at home, close all doors and windows, and do not go outside
 - B. *Leave your home and go to a community shelter*
- The tropical cyclone is now ONE HOUR away from your home. What should you do?
 - A. *Turn off gas and electric supplies and then go to the shelter*
 - B. Do not do anything; go immediately to the shelter (Ibid. 83).

Students are asked to choose A or B by raising their hands with their eyes closed so that they will not be influenced by other students and will not feel badly if their answer is incorrect (Ibid).

Teacher Professional Development/Guidance

During the MDRD-EDU project, training of trainers and education supervisors (ToT) was provided to support the use of the new DRR curriculum materials in grade 7. In addition to Science and Social Science teachers and education supervisors, representatives from the following governmental departments, amongst others, also received training: The Office of Civil Defence, Department of Environment and National Resources, Department of Energy, Department of Science and Technology, Department of Health, National Police (Centre for Disaster Preparedness, 2008; DepEd et al, undated).

Since 2002, the Philippines Institute of Volcanology and Seismology has held annually a three-day workshop on earthquake and volcano hazard awareness and disaster preparedness for public school teachers of Metro Manila (UNISDR, 2011).

Reflecting upon the initiative thus far, we believe that further enhancement of the capacity of teachers and the development of pedagogical strategies (taking into consideration varied learning abilities, gender and disability) remain vital strategies to pursue (DepEd, undated).

Learning Outcomes/Competencies

Although a systematic list or statement of DRR learning outcomes has not yet been developed, statements of objectives are included in the *Lesson Exemplars* booklet on Science (DepEd, 2009a). For example, the chapter on heat waves states that at the end of the lesson, students will be able to define heat waves, list down their effects and develop a plan to minimize their impact (Ibid. 6). The chapter on tropical cyclones states that the lesson will enable students to differentiate weather from climate, describe the Philippines' climate, identify tropical cyclones and classify according to the speed of circulating winds, explain warning signals of a tropical cyclone and provide information on disaster preparedness relative to a tropical cyclone (Ibid. 22).

Policy Development, Planning and Implementation Aspects

During phase one of the project, the TWG was formed and an advocacy workshop was held to raise awareness among DepEd and key ministries. Of particular importance, in terms of establishing a legal platform to support DRR education in school, in 2007 the Department of Education issued an order prioritizing the mainstreaming of DRR management in the public school system and calling for the implementation of DRR programmes and projects.

During phase two, the Technical Working Group was expanded to include representation of the following: DepEd, Department of Science and Technology, Department of Environment and National Resources, Department of Public Works and Highways, National Economic Development Authority, NDCC-OCD, Office of the Presidential Advisor on Climate Change, the Philippines Information Agency, and ADPC (DepEd, undated).

In order to integrate DRR into a broader national education agenda, the TWG entered into a dialogue with the Philippines' Education Working Group (EWG), an important governmental platform which brings together key stakeholders working on various development agendas⁴⁸ (Ibid).

One manifestation of governmental commitment to mainstreaming DRR education is the *Republic Act 10121* on strengthening the disaster risk reduction and management system in the Philippines. DRR integration in primary, secondary and tertiary levels of education is a part of this national legislation (The Republic of Philippines, 2010).

⁴⁸ They include: AusAID, USAID, WB, CIDA, UNICEF, Save the Children, Plan International, Children International

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A girl watches a video called 'Happy Tales' at Rosauro Almario Primary School in Tondo, a neighbourhood of Manila, the capital of the Philippines to promote environmental awareness through storytelling and other activities. This was done in the framework of the child-friendly schools programme, promoted by UNICEF globally, and which strives to create safe, protective and inclusive spaces for all children, especially girls, and encourages the involvement of parents and the community.



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Case 12: Angola (synoptic case)

Overview

Angola offers an example of the development of pedagogical and curriculum materials in DRR by local experts with the help of international agencies in a small scale pilot with a low level of involvement and ownership from the government.

In this way, the transition to scale and question of location of DRR within the national curriculum are in limbo due to the fact that the Ministry of Education does not see DRR as a priority.

The Education in Emergencies and Post-Crisis Transition (EEPCT) Programme, funded by the Government of the Netherlands and the European Commission contributes to UNICEF's work with the Government of Angola to support and rebuild the education system.

Since 2008, EEPCT funding has helped support a project on Disaster Risk Reduction through the UNICEF Education Section. A curriculum for DRR education in primary school was created in cooperation with the Instituto Nacional de Investigação e Desenvolvimento da Educação (INIDE, the National Institute for Investigation and Development of Education) and the Civil Protection Section, as were a manual for teachers and students and a board game. All versions of these tools have been finalized, but have not yet been duplicated or distributed.

Materials were developed in Portuguese including a series of lesson plans for specific situations: floods, epidemics, landslides, droughts, forest fires and also small accidents. Each chapter of the teachers' manual (INIDE, 2008) presents an explanation followed by lesson plans that include learning activities, usually with identification of preventative measures. A second edition (INIDE, 2010) called 'versao experimental' (experimental version) also includes a chapter on storms and several texts for students.

The approach seems to be to present in DRR in a series of coordinated initiatives across disciplines over a period of three school years (grades 4 to 6). Topics and materials are developed as separate lessons for piloting; integration will be considered after validation. The introduction explains that 'the content will be integrated in several curriculum disciplines, Portuguese (national language), Geography, Environmental Studies, Natural Sciences, Moral and Civic Education, and the integration is suggested in the tables that are in the last part of the manual' (INIDE, 2008, 7).

The main focus is on Natural Sciences, Geography and Communication. The teaching methodology promotes interactive teaching, with lots of group discussion activities to raise students' awareness about risks in their everyday lives.

During an interview, members of the Civil Protection Unit described their eagerness to integrate DRR into basic education at the primary-school level, and to involve communities in these activities. Plans for implementation have been developed and a short pilot project conducted. However, according to Civil Protection Unit staff, the current stumbling blocks are lack of financial support and lack of institutional coordination⁴⁹. The DRR programme has therefore not yet been implemented in schools. There is currently no UNICEF education sector involvement in promoting DRR since UNICEF aligns its programming with that of the Government of Angola, which has not identified DRR as a priority.

⁴⁹ Interviews with several stakeholders in the field of education in Angola were conducted by a team from the UNICEF Evaluation Office in June 2010 as part of the Progress Evaluation of UNICEF's Education in Emergencies and Post-Crisis Transition Programme (UNICEF, 2011).

A boy does arithmetic at the blackboard during a class in the Rangel neighbourhood of Luanda, Angola.



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Section 10. The Case Studies

Case 13: Lesotho

Overview

Lesotho offers a noteworthy example of the fertile potential for DRR that is released when a national curriculum is reconfigured away from a primarily academic model to a model primarily based on skills and dispositions development. Curriculum developers have opened exciting new possibilities for the integration of DRR,

more directly addressing values, attitudes and skills, once they are freed from the culture, expectations and constraints of traditional curricular organization. The implementation and impact of the new curriculum, with its intricately woven DRR themes, will be worth monitoring.

Introduction

In October 2009 UNDP and the National Disaster Management Authority (NDMA) of Lesotho hosted a two-day workshop on mainstreaming disaster risk reduction for members of the National Curriculum Development Centre (NCDC), with the aim of creating awareness of the need to integrate DRR into school curricula. By the end of the workshop a roadmap for integrating DRR into the school curriculum of grades 1 through 10 had been developed. NCDC, NDMA and UNDP committed to supporting the initiative which, they believed, 'presented the best opportunity for Lesotho to be among the first few African countries to integrate DRR in national school curricula' (UNDP/NDMA, 2009, 1).

Curriculum Development/Integration

The commitment to embedding DRR in the curriculum coincided with the development of a new curriculum framework for Lesotho under a Curriculum and Assessment Policy (MoET, 2009). Dispensing with a subject-based model, it was decided to opt for a curriculum directed at *usable skills* development and composed of five *curriculum aspects* within each of which there would be a focus on five learning areas. The *curriculum aspects* framing the *learning areas* are: effective communication, awareness of self and others, environmental adaptation and sustainable development, health and healthy living, production and work-related competencies. The *learning areas* are: Linguistics and Literacy; Numbers and Mathematics; Personal, Spiritual and Social; Scientific and Technological; and Creativity

and Entrepreneurial (Ibid). The new curriculum is to be incrementally implemented from January 2012⁵⁰.

The new curriculum framework has offered the NCDC ample scope for the integration of DRR in its curriculum planning. Matrices linking eight DRR modules to *curriculum aspects*, *learning areas* and grade levels have been developed. The modules are: (1) Village Map: Resources; (2) Village Map: Hazards; (3) Disaster Concepts: Hazards, Vulnerability, Risks; (4) Emergency Response; (5) Disaster Preparedness; (6) Psycho-social Support; (7) Transforming Vulnerability into Capacity; (8) Disaster Risk Reduction and Sustainable Development. Each module connects with particular *curriculum aspects* and *learning areas* and extends across a cluster of grade levels (Kalden, 2011, 2-6).

For example, Module 3, Disaster Concepts, links to the Scientific and Technological *learning area* and to the environmental adaptation and sustainable development *curriculum aspect*. Each topic in the module connects with one or more grade levels from grades 4 to 9, allowing for curriculum reinforcement throughout these grades. Hence, Module 3 covers: What is hazard? (grade level 6); What is disaster? (6); Disasters in Lesotho (4, 6); The impact of disasters (6, 7, 8, 9); What is vulnerability? (6); What is risk? (6); Hazards and seasons (4, 7); Community vulnerability (4, 7, 8, 9); Risk in the community (4). Module 6, Psychosocial Support, connects with the Creativity and Entrepreneurial *learning area* and health and healthy living

⁵⁰ Munas Kalden, UNICEF Lesotho, to Fumiyo Kagawa, 9 November 2011

A boy presses his face against a window in a school in Maseru, the capital of Lesotho.



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curriculum aspect. Its topics link to grades as follows: How do I feel after an emergency? (5); How to react in case of an emergency? (5); Listen, protect and connect (6, 7, 8, 9); Psychosocial play and creative activities (art, silent stories, movement, music, storytelling, 'fabric play', cooperative games, drama games) (7, 8, 9) (Ibid. 2-3, 5).

Pedagogy

Reference to the inclusion of socio-affective and psychosocial topics and learning modalities such as empathy building, the sharing of feelings, games and drama, is indicative of the new emphasis on active and experiential learning in the delivery of the new curriculum. 'It is planned,' writes Munas Kalden, 'to have more participatory methodologies and participatory appraisal tools. We want to train the teachers on the same. For example, conducting hazard, vulnerability and capacity assessment, [using] Venn diagrams, seasonal calendars, hazard maps, historical profiles, transect walks, problem trees'⁵¹.

The report on a September 2011 workshop for Lesotho curriculum developers (see below) gives significant space to reviewing interactive learning materials. 'Successful disaster risk reduction education strategies,' the report affirms, 'are student-driven and learner centric. ...Disaster education should not be an event (like an evacuation drill); it should be a process' (UNICEF et al, 2011, 34).

Student Assessment

The anticipated consequence of the new skills-oriented curriculum is skills-oriented forms of assessment of DRR student learning, but details are still to be worked out⁵².

Teacher Professional Development/Guidance

The details of how teacher training will help facilitate delivery of DRR elements of the new curriculum have yet to be determined. They are 'to be worked out collectively by UNICEF and the NCDC'⁵³.

Learning Outcomes/Competencies

No detailed listing of grade-related learning outcomes or competencies has been developed thus far⁵⁴.

Policy Development, Planning and Implementation Aspects

A 1997 Disaster Management Act established a National Disaster Management Authority (NDMA) under the Prime Minister's Office with the responsibility of planning, coordinating and monitoring disaster management actions and programmes. In 2007, NDMA, with support from UNISDR, established a National Platform for addressing inter-related social, economic and environmental disaster risk reduction, thus bringing together different sectors. In 2007 a National Plan for Capacity Development in DRR was also approved, with one of its five objectives being 'to enhance information and knowledge management for disaster risk management' (UNISDR, 2010, 114-15).

⁵¹ Munas Kalden to Fumiyo Kagawa, 9 November 2011

⁵² Ibid.

⁵³ Ibid.

⁵⁴ Ibid.

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Against this background, the National Curriculum Development Centre began efforts to integrate DRR in national school curricula in grades 1 to 10 with the development of the roadmap emerging from the October 2009 conference (described in the introduction to this case study). The DRR strands in the new national curriculum have been the fruits of the curriculum planning and development process since then. The new syllabus at grade levels 1 to 3 (with DRR integrated) will be pilot tested from January 2012. Planning and development of grade 4-10 curricula is ongoing; the schedule for piloting has not yet been determined (UNICEF, 2011, 3).

In preparation for the launch of the new grade 1, 2 and 3 curriculum, a five-day Knowledge Facilitation Workshop, *Disaster Risk Reduction: Integrating into School Curriculum in Lesotho*, was held for curriculum developers in Maseru, Lesotho, from 5 to 9 September 2011⁵⁵. The workshop 'aimed to provide conceptual clarity on DRR and child-centred learning methodologies in [the] mainstreaming process of [the] education sector as well as identify key DRR topics, learning outcomes, skills and abilities' (UNICEF et al, 2011, 4). Speaking at the workshop, the Acting Executive of the National Disaster Management Authority referred to DRR in the curriculum as a 'national priority' while the Chief Education Officer called Curriculum Development a 'bold step towards (a) culture of safety' (Ibid. 47-8). To sustain the momentum of the process, there is a 'felt need among the stakeholders to integrate DRR into secondary and tertiary institutions of learning in Lesotho'. To this end, two conferences were held in October and November 2010 for

heads of universities and other tertiary institutions at which a roadmap for the integration of DRR in these institutions of learning was developed (Ibid).

In July 2011 the NDMA promulgated a *National Disaster Risk Reduction Policy*. One policy commitment would be to 'promote the integration of disaster risk reduction into school curricula at primary, secondary and tertiary levels' in meeting the goal of building 'a culture of safety among communities and a disaster resilient society through education' (NDMA, 2011, 15).

⁵⁵ With support from the UNICEF Education in Emergencies and Post-Crisis Transition (EEPCT) Programme funded by the Government of the Netherlands and the European Commission.

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Case 14: Madagascar

Overview

Madagascar offers an example of an infusionist approach to DRR across a range of curriculum subjects which are strongly influenced by the precepts, principles and concerns of environmental

education. Climate change education figures quite predominantly, a trend discernible in DRR developments in a number of African countries.

Introduction

In 2002 the Madagascar government promulgated a National Strategy for Disaster and Disaster Risk Management (UNISDR, 2007, 86). A 2003 law established a Conseil National de Gestion des Risques et Catastrophes (National Council for the Management of Risks and Catastrophes), setting up a National Bureau and national management policy which were approved in the same year. Disaster risk reduction has since been integrated into the national development plan, the *Madagascar Action Plan 2007-2012*. In 2006 Madagascar also developed a *National Adaptation Plan of Action for Climate Change* built upon the increasing vulnerability of the island, the fourth largest island in the world, to frequent and intense cyclones, floods and drought (Northumbria University / UNICEF ESARO, 2011, 4-5).

By 2009, the government of Madagascar had made 'significant progress' in the wake of the 2005 Hyogo Framework for Action with the National Council (CNGRC) chaired by the Prime Minister and meeting at least every three months, with the National Bureau (BNGRC) operationalizing its decisions. DRR curriculum development in the period of 2006 to 2009, described below, flowered within this framework (Ibid. 5).

A 2009 political crisis that brought a military dictator to power in Madagascar severely disrupted DRR developments due, to some degree, to the suspension of aid in the new political situation. Since 2009 DRR developments 'are not the priority of the government of Madagascar' and substantive progress with

DRR is, more or less, in hiatus. The 'prevailing political situation limits UNICEF from taking DRR work upstream through advocacy' although the crisis and instability allow the organization to 'push DRR through its emergency and regular programmes,' including education (Ibid. 7-9).

The Hyogo Framework provided the impetus for the integration of DRR within the curriculum beginning in 2005, with developments intensifying in 2008 and 2009 as attention focused on the impact of climate change. An Education Cluster was established, co-chaired by the Ministry of Education and UNICEF, its work underpinned by technical and training support provided by the UNICEF Regional Office (ESARO) and the Inter-agency Network for Education in Emergencies (INEE) (Ibid.7).

The immediate stimulus to action followed from Ministry of Education participation in a UNISDR Africa regional training workshop on *DRR and Education* held in Kenya in May 2006 which focused on making school buildings safe and mainstreaming DRR into school curricula. Following the workshop, an *I Protect My Country from Natural Disasters* project was implemented from April to October 2006 from which the curriculum development described below flowed (UNISDR, 2007, 86-7).

Curriculum Development/Integration

Environmental education in Madagascar has a long history that is rooted in its ancestral culture. At the primary level it

Boys laugh as they perform an exercise in a pre-school class in Soavinandriana District, Itasy Region of Madagascar.



© UNICEF/NYHQ2009-1243/Pirozzi

is a cross-cutting element integrated into all disciplines. The ever more proximate threat of climate change has served to strengthen the environmental dimension of the curriculum while sharpening the urgency to build a praxis-orientation into learning⁵⁶. The emphasis on environmental awareness has very much informed DRR curriculum developments.

At the primary level a DRR handbook for grade 4 and 5 students and accompanying teachers' manual became available in October 2006, both outcomes of the *I Protect My Country from Natural Disasters* project. Launched conjointly by the Ministry of National Education (MoNE) and the Ministry of Home Affairs (MoHA), they were both entitled *I Protect My Country Against Natural Disasters*. The students' handbook (MoNE/MoHA, 2006a) treats natural hazards in Madagascar: cyclones, earthquakes and volcanoes, tsunamis, floods, fires and malnutrition. Offering explanations and advice on what to do when confronting a hazard, and illustrated with attractive pictures, the book calls upon students to 'communicate what you know on (the) natural disasters to members of your society' (Ibid. 40). The teachers' guide (MoNE/MoHA, 2006b) covers the same six themes guiding the teacher on how to use the student handbook in the classroom. There is no specific guidance offered on pedagogical possibilities, the presumption seeming to be that a text-led approach will be employed.

DRR is also currently treated in grade 6 and in a range of subjects in grade 7.

In grade 6 DRR is embedded in the Science and Technology curriculum in a two-month unit on the management of water within which students explore water-related catastrophes such as floods, cyclones and drought. The Direction of Curriculum within the Ministry of National Education launched the new curriculum in 2008.

In grade 7 DRR learning is reinforced across three learning programmes launched by the Direction of Curriculum in 2009: French, Science and Technology, and Mathematics.

In the grade 7 French curriculum, environmental awareness is one of six themes (18 hours of teaching) on topics such as brush fires, recycling of rubbish, new sources of energy, climate change, deforestation and the threat to indigenous species. In addressing each topic students practice: making oral presentations on environmental protection (e.g., discussing the consequences of deforestation, explaining the importance of plants for health); making others aware of environmental protection (e.g., advising peers not to harm wild animals; informing peers of the importance of protecting turtles); understanding messages on environmental protection (e.g., Internet searches, reading articles on brush fires, finding out how solar heating works); producing written material on environmental protection (e.g., environmental poems, essays, posters) (MoNE, 2009).

⁵⁶ Jacky Roland Randimbarison, UNICEF Madagascar, to Fumiyo Kagawa, 14 November 2011 (following consultations with partners).

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In grade 7 Science and Technology one of six themes (18 hours of teaching) concerns the degradation of the quality of the regional environment with topics such as degradation of soil quality, rice field flooding, disappearance of local forests, mineral exploitation. Within each topic, students work on: protecting the soil (e.g., composting, mulching, and alternating how land is used); working to prevent/reduce pollution (e.g., reducing wood burning, planting trees, recycling); and conducting an enquiry into mineral exploitation.

In grade 7 Mathematics, work is undertaken (42 hours of teaching) on measurement and scale which includes studying 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 (identifying the areas concerned on maps). The unit also includes consulting maps on the impact of climate change on agriculture and examining levels of carbon consumption.

Climate change is thus a leitmotif of the grade 7 primary curriculum, exploring the connection between climate change and the environment, analyzing the causes of climate change, identifying the consequences, and taking action by way of mitigation and adaptation.

Civic Education is also proving an important vehicle for DRR learning. Introduced into the curriculum in 1999, the programme now includes DRR and climate change in the fourth and fifth

years of the primary curriculum in particular. 'While [the] approach is heavy on theory, it involves some simulation exercises'. A new high school curriculum in Citizenship is on the drawing board and may prove fertile ground for DRR themes⁵⁷.

Pedagogy

Learning and teaching couple a textbook-based approach with active and participatory learning, including simulation exercises. Of particular note is what is described as the 'situation approach' in which 'a past emergency is discussed and explored with the objective of applying lessons learned to a future disaster including prevention and preparation methods'. Teachers, it seems, choose a hazard according to what is experienced locally and according to seasonality. 'Cyclones are discussed in the fourth or fifth year of primary once a week before the cyclone season to teach students about the definition, origin and development. This is followed by discussions on impact, including the necessary steps to be taken in their school and community to reduce these impacts before the disaster occurs and (in) the aftermath of the disaster. The goal of these exercises is to incite long-term behaviour change in students'⁵⁸.

The Education Cluster has produced two films to teach students about tsunamis and cyclone hazards⁵⁹.

Student Assessment

DRR-specific assessment in Madagascar is used for formative purposes. Simulation exercises are employed to ascertain levels

⁵⁷ Ibid.

⁵⁸ Ibid.

⁵⁹ http://www.mg.one.un.org/HAYZARA/index.php?option=com_content&view=article&id=443%3Acyclone-cluster-education-reduction-des-risques-et-cat-astrophes2010&catid=31%3Areports&Itemid=48&lang=fr
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of student understanding during the learning process while the 'situation approach', comparing past disaster situations and interventions with the present situation, is used to assess and, if necessary, enhance the quality of students' critical and creative thinking about disaster responses⁶⁰.

Teacher Professional Development/Guidance

DRR-related teacher training for grade 4 and 5 teachers, lasting for three days (24 hours of training), commenced in October 2006 at the end of the *I Protect My Country from Natural Disasters* project and focused upon the students' handbook and teachers' handbooks published in that year (see above); some 75 local government officials and 150 teachers were trained (UNISDR, 2007, 87).

Funding was lacking for the printing of the 400,000 copies of each of the teachers' and students' handbooks that was required. Only 10,000 copies of each were printed, after the decision to distribute a quarter of the print-run to 20 schools in known disaster-prone areas was made. (Ibid. 87, 89).

Training of grade 4 and 5 teachers continues, as does that of grades 6 and 7 which has followed the orientation of the curriculum towards climate change in 2009. The total number of teachers and educational staff to have been trained stands, at the time of writing, is 1,488. Teachers who have been trained are then called upon to train others in a cascade process⁶¹.

The training programme currently includes: a rationale for education in emergencies, the Education Cluster, the core commitments for children in humanitarian action, natural hazards of Madagascar and steps to reduce their impact, student and teacher manuals, climate change, gender and DRR, INEE Minimum Standards for education in emergencies, early childhood, and DRR learning facilitation⁶².

Training units in DRR conducted by members of the Education Cluster are in the local language (Malagasy) in order to facilitate message transfer to target groups, students in primary and secondary school⁶³.

Learning Outcomes/Competencies

There appears to be no list of DRR-specific learning outcomes organized according to knowledge, skills and attitudes but some broad competencies have been identified for different grade levels. For example: participating in the protection of the environment of the school (grades 1 and 2), knowing what measures to take to reduce the impact of a cyclone (grade 3), acting as agents of change to convey key messages and actions to parents and the community (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 in local languages in order to raise environmental awareness.

⁶⁰ Jacky Roland Randimbarison to Fumiyo Kagawa, 14 November 2011

⁶¹ Jacky Roland Randimbarison to Fumiyo Kagawa, 21 November 2011

⁶² Jacky Roland Randimbarison to Fumiyo Kagawa, 14 November 2011

⁶³ Jacky Roland Randimbarison to Fumiyo Kagawa, 14 and 21 November 2011

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Policy Development, Planning and Implementation Aspects

The 2006 *I Protect My Country from Natural Disasters* project was implemented by BNGRC in close cooperation with the Ministry of National Education. Other partners involved in implementation included the Ministry of Home Affairs, the Ministry of Transport and Meteorology, UNESCO, UNICEF and UNISDR Africa. BNGRC facilitated the overall process, including the training of teachers; the Ministry of Education in charge of mainstreaming DRR in the school curriculum; through its National Meteorological Service the Ministry of Transport and Meteorology provided expertise on cyclone, drought and floods. Local government officials from three cyclone-prone areas, curriculum developers from the Ministry of Education and journalists trained in DRR drafted the manuals (ibid, 87-8).

The Education Cluster includes representatives from the technical direction at the Ministry (planning, curriculum, professional and technical training, basic education), the Ministry of Home Affairs, UNICEF, UNESCO, the NGO community, the Malagasy Red Cross and meteorological experts. The Cluster is currently advocating for a commitment on the part of the Ministry of National Education to improve integration of DRR in education in the Madagascar EFA Plan for 2012-2013. In so doing, they seek to 'demonstrate the importance of results obtained since 2006 – the absence of loss of life at student level, the coordination of actions in response, good emergency preparedness, the efficiency of message transmission at the level of students through the teacher'⁶⁴.

In the Hyogo progress report for 2011, the Madagascar contribution concludes: 'Pour ancrer véritablement la culture des risques chez les Malgaches, il serait judicieux d'incorporer la réduction des risques et des catastrophes dans les programmes scolaires à tous les niveaux' (UNISDR, 2011, 9)⁶⁵.

⁶⁴ Jacky Roland Randimbarison to Fumiyo Kagawa, 21 November 2011

⁶⁵ "In order to truly anchor the culture of risks among the Malagasy, it would be wise to incorporate risk and disaster reduction in school programmes at all levels."

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Section 10. The Case Studies

Case 15: Malawi

Overview

Malawi has not yet employed disaster risk reduction as a guiding concept for curriculum development, but addressing vulnerabilities is already prominent in a curriculum uniquely informed by 'seven main categories of skills'. Among a number of opportunities for integrating DRR and climate change themes in the

curriculum, Life Skills Education, which emphasizes 'psycho-social skills', seems to offer fertile ground. Malawi is already employing continuous assessment and the Child Friendly Schools model at the primary level, thus further preparing the ground for effective DRR education implementation.

Introduction

Malawi's school curriculum is informed by seven overarching national skills categories: 1. citizenship skills; 2. ethical and socio-cultural skills; 3. economic development and environmental management skills; 4. occupational and entrepreneurship skills; 5. practical skills; 6. creativity and resourcefulness skills; 7. scientific and technological development skills (Malawi Institute of Education, 2004). Each of these seven overarching categories of skills translates into detailed outcomes for primary education and objectives for secondary education. (In Malawi, the new primary school curriculum, grades 1-8, is outcomes-based and the secondary curriculum, grades 9-12, is objectives-based)⁶⁶. In the Malawi curriculum documentation, the notion of 'skills' is used loosely to encompass competencies related to knowledge, skills, attitudes, values and behaviour.

At the primary level, these overarching seven categories of skills translate into eight development outcomes to be achieved by the end of primary education. A number of the development outcomes are particularly relevant to competencies identified in literature on DRR education. They include: 'communicate competently, effectively and relevantly in a variety of contexts and in multiple languages'; 'produce product and solutions through Science and Technology in a creative way and demonstrate respect for the environment to solve problems'(sic.); 'demonstrate health promoting behaviour in their personal lives as well as their communities and wider environment with particular attention to prevalent diseases such as malaria, sexually-transmitted diseases and HIV and AIDS'; 'observe, interact with the natural and physical environment in order to understand and make use of their interrelationship

in a responsible and appreciative manner' (Malawi Institute of Education, 2005 a, b, c, d, 2007 a, b, c).

A total of 68 objectives are put forth for secondary education. Some of the objectives also run parallel to competencies observed in literature on DRR education. For example, in the category of 'citizenship skills,' students are expected to 'acquire decision-making skills necessary for participation in civic affairs,' to 'initiate and implement community projects,' to 'develop personal and social responsibility,' and to 'demonstrate a spirit of leadership and service.' (Malawi Institute of Education, 2004, iv-v). Under the category of 'economic development and environment management skills' appear a few objectives concerning understanding of Malawi's natural resources and natural conservation as well as the application of environmental resource management and agriculture practices (36-41, 44). The 'creativity and resourcefulness skills' require students to 'apply problem-solving techniques to new situations' (56), to 'develop the ability to maximize the use of available resources' (60) and to 'develop the spirit of inquiry and independent thinking' (61) (Malawi Institute of Education, 2004, iv-v).

In Malawi's spiral competency-based curricula, each subject and grade-specific syllabus includes a 'scope and sequence chart' in which target skills (or competencies) are placed in a specific order and sequenced so that they are reinforced and deepened grade by grade. Accompanying each skills-oriented goal are topics, objectives (i.e., competencies which students obtain), contents, teaching and learning methodologies, teaching and learning resources and modes of assessment.

⁶⁶ Alison Mhlanga, Malawi Institute of Education, to Fumiyo Kagawa, 13 December 2011. Note: For the consistency of the report, Malawi's curriculum 'standard' is called 'grade'.

Two girls doing their homework in the Safalao market area in Ndirande Township of Malawi.



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Curriculum Development/Integration

At the time of writing, Malawi had just begun to integrate issues of climate change into school curricula. It recognizes the importance of school curricula to respond to 'critical contemporary issues such as gender, Information Communication Technology (ICT), HIV and AIDS, climate change, environmental conservation, special needs education, human rights, governance and entrepreneurship' (Malawi Institute of Education, 2009, 2). The government has recently expressed its commitment to integrating DRR into school curricula (see below).

Although there is, indeed, a perception that Malawi has not integrated DRR into the school curricula (e.g., UNISDR, 2010, 134), an examination of selected Malawi school syllabi has revealed that Malawi has in fact been addressing vulnerabilities of critical relevance to the country. A number of the key DRR topics and competencies are already in existing curricula.

The Life Skills Education subject was introduced in 1999 at the primary school level in response to the perceived limitations of existing traditional subject areas in effectively addressing key challenges facing students (HIV and AIDS in particular) and to bring about necessary changes in behaviour. Following a UNICEF-supported pilot project in 24 primary schools (grade 4) across the country, the Ministry of Education directed the subject to be implemented at all primary education levels. Life Skills has become a school subject from grade 2 to grade 8. It was introduced at the secondary level in 2002.

In Life Skills Education, there is a specific emphasis on developing key 'psycho-social skills', such as 'self-awareness,

self-esteem, empathy, communication, interpersonal relationships, decision making, problem solving, creative thinking, critical thinking, coping with emotions and stress, peer pressure resistance, peaceful conflict resolution and entrepreneurship'. Moreover, 'participatory methods and experiential learning techniques' are considered pertinent to the Life Skills Education curriculum (Malawi Institute of Education, 2001d, 1).

In the Life Skills Education curricula, the HIV/AIDS hazard is a central focus. There is no reference to natural hazards at the primary level, but grade 4 of the secondary curriculum treats drought, natural disasters and global warming as examples of major global problems and are subsumed under the 'empathy and tolerance' skill. Students are expected not only to identify and explain the effects of a number of global problems, but also to 'give support to and care for people affected by global problems' (Malawi Institute of Education, 2001d, 39). At the primary level, other health-related hazards and risks appear repeatedly and students are expected to develop the ability to prevent malaria and to practice personal hygiene (Malawi Institute of Education, 2005 a, b, c, d, 2007 a, b, c).

For the primary Social and Environmental Sciences subject, safety issues (such as road/traffic safety, home safety, safety at work) are addressed in grades 3, 5 and 7. 'Environmental protection' is one of the core subject outcomes: 'The learner will be able to make informed decisions considering local, regional and global consequences to maintain a balance between humans and their environment to ensure its sustained use for present and future generations' (Malawi Institute of Education, 2005c, 2007b,c). In order to achieve this outcome

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the following topics appear: water conservation (grades 3, 4); misuse and conservation of the physical environment (grade 4); environmental protection (grade 6); air conservation and natural resource conservation (grade 7); and environmental conservation and management (grade 8). A topic on 'natural disasters in Southern Africa' appears at grade 7, and causes and effects of desertification are discussed within the topic of environmental conservation and management (Malawi Institute of Education, 2005a, b, c, d, 2007b)

In secondary Geography, the following topics are repeatedly addressed throughout the four grades: 'Earth as a planet/structure of the earth', 'the environment', 'natural resources', 'natural disasters' and 'population dynamics' (Malawi Institute of Education, 1998c). With regard to the topic on natural disaster, the students are expected to: 'explain the meaning of the terms "natural disaster", identify some natural disasters in Malawi, assess the effect of some natural disasters, and suggest precautionary measures against natural disasters' (grade 1); to 'locate areas which are frequently affected by natural disasters, explain causes of some natural disasters in Malawi, suggest options available to people living in areas affected by natural disasters' (grade 2) (Malawi Institute of Education, 1998c, 19, 34-35). The topics of plate tectonic (including causes and effects of volcanoes and earthquakes) (grade 3) and the causes and effects of climate change (grade 4) are also included (Malawi Institute of Education, 2001c).

In the secondary Agriculture syllabi, 'agriculture and the environment' is one of the key strands appearing throughout four grades. Key topics are: conservation of natural resources

and issues of population growth and food security (grade 1), influence of soil erosion on silting and flooding, relationship between rapid population growth and drought, food security (grade 3); soil degradation (grade 4) (Malawi Institute of Education, 1998a, 2001a).

Secondary Biology syllabi treat topics on human diseases and the effects of environmental stresses, (e.g. flood and drought) (Malawi Institute of Education, 1998b, 2001b).

Pedagogy

There is a strong emphasis on participatory methods and experiential learning techniques in Life Skills Education. Various modes of participatory pedagogical approaches are also suggested in other closely related subject areas as well. Suggested pedagogical approaches include brainstorming, debate, case study analysis, discussion, drawing, personal narrative, poems and song, among others.

Malawi introduced the Child Friendly School model in 2006 in order to move forward the government's commitment to providing an enabling learning environment for primary education. The five key characteristics of the Malawi Child Friendly School framework are: a rights-based and inclusive school; an effective school; a safe, protective and healthy school; a gender-responsiveness that promotes equity and quality; school building school/community linkages and partnerships (Ministry of Education, Science and Technology & UNICEF, 2008). Ongoing Child Friendly School initiatives will be strong assets in Malawi in enhancing climate change and DRR learning contents in school curricula.

Student Assessment

Malawi's new primary curriculum (starting in 2007 and completed in 2009) is outcome-based and has a strong emphasis on learner-centred approaches. A core of this recent primary curriculum reform was the introduction of elements of continuous assessment for teachers 'to use the assessment to support learning'. The secondary curriculum reform, currently underway, also plans to introduce continuous assessment. The curriculum recognizes the importance of making 'a smooth transition from primary to secondary education'. Secondary curriculum reform is concerned with improving poor achievements given that more than half of the students fail end-of-term examinations. Incorporating continuous assessment into what is, at present, an exclusively summative assessment is seen as a vital vehicle for maximizing learning outcomes (Malawi Institute of Education, 2009, 2).

Primary syllabi suggest various modes of assessment using a scope and sequence chart. Examples of assessment modes include: drawings; miming; observations (teacher's observations, observation check list); oral questions; self-assessment; short essays; singing; story telling; written reports; written texts (Malawi Institute of Education, 2005 a, b, c, d, 2007 a, b, c).

Teachers at all primary grade levels were oriented to the use of the new continuous assessment approach at the beginning of the implementation of the new primary school curriculum (grade 1 materials were introduced in 2007; grades 2, 5 and 6 in 2008; grades 3 and 7 in 2009; grade 8 at the start of 2009/2010 school year). The orientation was given insufficient time due to limited financial resources. While teachers do

continue to learn about the new continuous assessment approaches during continuing professional development (CPD) activities, these activities are somewhat erratic and rather unsustainable given the financial constraints⁶⁷.

Little or no evaluation has been conducted to ascertain the impact of the new assessment approach; no documents are currently available. However, according to the anecdotal comments of some teachers at informal meetings, quite a number of teachers have found the new assessment is too demanding and time consuming, requiring a great deal of time to keep records of assessment results⁶⁸.

The Ministry of Education is currently working further on developing a reliable assessment framework for subject areas such as Life Skills, which are concerned not only with knowledge but also with behavioural change⁶⁹.

Teacher Professional Development/Guidance

From 2009, UNICEF and Save the Children supported the training of all District Education Managers (DEMs) on EPRP (Education Preparedness and Planning Processes) and DRR⁷⁰. Ideally, the DEMs and their teams are supposed to train teachers on EPRP/DRR using the cascade model. However, this is not happening as anticipated. In some districts, DEMs have taken the initiative to orient teachers on EPEP/DRR but in only a limited way due to inadequacy of resources⁷¹.

⁶⁷ Alison Mhlanga to Fumiyo Kagawa, 13 December 2011.

⁶⁸ Alison Mhlanga to Fumiyo Kagawa, 13 December 2011.

⁶⁹ Kennedy Warren, UNICEF Malawi, to Fumiyo Kagawa, 11 October 2011.

⁷⁰ Part of the Education in Emergencies and Post-Crisis Transition (EEPCT) Programme funded by the Government of the Netherlands and the European Commission

⁷¹ Kennedy Warren to Fumiyo Kagawa, 2 December 2011.

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Learning Outcomes/Competencies

As mentioned above, the Malawi curriculum is structured according to competency based learning outcomes. Examples of competencies are included in the above section on the curriculum development/integration.

Policy Development, Planning and Implementation Aspects

Malawi's DRR commitment dates back to 1991 when the country passed a *Disaster Preparedness and Relief Act*. The Department of Disaster Management Affairs was created as a coordinating and implementing body for DRR programmes in the country (UNISDR, 2010). Although education has not been a core area for Malawi's DRR efforts, the Secretary and Commissioner for Disaster Management Affairs has recently emphasized education as one of the key priorities for the Government of Malawi's DRR initiatives over the next five years. The government intends to 'include disaster risk management in primary, secondary, tertiary and other training institutions' curricula. The inclusion of disaster risk management in the curricula, starting from primary school level, would ensure that children grow up with an understanding of impacts of disasters and what can be done to reduce the impact' (Government of Malawi, 2011, 4). DRR stakeholders are lobbying strongly for the inclusion of DRR at all levels of the school curriculum (UNISDR, 2011, 11).

An Education Technical Working Group of the National Disaster Preparedness Committee was established in 2010. This is a very important milestone signalling that education is becoming a top priority in the National Preparedness Plan⁷².

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⁷² Kennedy Warren, UNICEF Malawi, to Fumiyo Kagawa, 11 October 2011.

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Case 16: France

Overview

France offers an example of the systematic preparatory provision of risk-related education in the primary school, with in-depth treatment in *collège* (secondary school, ages 11-14)

and *lycée* (high school, ages 15-18). Consideration of risk features as a component of both citizenship education and education for sustainable development.

Introduction

Efforts by the Ministries of Environment and National Education to introduce disaster risk reduction education in the 1990s culminated in three developments in the first decade of the new century. First, in 2003, environmental education for sustainable development was made comprehensive in academic institutions. Second, the Ministries of National Education, Health and the Interior made it an aspect of mandatory schooling to teach students about risk prevention. Third, a 2006 governmental decree launched an initiative whereby each school and academic institution would develop a plan to teach primary through tertiary students about risk prevention (UNISDR, 2007, 59). Implemented by the Ministry of National Education, the Ministry of Ecology and Sustainable Development and the Ministry of Interior and Regional Planning, schools began to develop their bespoke Case-Specific Risk Reduction Plan, with primary schools taking the lead and secondary and tertiary institutions following (Ibid. 60). The aims of the initiative were as follows:

- Provide knowledge of risks and of preventative and protective measures against risks in a local context
- Inform students of different types of rescue services and the way they work so students are equipped to alert others in emergency situations
- Teach students basic survival steps while awaiting organized rescue
- Encourage students in civic-minded behaviour and individual and collective responsibility (Ibid).

Curriculum Development/Integration

At the primary school level volcanic and seismic activity are first addressed in grade 3 as phenomena (but not in terms of risk reduction). At grade 4 students learn about seismic and volcanic risk and their prevention and mitigation, and also about tsunamis, a 'risk at a planetary level'. In grade 5 major risks and security issues are treated in Civic Instruction while in Geography students consider inequality in the face of risk by comparing and contrasting a catastrophe in an economically developed country and an economically poor one⁷³.

In *collège* major catastrophes are studied in Geography, Civic Education and Earth and Life Science with contributions from other subjects. Among the interdisciplinary themes addressed, one on security seeks to make students aware of the management of security problems within which natural and technological catastrophes are treated.

At the general *lycée*, students learn about places that are at risk, the unequal level of vulnerability within and between societies and the politics of risk prevention. At the professional *lycée*, in the Geography programme, natural risks are covered within the study of fundamental social needs from the perspective of sustainable development within a world of increasing globalization.

Major risks are, therefore, 'largely written into the teaching programme in a continuous manner from primary school' (*Les risques majeurs*, 2011).

⁷³ Paper received from Olivier Schick, Association Prévention 2000/AFPCN, Mapping of Global Disaster Risk Reduction Integration into Education Curricula Seminar, 31 October 2011.

Child and children's drawings in a primary school classroom at La Varenne Saint-Hilaire in France.



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Pedagogy

The Ministry of National Education (2010) has developed a teacher's guide on educating for risk responsibility, offering an 'anticipate, act, learn' ('anticiper, agir, apprendre') model and process for addressing risk in the curriculum as part of the development of the future citizen. Having *anticipated* (i.e., mobilized general and specific knowledge in evaluating the risk in the situation encountered), *acted* (i.e., with alert, reflective and responsible behaviour) and *learned* (benefitted from personal experience and that of others to reinforce the ability to act prudently and efficaciously and to better anticipate the future) (2010, 5).

A CD-ROM on Education for Sustainable Development offers both collège and lycée level case study material and interactive learning activities on local through global human/environment interactions, to 'develop autonomous responsibility for helping create a more viable future'. It includes documents and learning activities on maritime pollution, seismic activity in Sumatra and Hurricane Katrina⁷⁴.

A much celebrated and replicated Secondary School 'Students: Risk Ambassadors' project, winning a trophy from the Ministry of Ecology and Sustainable Development, took place at a secondary school in the city of Rochefort on the west coast of France during school year 2006-7. Developed by Prevention 2000⁷⁵ in 2002, it involved teaching technical students about local hazards through a local environmental officer and then translating their learning into forms of communication (through

local media, online and in print form) that reached out into the local community, exposed gaps in community understandings of disaster prevention and galvanized community action towards a culture of safety (UNISDR, 2007, 62-5). The approach has continued to evolve and now goes under the name of 'Memo'Risks'⁷⁶. As such, it was exhibited at the UNESCO World Conference on Education for Sustainable Development (ESD), Bonn, Germany, in March/April 2009. The conference documentation describes the approach as follows:

Memo'Risks teaches a local and practical disaster reduction education. (It) associates the city and the educational institution in a global project for communication upon major risks. Based upon a true partnership, the project couples risk education among children with risk awareness among the population. The method, highly multidisciplinary, applies to natural and technological risks, and is adaptable to any territory and any language. It leans on the memory of past disasters, local inhabitants' awareness of the risks, and an understanding of what is at stake within the community. It raises adult awareness and leads the school to take all necessary preparation to face crisis. Finally, it gives the kids an opportunity to take part in public life and encourages authorities to lead more efficiently their mission of spreading preventative information to the inhabitants⁷⁷.

⁷⁴ Ibid. The CD ROM, *Societies Faced by Risk*, is an Editions Belin Terra Project publication. ISBN 978-2-9155-9964-0.

⁷⁵ http://www.prevention2000.org/cat_nat/reseau/page1.htm

⁷⁶ <http://www.memorisks.org/>

⁷⁷ <http://www.esd-world-conference-2009.org/en/esd-projects-exhibition/europe-and-north-america.html>

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Originally intended for students aged 11 and up, and reflecting ESD advocacy of locally-anchored partnerships of an interdisciplinary nature, it has been adopted recently for 7-9 year olds, and will be available to all French schools beginning in March 2012⁷⁸.

Teacher Professional Development/Guidance

The French Institute for Major Risks and Environmental Protection Training offers interdisciplinary and inter-sectorial training supported by ministries of state concerned with major risks. With 500 trainers spread across thirty school districts, and with the support of the Ministry of National Education, the Institute helps schools and teachers develop Case-Specific Risk Reduction Plans as well as designing and distributing learning tools⁷⁹.

Learning Outcomes/Competencies

In the Ministry of National Education's teachers' guide (2010) learning outcomes are specified under the three headings of 'anticipate, act and learn' 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, *inter alia*, the following learning outcomes: understanding and evaluating major natural and technological hazards and knowing of mechanisms for managing crisis and hazard ('anticiper'); 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 ('agir'); reflecting on management and behaviours in situations of crisis and being able to transfer learning to different hazards

('apprendre'). Outcomes are graduated 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' for 2 to 7 year olds; 'know the principal natural and technological risks' for 8 to 12 year olds; 'analyse different natural and technological risks,' 'be informed of risks in the near environment,' and 'know the different help services' for 13 to 15 year olds; and, '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' for students aged 16 and over (Ibid). A graduated competencies approach is seen as an important strand in developing the responsible citizen.

Policy Development, Planning and Implementation Aspects

DRR also has a significant place within Education for Sustainable Development (ESD). 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 cross-cutting disciplinary unifier. 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 (Circular no 2004-015).

⁷⁸ Olivier Schick to David Selby and Fumiyo Kagawa, 25 November 2011

⁷⁹ <http://www.iffo-rme.fr>

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Case 17: Japan

Overview

Japan offers an example of DRR infusion into formal school curricula through two main avenues: existing school subjects and 'a period of integrated study'. There are a number of boards of education, schools, and individual teachers who have taken advantage of the latter avenue and have developed

Introduction

Japan is widely known as a proactive country when it comes to dealing with natural hazards by advancing high technologies and building infrastructures against earthquakes and tsunamis as well as regularly conducting early warning and evacuation drills at all levels of society, including schools, communities, public and private organizations.

In Japan, school safety has been divided into three areas, i.e., general safety of students' everyday lives (being safe from various accidents and criminal activities), traffic safety, and disaster risk reduction. To address the latter, disaster risk reduction education is in place, together with disaster management for school infrastructures, and school and community support networks (Ministry of Education, Culture, Sports, Science and Technology, MEXT, 2011a).

Curriculum Development/Integration

According to MEXT, DRR-related topics and themes appear in a few subjects in both primary and secondary school curricula. Examples at the primary level are: Social Studies (locally specific disasters and accidents, grades 3-4; local disaster response initiatives and mechanisms, grade 6); Science (mechanisms of volcanic activities and earthquakes, grade 6); Physical and Health Education (prevention of injuries and first aid skills for minor injuries, grades 5-6). Examples from the lower secondary level (with no specification of grade level) include: Geography (geographic characteristics of the country and natural disasters); Science (mechanisms of volcanic

teaching and learning support materials and special programmes based on the experiences of and lessons learnt from recent natural disasters. The systematic development and implementation of DRR curricula in schools throughout the country has yet to be realized.

activities and earthquakes; human and natural relationships including natural disasters); Physical and Health Education (causal effects of injuries; preventative behaviour and attitudes towards injuries; first aid skills); Technologies and Home Economics (safe and convenient home environments)⁸⁰.

With regard to the 'period of integrated study' which was established in the new curricula introduced in 2002⁸¹, each school and teacher is encouraged to use this curriculum space creatively by offering interdisciplinary and comprehensive courses dealing with issues and topics which are the most relevant to students in a particular locality. Popular topics covered in this curriculum space include: international understanding and environmental and welfare education, among others. DRR topics are also addressed in some schools, especially in those located in regions recently affected by natural disasters or in high disaster risk areas. For example, using 50 class periods per year during the period of integrated study, one elementary school in Kochi prefecture addresses DRR throughout the year using activities such as creating local evacuation maps, organising puppet shows about on DRR for younger children, conducting evacuation drills, and practicing first aid skills⁸².

Pedagogy

The Cabinet Office supports the dissemination of good teaching practices and useful tools for disaster risk reduction education through a webpage devoted to this topic⁸³. Good DRR lesson examples can be found through this link. The teaching and

⁸⁰ <http://www.mext.go.jp/>

⁸¹ At the primary level (grades from 3 to 6) 70 class periods are allocated per year (45 minutes per class). At the secondary level, for grade 7, 50 classes, for grade 8 and 9, 70 classes are allocated per year (50 minutes per class) (<http://www.mext.go.jp/>).

⁸² This project was from 2003 to 2005. It is uncertain whether the school will continue this project. <http://www.bosai-study.net/houkoku/plan08/index.html>

Yuuna Sasaki, 8, photographs Kobuchi Beach, in the city of Ishinomaki in Japan, with debris towers behind her.



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learning methods commonly used include: lectures by guest speakers (experts in DRR or those who have experienced a specific natural disaster), field trips (e.g., to fire stations or museums), interviewing local community members, making hazard maps and hazard newspapers, using puppets (to pass on DRR messages to younger children), playing games, telling stories and singing songs⁸⁴.

Student Assessment

This research has thus far found only sporadic examples of DRR student assessment tools created by individual teachers in their development of DRR-related lessons (e.g., self-assessment survey forms or essay writing), but clear and fully elaborated assessment guidelines and/or frameworks specifically for DRR student learning have not been found at either the national or local level.

Teacher Professional Development/Guidance

Some teacher professional development opportunities for DRR education exist, provided by MEXT and local government. MEXT's main target groups are supervisors and key personnel from the prefectural education boards who can then go on and train teachers in their locality (Goto, undated).

At the national level, the Cabinet Office and MEXT have developed and distributed some teacher reference materials as well as learning support materials for students (such as pamphlets or films) for different grade levels. The most recent materials Mext has developed are teachers' guides and students' books

(for both primary and secondary levels) on civil nuclear hazard in response to the Fukushima disaster of March 2011.

At the local government level, a number of DRR curriculum resources have been developed around the country. For example, the disaster risk reduction department and the education board in Kamaishi city, Iwate prefecture, developed tsunami education materials aiming at nurturing students' capacity to survive and to help others in case of a tsunami. The teacher's guide suggests a number of practical ways to embed tsunami, earthquake, and safety issues in all subject areas at different grade levels⁸⁵.

Learning Outcomes/Competencies

The research has thus far found no list of DRR learning outcome statements.

DRR-related students' competencies can, however, be divined from curriculum guideline statements of subjects that include DRR themes and topics. Competencies are predominantly discipline-specific and knowledge-oriented and are sometimes linked to observation and research skills. Examples include an understanding of: local mechanisms of and efforts for reducing disaster hazards and accidents through field trips and research (Social Studies, grades 3 and 4); the structures and changes of the earth in relation to volcanic activities and earthquakes through observation and investigation (Science, grade 6); prevention of injuries (Physical and Health Education, grades 5 and 6); unique geographical characteristics of Japan (Geography, secondary level)⁸⁶.

⁸³ <http://www.bousai.go.jp/minna/kyouiku/index.html>

⁸⁴ Ibid.

⁸⁵ It has been reported that when the devastating tsunami hit the city on 11 March 2011, students took appropriate actions for evacuation by making a quick and flexible judgment and helping the vulnerable, which in turn saved a lot of lives. It was also reported that students were actively involved in voluntary activities in evacuation centres (MEXT, 2011b).

⁸⁶ <http://www.mext.go.jp/>

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Skills and attitudinal competencies are less prominent overall. Physical and Health Education emphasizes first aid skills (grades 5 and 6), while special school events (e.g., healthy/safety and school sports events) at both primary and lower secondary levels, are considered to contribute to cultivating students' positive dispositions towards safe and responsible behaviour in a group and sense of solidarity with others⁸⁷.

A wider range of learning outcomes exists for lessons created under the 'period of integrated study'. An examination of some lessons has revealed that in addition to developing knowledge and awareness of specific hazards, competencies such as self-help, collaboration with others and communication skills are also mentioned.

During the expert consultation group meetings held in response to the 2011 Great East Japan Earthquake, one of the important competencies for students to develop that emerged was a 'proactive attitude' to responding promptly in a changing environment. More specifically, it is considered vital for pupils to take actions to save lives from natural hazards that are beyond predicted scales. In addition, it suggests that DRR education should help pupils to become active agents who can contribute to post-disaster reconstruction efforts. A sense of compassion, a disposition towards mutual support, and respect for lives are therefore important competencies (MEXT, 2011a).

Policy Development, Planning and Implementation Aspects

There are governmental strategies that support the integration of DRR into formal school curricula. Most importantly, in 2006

the Cabinet Office issued the *Basic Strategy to Promote Nationwide Commitment to Reduce Disaster Risks*. This strategy suggests that educational institutions at all levels should develop DRR education by considering lessons from past disaster experiences in their own regions. It highlights the importance of enhancing students' capacities to actively contribute to disaster risk reduction initiatives in their local communities. In terms of DRR teaching and learning materials development, it recommends the use of various media such as picture and storybooks, cartoons, games, and the Internet⁸⁸.

In 2007, in order to strengthen a support system to advance disaster risk reduction education more systematically, MEXT organized a consultation committee consisting of key stakeholders at a national level. After reviewing the achievements of DRR education in Japan, gaps were identified. The following needs, among others, were noted: a systematic approach in which age specific DRR knowledge is clearly articulated; integration of DRR knowledge into school curricula in a more sequential manner that takes into account children's ages; promotion of inquiry-based and active learning methods for DRR (MEXT, 2007). The committee also reflected upon the movement-to scale-aspect of DRR education, categorizing education stakeholders into the following three types: 1. those who are not aware of the importance of DRR education, and unmotivated to learn about it; 2. those who are interested in DRR education but do not know how to start learning; 3. those who are actively involved in DRR education. The committee highlighted the vital importance of creating mechanisms whereby initiatives by enthusiastic practitioners could provide

⁸⁷ Ibid.

⁸⁸ <http://www.cao.go.jp/index.html>

practical support and stimulus to those who were already interested in DRR, and further influence those who were not aware of the importance of DRR education. The committee noted that currently good examples exist in specific schools and localities as 'dots' in isolation (Ibid).

The level of commitment to and implementation of DRR education in Japan indeed differs from region to region, some regions being more advanced than others. For example, to hand down lessons from the 1995 Great Hanshin-Awaji Earthquake Disaster to future generations, the Hyogo Prefectural Board of Education developed supplementary materials for classroom use at different grade levels of primary and secondary schools. Maiko High School in Hyogo Prefecture has developed a special course on disaster prevention (Chinoi, 2007). In some regions, however, very little appears to be happening.

Consolidating good practice is a vital next step for DRR curricula development in Japan. The *HFA National Progress Report* touches upon this point as follows: 'It is required to develop more systematized programs that fit to ages and [local] areas and improve current official curriculum guidelines' (UNISDR, 2011,14). Similarly, MEXT (2011a) points out the importance of systematically developing pre- and in-service teacher training opportunities for all teachers.

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Case 18: New Zealand

Overview

New Zealand offers a national multi-media (print form and electronic) approach to DRR for primary and intermediate schools (students aged 7 to 12). The resource is an initiative of the Ministry of Civil Defence and Emergency Management that is embraced by but not proactively reinforced by the Ministry of Education. It is of considerable interest in its multi-

hazard approach, the comprehensive nature of the programme developed and its use of diverse learning and teaching approaches. It also provides some important insights into what is necessary in order to reinforce and therefore systematize delivery of DRR through a national curriculum.

Introduction

What's the Plan Stan? (WTPS) is a teaching and learning resource 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 practices in disaster preparation and response. It is aimed at teachers, offering guidance on incorporating the material in their teaching and learning programmes principals, offering advice on school emergency management; and students and their families, offering easy-to- assimilate, user-friendly DRR material. *What's the Plan Stan?* focuses on earthquakes, tsunamis, volcanoes, storms, floods and non-natural disasters (pandemics, wildfires, biohazards, transportation accidents, terrorist bombs and threats). The package includes a *Teachers' Guide*, a CD-ROM and a website: www.whatstheplanstan.govt.nz. It was developed by Educating NZ, a leading education consultancy, on behalf of MCDEM⁸⁹.

The CD-ROM and website provide essentially the same material for both teachers and students. The teacher section contains the *Teacher's Guide*, templates for handouts, unit plans, links to websites and organizations and ideas for using the CD-ROM with students. The student section includes facts on each disaster likely to afflict New Zealand, maps and historical accounts of disasters in New Zealand, photographs and video clips, interactive stories, quizzes and games.

WTPS has also been made available in the Maori language for use in language immersion and bilingual schools and within Maori-speaking communities.

At the time of writing, MCDEM is finalizing a consultation and

review process prior to the publication of an electronic disaster awareness resource for the early childhood sector, the *Early Childhood Education (ECE) Services Emergency Planning Guidance*, online since December 2011⁹⁰.

Curriculum Development/Integration

The *WTPS Teacher's Guide* emphasizes the fit between what the resource seeks to foster and the New Zealand national curriculum vision of nurturing confident, connected, actively involved young people who are lifelong learners; also highlighted is the resource's alignment with the curriculum's core value of community engagement and its associated key competencies (MCDEM, 2009, 13).

Curriculum learning areas identified as particularly suitable for incorporating *What's the Plan Stan* are: Health and Physical Education (Safety Management), Social Studies (the conceptual strands of Identity, Culture and Organization, and Continuity and Change), Science (Nature of Science, Planet Earth and Beyond), and English (Listening, Reading and Viewing; Speaking, Writing and Presenting). (Ibid. 13-14.)

The detailed unit plans set out in the *Teacher's Guide* are linked to the four learning areas and are meant to dovetail with the learning objectives for those areas at junior, middle and senior levels (within the primary and intermediate school).

For example, the junior level unit lays out classroom activities for the four learning areas into four sections: Section A: Reducing the risk – making ourselves aware; Section B: Let's get ready – and stay prepared; Section C: Time to practice – responding the right way; Section D: Be a survivor – recovery

⁸⁹ <http://www.educating.co.nz/>

⁹⁰ Marika Luiso, Acting Team Leader, Professional Development, MCDEM to David Selby, 16 November 2011. The resource is available at www.mcdem.govt.nz and www.lead.ece.govt.nz

Family meeting in Te Kotuku Kohanga Reo, peninsula of te Atatu, in New Zealand.



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from disasters. Under each section up to six activities are included, all falling within one or more of the four learning areas. For example, under Section A there are activities on:

- *Hazard identification* (mapping hazards in the locality and/or the classroom with homework to draw a picture of hazards at home)
- *Identify disasters* (exploring graphical images and video footage of disasters)
- *Identify Regional Disasters* (asking whether each kind of disaster could happen locally and making a graph and Venn diagram of similarities and differences in terms of their respective impact)
- *Historic disaster story* (reading a story of a historical disaster and then writing accounts as though present)
- *Find out who can help* (making collages of people who might need help in a disaster, discussing and role-playing how they could be helped, inviting helpers in the community to come to talk to the class)
- *Earthquakes* (reading an earthquake story, making earthquake posters, taking the posters home to alert the family).

The *Hazard Identification*, *Identify disasters* and *Earthquakes* activities are linked to the Health and Physical Education achievement objectives to 'identify and discuss obvious hazards in the home, school and local environment' and to 'identify risk and use safe practices in a range of contexts'. The *Identify Regional Disasters* and *Historic disaster story* activities are matched with the Social Sciences achievement objectives to 'understand how places influence people and people influence places', to 'understand how time and change affect people's lives' and to 'understand how people have different roles and

responsibilities as part of their participation in groups'. The *Identify Regional Disasters* activity links with the Science achievement objective to 'describe how natural features are changed and resources affected by natural events and human actions' and with the English achievement objective to 'acquire, select and use sources of information, processes and strategies to identify, form and express ideas' (Ibid. 15-20).

The *Teacher's Guide* also briefly enumerates windows of opportunity for integrating disaster awareness into the following curriculum areas: Technology and ICT, Food Technology, the Arts, Mathematics, Learning Languages (Ibid. 50).

Pedagogy

Inquiry learning is particularly appropriate for WTPS. 'Disaster awareness education provides a rich learning context for inquiry learning as it provides opportunities for students to build their knowledge as they engage with their community, while investigating answers to their questions and reflecting on their learning' (Ibid. 14).

Across the programme a varied diet of interactive and socio-affective learning activities are offered, including:

- Class and group work interpreting disaster pictures
- Venn diagram work in pairs to find out what is common and what is different about paired kinds of disasters
- Interpreting stories of historical disasters and writing imaginative stories as if present during the disaster
- Making posters about disasters
- Class review of school emergency plans, brainstorming ways to improve the plans, and designing emergency

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Case 18: New Zealand

procedure cards for different locations in the school

- Brainstorming emergency items needed at home for emergencies
- Discussing what to do in *What if?* scenarios
- Using the 'think, pair, share' cooperative learning process to discuss what might happen after a disaster
- Completing two-column 'People who can help' and 'What they can do' charts
- Group work to determine the effects of a possible disaster with multi-media presentations to the class
- Questioning community members and members of emergency management services invited to class
- Hazard mapping in school and community
- Exploring feelings and emotions of characters in disaster stories with students using puppets to convey how they think they would feel in and in the wake of a disaster
- Brainstorming of feelings of those involved in disaster scenarios (Ibid. 19-46).

Student Assessment

The WTPS *Teacher's Guide* recommends the use of 'formative assessment techniques to shape their ongoing interactions with students and to inform their planning' (Ibid. 14).

The junior, middle and senior level unit plans offer suggested assessment criteria that might be employed for either formative or summative assessment. Templates for how to design *pro forma* for student self and peer assessment are given as is advice on how to build teacher-conducted assessment into a learning program (Ibid. 47-8).

A survey of teachers who had used WTPS garnered very few actual examples of formal assessment of student learning (Johnson, 2011, 28) although many of the survey participants felt that assessment would be relatively easy to conduct through approaches such as behavioural observation (including of community application of knowledge acquired), student self-assessment, peer assessment, role play assessment and assessment of presentations (Ibid. 30-1).

Teacher Professional Development/Guidance

When *What's the Plan Stan?* became available in 2006, MCDEM hosted fifteen teacher workshops in different parts of the country to introduce teachers and principals to the resource, with some 700 educators in all participating (Ibid. 6). Since then, support for teachers has been restricted to what is available in the WTPS *Teacher's Guide* (MCDEM, 2009).

Johnson's 2011 survey of the implementation of WTPS brings teacher concerns about how to address students' emotional responses, the fears and sensitivities elicited by considering disaster hazards, to the surface. It was mentioned that teachers had received no training in this area. [Few teachers reported using the 'Feelings and Emotions' activities in the WTPS programme.] Some respondents also pointed out that following the 2011 Christchurch earthquake there had been a dispersal of families, children and some teachers around the country and that disaster awareness learning could be an emotionally fraught experience for those who had been in Christchurch. The survey raises the issue of how teachers should conduct disaster risk reduction education in contexts in which there has been an immediate or close encounter with disaster, an issue that has clear training implications (Johnson, 2011, 21, 22, 47).

Post-Christchurch, there is clearly a felt need for a revisiting of disaster awareness teacher training in New Zealand, especially in the socio-affective sphere.

Learning Outcomes/Competencies

The WTPS *Teacher's Guide* (MCDEM, 2009, 13) identifies the following 'key competencies' students require to 'live, learn, work and contribute as active members of their communities': thinking; using language symbols and texts; managing oneself; relating to others; participating and communicating. The 'strong link' between disaster awareness education and managing oneself is particularly emphasized.

WTPS takes its student learning outcomes from relevant grade-level achievement objectives set forth for the Health and Physical Science, Social Sciences, Science and English learning areas in the New Zealand national curriculum (examples given above). There is no discrete codified enumeration of disaster awareness student learning outcomes.

Policy Development, Planning and Implementation Aspects

WTPS is an outcome of the MCDEM *National Public Education Strategy 2003-2008* and its *Strategic Framework for the National CDEM Public Education Programme 2006-2015*. In 2004 a 'CDEM in Schools' working group comprised of civil defence staff was formed. The CDEM working group first conducted an analysis of MCDEM public education materials and surveyed teachers, identifying a lack of linkage with the national curriculum as a key finding. It went on to 'develop and roll out a national "all-hazards" resource for schools,' choosing to 'create a brand specific to CDEM education that would allow any future resource development to have a strong, pre-existing identity'. In 2005

MCDEM tendered Educating NZ to develop the resource. The consultancy group proceeded to do so, having first gathered data and ideas through focus groups with teachers, students and MCDEM staff (Johnson, 2011, 5).

The first edition of *What's the Plan Stan?* became available in 2006. MCDEM distributed hard copies to all primary and intermediate schools and conducted the training program for teachers and principals described above.

What's the Plan Stan? was upgraded in 2007 and, following the gathering of focus group feedback from teachers and civil defence staff on ways to improve the resource and enhance its fit with the national curriculum, it appeared in its current form in 2009 (Ibid).

MCDEM has not conducted an evaluation of the level of use or effectiveness of the resource (Ibid. 4, 49). But Johnson's implementation study (ibid) offers clear pointers to the patchy pick-up of the resource by teachers, as do the remarks by the Director of Civil Defence Emergency Management speaking at the launch of the study: 'The key finding for New Zealand is we have a good teaching resource that too many schools do not use' (MCDEM, 2011, 1). Amongst Johnson's findings from 2011 focus groups with 49 volunteer teachers, principals and other senior managers from 31 schools from rural, suburban and urban communities spread across the North and South Islands of New Zealand (and subsequent online survey and/or personal interview with some) are the following:

Approximately half of focus group participants had not heard of WTPS before their invitation to participate in the study

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(Johnson, 2011, 13). Of the participants who had used WTPS most had only used the resource once since its 2006 launch (Ibid. 15). A fall-away of use occurred after the successive launches of 2006 and 2009 (Ibid. 38).

For Johnson, a shift on the part of the Ministry of Education from a passively sanctioning role to a proactive role as far as disaster preparedness curriculum is concerned is what is needed.

While MCDEM and the CDEM Groups have taken great strides to work more directly with schools on civil defence, the Ministry of Education remains the national authority that teachers, school leadership and Boards of Trustees turn to for information and guidance. Therefore, if disaster awareness and preparedness among children and their families are a national priority and not just an MCDEM priority, it is imperative that the Ministry of Education play a leading role in supporting disaster preparedness in schools (Ibid. 47).

The WTPS website, she points out, can only be accessed on the MoE website through an internal page with the title 'Emergency Management Plan;' there is no reference to the programme under its 'teaching and learning resources' pages; and a search for WTPS by name garners no result (Ibid). She concludes:

Greater coordination and consistency in messages about disaster education and preparedness for children is needed across MCDEM and the Ministry of Education, particularly after a significant disaster like the Christchurch earthquake when educators are seeking information from trusted sources (Ibid).

Greater 'proactivity' and a higher profile for the Ministry of Education in DRR would more thoroughly embed WTPS, Johnson suggests, especially if other measures were taken in tandem. A disinclination to engage with a programme that originated outside its own ministerial auspices needs to be confronted.

Johnson recommends that an outcomes-based strategy for national implementation be developed: 'MCDEM should identify the intended outcomes for disaster preparedness education in schools and strategies for achieving those outcomes while appropriately addressing children's sensitivities' (Ibid. 49). This would help address the piecemeal approach to DRR in schools and the problem of sporadic teacher pick-up (Ibid. 45).

She also recommends that the problem of WTPS competing for curricular space with longer-standing and well-supported cross-curricular life-skills initiatives (e.g., around fire safety, road safety, countering bullying and abuse) be addressed (Ibid. 20, 46). There would be benefit for WTPS from some conflation of life skills strands.

She further reports a common sentiment among the teachers interviewed that in each school there should be identified leadership on DRR matters, whether emanating from the principal, a deputy principal, a specialist or designated teacher (Ibid. 32).

'At this time,' Johnson concludes (Ibid. 46), 'children in the New Zealand school system could complete their primary and intermediate school education and not once be exposed to a school-based lesson on disaster preparedness. If disaster preparedness knowledge among children is a national priority, a strategy is needed to ensure that children receive multiple exposures to disaster preparedness education throughout their childhood, including in schools, extracurricular activities and at home.'

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Case 19: British Virgin Islands (synoptic case)

Overview

The British Virgin Islands offers an example of nascent disaster risk reduction curricular response that calls for joining

thinking and action by governmental bodies if school students are to receive a thorough disaster-related education.

Under its Comprehensive Disaster Management Strategy and Programming Framework 2009-2013, the British Virgin Islands Department of Disaster Management (DDM) makes a commitment to 'promoting the inclusion of disaster risk reduction knowledge in relevant sections of school curricula at all levels' (DDM, 2009, 20).

Thus far, however, DRR has only been integrated in primary level Social Studies (grade 6) during the 2011-2012 school year through the auspices of the Department of Education and is expected to be a permanent addition in the years to come⁹¹.

Integration of DRR in the school curriculum has thus far been limited to one term, introduced in January 2011 and developed. In the 'People, Places & Environments' section of the programme students are required to:

- Identify changes to the landscape that are brought about by natural conditions (*wind, rain, landslide, hurricane, earthquake, volcanic activities*)
- Identify practices that are harmful to the environment/landscape
- Identify the different forms of pollution (*water, land, air*)
- Identify measures which can be taken to minimize or eliminate such pollution
- Distinguish between the concepts of 'weather' and 'climate'
- Identify climatic conditions that influence human activities in the British Virgin Islands and the Caribbean

For its part, the Department of Disaster Management has developed a range of resources for use at home or in the classroom. These include:

- *Floods: Disaster Preparedness Activity Book* for primary grades 3 and 4, an informative, well-produced book with activities for children (puzzles, crosswords) to help reinforce the learning (DDM, undated, a)
- *Shake Rattle and Roll: Disaster Preparedness Activity Book* for ages 8 to 10 on earthquakes, also attractive and informative with puzzles and quizzes (DDM, undated, b)
- A series of cartoons books, the Alex and Jasmine series, for use at home or in school to alert children aged 3 to 5 to hazards and disaster preparedness, containing exercises and activities (see, for example, DDM, undated, c)
- *Geological Hazards Activity Book* for primary grade 4, covering landslides, earthquakes, volcanoes and tsunamis with puzzles and simple activities (DDM, 2006)
- *Geological Hazards: What You Should Know! A Handbook for Secondary Schools*, a beautifully presented and illustrated book, strong on geological detail, with some exercises. The book is described as 'an innovative and interactive tool for disaster preparedness' but the interaction is restricted to responding to questions (DDM, 2008).

In addition, the Department of Disaster Management has produced a series of educational posters.

⁹¹ Sheniah Armstrong-Davies, Planning Preparedness Manager, Department of Disaster Management, British Virgin Islands to Fumiyo Kagawa, 4 November 2011.

Workshop on Climate Change Education for Sustainable Development in the British Virgin Islands.



© UNESCO/Julia Heiss

In 2008 DDM also held a 'Summer Exploration Programme' which targeted secondary school students ages 12 to 16 and sought to foster greater interest by youths in DRR. The programme included hazard safety activities, and geological field trips exploring the various hazards to which the British Virgin Islands are exposed⁹².

Available evidence suggests a low level of collaboration over disaster risk reduction among the respective arms of the government.

While the Social Studies programme addresses the manifestations and provenance of disasters, its topics fall short of a full embrace of practical disaster prevention, preparation and mitigation issues and concerns the DDM might have brought this to the table.

While most attractively presented, the DDM materials lack the imprint of the pedagogical expertise and interactive learning resource development that the Department of Education could have enlisted. The curricular application of a number of the resources developed has not been made clear.

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⁹² Sheniah Armstrong-Davies to Fumiyo Kagawa, 18 October 2011

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Case 20: Chile (synoptic case)

Overview

Chile offers an example of a country with a great number of natural hazards that has relied on a transversal approach to infusing DRR in the curriculum.

The strategy is based solely on the input provided by a ministry document sent to schools; there has not been capacity building or monitoring.

The *Integral Plan for School Safety* was produced by the relevant national agency as a methodological tool to help schools be prepared for evacuation and to improve the safety of the educational community. It includes some elements concerning the development of a culture of prevention. The plan has been disseminated in most schools and more than 2000 teachers have been trained in its application, but there is insufficient funding for its generalization to all teachers and for any subsequent monitoring activities.

A website⁹³ addressed to children that includes some materials about school safety, and short explanations of different disasters and appropriate behaviour in each case (earthquakes, tsunamis, volcanoes, floods, forest fires and landslides) has been developed.

Some projects funded by international cooperation agencies have promoted the inclusion of the DRR approach at a pilot scale, but the policymakers have not yet committed to funding the promotion and disseminating good practices.

The National Curriculum was analyzed by the Education Ministry to identify places in which topics of DRR could be included as a transversal dimension. A document for schools has been produced, but there has been no further action on capacity building in this direction, nor with the topic of the initial training of teachers.

⁹³ <http://www.onemi.cl/onemieduca>

A boy stands in the main square of the town of San Pedro de Atacama, Chile.



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Case 21: Costa Rica

Overview

Costa Rica is an example of inclusion of DRR in a limited number of subjects but still contributes to the overall reinforcement

of DRR by being carried within the 'transversal theme' of environmental education.

Introduction

Costa Rica has been developing disaster risk reduction education mechanisms since the late 1980s. In 1987 the Ministry of Education created an Educational Programme for Emergencies (PEEMEP). Among the objectives of PEEMEP was to develop didactic materials on disasters oriented towards teachers and students and to coordinate and develop first aid courses and evacuation plans for earthquakes and fires. In 1991, disaster education was included in Science and Social Studies curricula for primary school and was extended to secondary schools in 1993 (Ministerio de Educación Pública et. al, 2000,8).

Curriculum Development/Integration

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. Specifically, disaster prevention is now taught within the Science curricula for grade 1 -3 and within the Social Studies curricula for grades 4 -9. However, DRR appears in other subjects across the curricula. A few examples are provided below⁹⁴:

At the same time, the National Strategy for Environmental Education implemented an annual National Week of Disaster Risk Reduction Education during the second week of October as a way to foster educational activities aimed at building a disaster risk prevention culture (Monge, 2005).

Table 10. DRR in the Costa Rican Curriculum: Some Examples

School Year	Subject	DRR activity
1	Science	Development of a list including illustrations of country areas vulnerable to floods or landslides. Development of prevention measures in risk situations linked to dry or wet seasons
2	Spanish	Establishment of semantic groups of words on disaster prevention
4	Social Studies	Identification of Costa Rica as a zone vulnerable to earthquakes. Development in groups of a risk management plan
6	Spanish	Analysis and writing of news related to disasters from television, radio and internet.
7	Civic Education	Student research, through observation and interviews of their peers', family's and communities' different perceptions of vulnerability and risks. Student drawing of a risk map of their communities

⁹⁴ <http://www.educatico.ed.cr/ProgramProgrammeasdeEstudio/Forms/AllItems.aspx>

School in the Guyami Indian reserve of Costa Rica.



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Pedagogy

The implementation of risk management in the school curricula has been made through the following activities (DIPECHO, 2008, 16):

- Awareness campaigns for teachers and students on disaster prevention and risk reduction.
- Drawings, essays, song and poetry contests with themes allusive to DRR education.
- Drawing of risk maps and vulnerability zones.
- Formulation of risk reduction plans.
- Designing murals with recommendations for DDR.
- Development of evacuation plans.

The Department of Technological Resources for Education of the Ministry of Public Education has implemented a programme called *Desastres No No (Disasters No No)*⁹⁵. *Desastres No No* is an online educational and interactive tool about disaster prevention. Its pedagogical focus is on primary school children in grades 4 to 6. The online game provides definitions of the main DRR concepts through quizzes and then continues on to different kinds of threats (tornados, tsunamis, floods, earthquakes, volcanic eruptions, landslides, electrical storms and technological threats), providing definitions, standard measures to take before, during and after an emergency, and a learning evaluation. The site also provides a link to a teacher's guide, *Activity Guide for Pedagogic Mediation in Disaster Prevention for Grades 4-6* (Jimenez et. al. 2008).

Student Assessment

No data has been found.

Teacher Professional Development/Guidance

DIPECHO (2008) provides an example of teacher professional development and guidance in Costa Rica. The programme was designed to improve education on tsunamis in Puntarenas, a community affected by landslides, hydro-meteorologic and seismic threats. The project provided information about building good practices to improve organisational, training, prevention and disaster responses. 230 teachers of grades 4, 5 and 6 received training which they could then transmit to 4,500 students, thus raising awareness and teaching disaster response strategies. The students, in turn spread the word among their families, meaning that the programme ultimately had over 22,500 indirect beneficiaries. Among the main outcomes of the programme was the creation of educational materials for teachers and students.

Two other guides for teachers (UNESCO, undated; Jimenez et. al., 2008) exist but there is no evidence of their implementation. In addition, seminars, courses and workshops were proposed in the National Plan for Disaster Risk Reduction (see below) but it is unclear whether any have been conducted. Production of materials is also proposed in the Plan but has not yet occurred. Financial constraints are identified as the cause.

Learning Outcomes/Competencies

No list or statement of disaster-related learning outcomes has come to light.

⁹⁵ <http://desastres-no-no.ucr.ac.cr>

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Case 21: Costa Rica

Policy Development, Planning, Implementation Aspects

From 2004 to 2009, Costa Rica implemented a National Plan for Disaster Risk Reduction Education (PLANERRYD) with the objective of creating a disaster prevention culture. PLANERRYD has been implemented by the Ministry of Education in coordination with local authorities and schools. Its main areas are:

- Improvement of school infrastructure
- Teaching and training geared towards the creation of school security teams
- Curriculum development, aimed at producing guidelines to incorporate DRR education in primary, secondary and university education
- Promotion and sustainability, seeking to improve school security (Ministerio de Educación Pública et. al, 2000, 3).

The area of curriculum development was described as follows:

“Through a national curricular revision, PLANERRYD will identify all the topics and cultural contents that have a direct relation with the themes of prevention, mitigation, preparedness and disaster risk reduction. Likewise, PLANERRYD will seek to include absent contents and to define methodological strategies to strengthen curricular changes” (Ministerio de Educación Pública et. al, 2000, 27).

The 2007 report on the national Implementation of the Hyogo Agreement accounts for the implementation of PLANERRYD, stating that it has been adopted by the education sector with an intense level of participation and that primary teachers have received training (CNE, 2007, 12).

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Case 22: Cuba (synoptic case)

Overview

Cuba offers an example of disaster risk reduction issues being addressed through the holistic application of environmental education to the national curriculum. While there are relatively few direct

references in subject and topic headings to disaster risk reduction, the cumulative impact of the curriculum is directed towards building an ethic of environmental mindfulness and a culture of mitigation.

Ongoing improvements in the Cuban national curriculum since 1975/6 have progressively developed teaching and learning content on the protection of flora, fauna, human health, water, soil and atmosphere, among other environmental themes, in school curricula, textbooks and methodological guidelines for teachers.

Between 1976 and 1981 several subjects introduced teaching and learning content on environmental education as a subject specific or cross-cutting element, in combination with extra-curricular activities connected to the protection of the environment and based in the community and locality.

Environmental education focused on community-based actions and participation to develop environment-oriented attitudes, sensitivity and awareness. Pedagogical approaches focused on the formation of values and a knowledge-based outlook on environmental problems in order to foster participation in their solution and, mainly their prevention.

With a view to improving the quality of education to reflect scientific, technical, economic and social development and progress, the Ministry of Education built upon research studies and evolving practices in introducing new curricula, methodological guidelines and textbooks for general education from 1987 through 1991.

As a result, environmental education curriculum content was updated in the following subjects: The World in Which We Live, Natural Sciences, Geography, Chemistry, Biology, Physics, Spanish Literature and History as well as in Civic, Artistic and Vocational Education. An approach to protection was further

developed and solidified as an educational platform for disaster prevention and risk reduction.

Although new content does appear in particular chapters, units and lesson plans, the goal is to approach the material from systematic, interdisciplinary and multidisciplinary standpoints. Throughout the school year, students become acquainted with environmental problems, their causes, effects and solutions.

The World in Which We Live is a subject taught from first to fourth grades at the primary level. It exposes students to nature and to the need for its protection, while guiding them through care-centred actions. The focus of this subject, love and care for nature, is expressed in a practical manner with outings and excursions. In third and fourth grades, Nature Protection Brigades are set up to implement activities aimed at examining incorrect actions that cause contamination and other environmental problems.

Natural Sciences, in grades five and six, explores various aspects of the environment, how they are destroyed, the measures to be adopted for their protection and what actions can be undertaken by students to contribute to their preservation. Emphasis is placed on pollution and its improvement. Other areas of study include: the need to preserve the soil, plants and animals; rational use of natural resources; and transformations in the biosphere caused by humans.

The Geography of Cuba (grade 6) examines: the relationship between nature and socio-economic transformation; fresh-water, its protection and use as a power source; protection of nature in different regions of the country. Geography of the

A smiling boy sits outdoors with other children at the Renato Guitart primary school in Havana, the capital of Cuba.



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Continents (grade 7) examines the need to protect the plants and animals of different regions. It emphasizes the rational use of all resources in confronting global shortage and depletion. General Physical Geography and Geography of Cuba, both taught in eighth grade, and General Economic Geography and Geography of Cuba, in ninth grade, deal with the damage caused by contamination and erosion, as well as protection, landscape preservation and actions to preserve the ecological balance. In General Geography (grade 10) students take an in-depth look at the interaction between nature and society, taking into consideration the processes that are harmful to the environment, such as contamination by oil and pesticides, deterioration of the ozone layer, thermal inversion, pollution (smog) and erosion. The study of protected areas, national parks, biosphere reserves, fauna shelters and others is also included.

Readings found in the Spanish Literature textbooks address environmental issues, disaster preparedness and risk management.

Seventh-grade Biology features plants as an important element in the environment and for human life, giving examples of plant species of economic, medicinal, ornamental, endemic and scientific-technical value, as well as looking at endangered flora. At grade 8 Biology explains the importance of animals within the environment and for humans, and also looks at environmental damage caused by humans that has led to the disappearance and extinction of animals. The course also considers measures and ways to protect fauna. Ninth-grade Biology introduces the issue of pollution, the ecological damage it causes, its negative impact on health and the sanitary measures for the preservation of human health and protection against diseases and epidemics. In grades 11 and 12, Biology

takes a closer look at ecological problems, dealing with the biosphere, habitat and ecological niche, ecosystems, communities, populations and food chains, the diversity of ecosystems in Cuba and alternative approaches to protecting the biosphere.

Chemistry deals with global warming, smog-caused pollution and damage to the ozone layer, acid rain and other issues of fundamental importance to disaster mitigation. The new teaching materials that have been prepared are intended to link and apply chemistry-related knowledge to life, in particular to the issues relating to contamination, detoxification and protection of the environment.

Other high-school subjects address various environmental issues; for example, ninth-grade Physics looks at electronuclear power plants and, as an integral part of the subject, examines safety measures and alternative energy solutions that could prevent disasters and ecological catastrophes.

Surveying curriculum developments in Cuba, we can see there has been a shift away from a subject-isolated and primarily scientific approach to environmental education that focuses on focus on flora and fauna, to an interdisciplinary approach that places with greater emphasis on the relationship between society and nature, and the social, economic and cultural implications of environmental risk and student/citizen engagement.

From 1980 to 1990, the Cuban government worked alongside the National Environmental Protection Programme, placing particular emphasis on environmental problems and related educational actions. They also focussed on relating the main documents governing the nation's political, economic and

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Case 22: Cuba (synoptic case)

social life to education. Recommendations were made to the Ministry of Education for extended inclusion and improvement of environmental education in the national curriculum. Thus, the inclusion of environmental education became an overarching objective. To this end, groups of experts from universities of pedagogical science and provincial and municipal education divisions (assisted by specialists from the Ministries of Science, Technology and the Environment) were assembled to compose guidelines for teachers and books/textbooks for students. New programmes and textbooks were progressively validated and implemented between 1987 and 1991 (National Programme for Environmental Protection, 1993).

In preparing for the new environmental aspect, a number of seminars/workshops were held with work carried out in commissions. Teaching programmes and materials were reviewed with accounts of the experiences of other countries. The rationale behind this methodology was that change was not only about including an environmental topic or content in a given subject, but achieving some articulation, complementarity and interrelation among disciplines, while connecting the various school grades, teaching cycles and levels, syllabi and curricula in general. The outcome was a qualitatively higher phase of the development of environmental education within the national education system, even the interdisciplinary, multidisciplinary and trans-disciplinary possibilities and potentials afforded by the curriculum have not necessarily been fully realized.

A subject in the school curriculum that deals specifically with the topics of disaster prevention and risk management is Civil Defence, taught in the third and fifth grades of primary education, in eighth grade of secondary education and eleventh grade of high school education.

Between 2008 and 2011, without any changes to the curricula, a number of new curriculum and extracurricular developments unfolded as described in *Table 11*.

Key targets and projections for the 2011-15 period in Cuba embrace the comprehensive inclusion of education for sustainable development through all levels of school education; the development of climate change education according to the National Program on Climate Change, and the constant updating of the national strategy on environmental education to meet emerging new hazards (Ministry of Science, Technology and Environment).

Table 11. Curricular and Extra-curricular Developments in Cuba, 2008-11

On climate change	<p>Students, teachers, professors, educators, families, communities and Cuban society at large are gradually and progressively familiarizing themselves with and increasing their theoretical and practical knowledge of environmental protection and climate change through the teaching curricula, etiquette lessons, non-formal and informal education and other activities.</p> <p>Environmental education and culture are being further developed and improved at the provincial level, although the need exists to reach new targets and results due to the seriousness of climate change.</p>
On biodiversity	<p>Students, teachers, professors, educators, families, communities and Cuban society at large are gradually and progressively engaging in practical actions as part of the work done by the 'System of Protected Areas'. The achievements and impact of the educational project are measured, for example, through local training and qualification processes.</p> <p>The policies and actions of governmental and non-governmental institutions and bodies at the municipal, People's Council and local constituency levels include the implementation of best practices. This has led to the protection of flora, fauna, biodiversity and the natural heritage according to the various preservation and management categories set forth in Cuba.</p>
On disaster preparedness and prevention	<p>Students, teachers and adult communities are improving their level of knowledge about the problems of local environment, its causes, effects and alternative solutions.</p> <p>Training activities in disaster preparedness and prevention are being carried out.</p> <p>The school community (boys, girls, adolescents, youths, teachers and professors) is motivated by educational campaigns and actions on sustainable development. The community participates in the improvement and protection of the environment, as well as in disaster prevention, while furthering its responsiveness to such events.</p> <p>UNESCO-associated schools in Cuba are preparing risk maps and evacuation plans for disaster prevention.</p>

(Science and Technology Division of the Ministry of Education, 2011)

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Girls and boys play a game with wooden blocks at the Isabel Rubio rural school in the La Guasasa community, Pinar del Rio Province, Cuba.



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Case 23: Nicaragua

Overview

Nicaragua offers an example of DRR as a cross-cutting theme with some structured infusion into a limited number of subjects.

Introduction

Nicaragua has strong seismic activity, due to its geographic location close to the borders of two tectonic plates and a significant number of active volcanoes. It also is on the route of tropical cyclones that form in the Atlantic. These conditions make Nicaragua one of the countries that is most threatened by natural phenomena. Because of this, Nicaragua has developed a comprehensive legal framework and policies directed at disaster risk reduction and prevention.

Curriculum Development/Integration

Basic and adult education curricula include a risk management programme. The Ministry of Education developed methodological guides for teachers and workbooks for students on DRR as a transversal axis of the school curricula with a special emphasis on prevention and school safety (see Ministerio de Educación, Cultura y Deportes, undated a, b, c, d, e, f, g, h).

Risk management has also been included in different subjects of the national curricula as follows:

Table 12. Risk Management in the National Curriculum in Nicaragua

	Grade	Subject
Primary	1 and 2	Language
	3 and 4	Natural Science
	5 and 6	Environment and Natural Resources
Secondary	7 to 10	Civic Education and Geography

(DIPECHO, 2008, 18)

Pedagogy

Student workbooks provide basic and up-to-date information on risk management, with themes incorporated in short stories, drawings, readings and activities that facilitate learning and practice at home, school and communities. Pedagogy is participatory, based on students' experiences and on developing their attitudes in addition to fostering a general culture of prevention. Active learning approaches are recommended, including individual and group reflections, case analysis, research of available written material and dramatizations (Ministerio de Educación, Cultura y Deportes, undated a, c, e, g).

A girl smiles as she stands by a running tap for displaced families in the town of Palacaguina, 105 km north of Managua, the capital of Nicaragua.



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Student Assessment

The risk management educational programme assessment is eminently qualitative. The teacher must observe and register students' skills in information analysis, behaviour and general attitude, including respect, responsibility, initiative and collaborative dispositions. The programme places special emphasis on formative aspects, taking into account various concepts and procedures. The objective is to foster in students a culture of prevention, mitigation and disaster response in and outside of school (Ministerio de Educación, Cultura y Deportes, undated a, b, c, d, e, f, g, h).

Teacher Professional Development/Guidance

Teachers' guides have been produced with specific curriculum materials for grades 1-2, 3-4, 5-6 and 7-8; there is also a methodological guide for those training to become teachers. The methodological guides provide information and strategies to facilitate the teaching process on risk management at different curricular levels (Ministerio de Educación, Cultura y Deportes, undated, b, d, f, h).

Learning Outcomes/Competencies

Risk management and prevention is one of the components of the sustainable environmental development transversal axis of the school curricula. As such, it is defined as *'the ability to plan, organise and execute activities that serve to prevent, mitigate or reduce environmental risks related to natural phenomena and human activities'* (Ministerio de Educación, 2009). There is a list of expected outcomes for every two grades (1-2, 3-4, 5-6 and 7-8), formulated in terms of skills and/or competencies, some of them hazard-specific and others more subject-specific.

Policy Development, Planning, Implementation Aspects

In 2000, the National System for Disaster Prevention, Mitigation and Response (SINAPRED) was created. SINAPRED is the main instrument for disaster risk reduction and provides the foundation for the National Policy of Risk Management. The National Policy contains the strategies, tasks and activities that should be undertaken by regions and municipalities in order to reduce risk in vulnerable communities.

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Case 23: Nicaragua

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Case 24: Peru

Overview

Peru presents an excellent example of national initiatives and international cooperation when it comes to DRR education. DRR is infused into a range

of primary and secondary subjects, the infusion being informed by guidelines on competencies.

Introduction

In 2007 the Ministry of Education launched its Social Mobilization Safe, Clean and Healthy Schools program (MS ESLS).

MS ESLS promotes educational programmes aimed at the generation of values, attitudes and practices necessary to foster sustainable development. One of its main objectives is to raise awareness and engage the educational and local community in the promotion and generation of a healthy life style, risk management and sustainable use of resources and biodiversity. The National School Curriculum establishes *'the understanding of the natural environment and its diversity and the development of environmental awareness geared towards risk management and the rational use of natural resources, within a modern citizenship framework'* as one of its objectives. (Ministerio de Educación, undated, 21). It also proposes disaster risk reduction education and environmental awareness as a cross- curricular theme.

Curriculum Development/Integration

The National School Curriculum at the primary level covers DRR within the Social Personal division that aims at promoting the full development of students as human beings and active members of society (National Curriculum, 205). DRR is covered specifically in Geography (grades 1 to 6) emphasizing an understanding of natural and anthropic phenomena, emergency preparedness, the National System of Civil Defence and prevention. DRR is also addressed in Science and Environment (grade 5) during the study of earthquakes, fostering *'participation in preventative actions of environmental risks'* (Ministerio de

Educación, undated, 251) as one of its primary outcomes.

In secondary education, DRR is included in the History, Geography and Economy division, promoting *'risk management capabilities and a long-term vision of development alternatives within a sustainable development framework'* (Ministerio de Educación, undated, 385). DRR appears in Geography (Grade 7 to 8) in which the student must be able to *'propose alternative solutions of risk management measures and prevention in rural and urban areas'* (Ministerio de Educación, undated, 390). DRR also appears as part of Science, Technology and Environmental Education (grades 7 to 11) in which the development of environmental consciousness in risk management is specified as an objective. The contents of these relate DRR to climate change, sustainable development and prevention.

The instructions included in the Educational Project of each school (a document produced by schools to explain how they will organize and contextualize the curriculum and teaching methodologies) establish that at least one institutional objective should be related to the inclusion of risk management in the teaching-learning process. Using the National Curriculum Framework foundation, each school should include risk management as a transversal topic with emphasis on areas such as personal development, social studies, and science and the environment. Schools decide the particular way to include the topic in their contextualized curricula. This means that all schools have covered some aspect of DRR, and, as such, the process is generalized.

Students reach for an assignment in a primary school in Llacuash, Peru.



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Table 13. Guidelines and Indicators for DRR Education in Peru: Some Examples for Grades 1 and 2

Area	Competency	Ability	Indicator
Communication	-Writing skills: Communicates experiences, interests, wishes, needs and fantasies through writing.	-Produces descriptive texts and narratives of everyday situations taking into account audience and message. -Produces descriptive, narrative, poetic and instructional texts of everyday situations from a pre-established scheme. -Writes texts in sequential order. -Writes texts in an orderly fashion, relating events to each other.	-Writes short stories and poems taking into account different audiences and including disaster risk reduction messages. -Is able to conceptualize basic definitions of disaster prevention with the help of the teacher. -Writes short stories with defined themes relating to a natural phenomenon, following a logical sequence.
Mathematics	Geometry and Measurements: establishes and communicates spatial relations using reference systems. Recognizes and describes geometric figures, associating them with their surroundings.	-Identifies and makes graphs of still and moving objects, straight lines and curves. -Interprets positions and movements of objects with reference to others.	-Produces graphs to map the distribution of risks in its community. Takes into account movements, positions, straight lines and curves. -Produces a map of community and points out evacuation routes.
Artistic education	Artistic expression: manifests life experiences, feelings and knowledge by using artistic forms of communication.	-Drama. Enjoys and analyses theatrical performances.	-Represents situations experienced during disasters through a puppets show. -Develops a prevention culture through watching shows describing disaster preparedness.

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Case 24: Peru

Pedagogy

Another interesting actor within the Peruvian context is the Disaster Prevention and Study Centre, (PREDES) a non-governmental organization promoting the prevention approach in development. Its main objective is to incorporate a prevention approach into sustainable development⁹⁶. PREDES has also made important contributions to DRR education by developing a methodology guide for the incorporation of risk management in schools. This guide provides clear guidelines and indicators for DRR education in all curricular areas of pre-school, primary and secondary. The table below provides some examples:

It is important to emphasize that this guide has not been implemented at scale. It was developed in a pilot project shared by PREDES, OXFAM and financed by the DIPECHO programme of the European Commission in a limited number of schools in two regions of Peru, through an M.O.U with the Regional Direction of Education of Puno Region, and the decentralized local unit of three districts. PREDES is a private NGO, and it takes part in projects with which the government is occasionally a partner⁹⁷.

Student Assessment

No evidence has been uncovered.

Teacher Professional Development/Guidance

Ciberdocencia is the Educational Portal of the National Department of Development and Training for Teachers⁹⁸. The website is updated regularly and provides access to information, inter-

connection services and materials that contribute to the continuous development and strengthening of research and facilitation skills of teachers in training and teachers in service. A few disaster risk reduction materials can be found on this website.

There seems to be no other specific guideline for teachers apart from those mentioned above.

Learning Outcomes/Competencies

There is a very detailed list of subject-specific learning outcomes for the different levels (kindergarten, primary, and secondary) including competencies that are further divided into attainment indicators. These can be found at the *Diseño curricular nacional de educación básica regular (National curricula of basic education)* (Ministerio de Educación, undated). There is no discrete list of DRR-related knowledge, skills and attitudinal learning outcomes.

Policy Development, Planning and Implementation Aspects

DRR is framed by the National Policy on Disaster Prevention and Response. One of the policy objectives is to strengthen disaster prevention culture by providing training and information to the general public. However, it does not contain guidelines or programmes relating to school curriculum or formal education. In Peru, DRR education is closely linked to environmental protection. In 2008, the Ministry of Environment (MINAM) was created as the administrative authority of the national environmental sector. MINAM has developed a National Plan of Environmental Action (PLANAA) as an instrument for long

⁹⁶ <http://www.predes.org.pe/predes/>

⁹⁷ <http://www.ciberdocencia.gob.pe>

⁹⁸ http://www.predes.org.pe/predes/predesandia_resultados.htm

term environmental planning from 2011 to 2021. One of PLANAA's main objectives is to achieve complete implementation of the National Policy on Disaster Prevention and Response at the national level by 2021. In order to achieve this, Strategic Action 7.6 seeks to strengthen environmental education at basic and secondary levels. The measurement for this objective is the percentage of primary and secondary schools with outstanding achievements in environmental education (Ministerio del Ambiente, 2011, 38).

At the international level, Peru is also deeply committed to regional integration processes that have brought DRR to the forefront. In 2002 Peru became part of the Andean sub-regional mechanism for Prevention and Response in Disasters (CAPRADE) that promotes a DRR Andean Strategy. From 2004 to 2009, Peru participated in a Project to Support Disaster Risk Prevention (PREDECAN) in the Andean Community (CAN).

The main objective of PREDECAN was to 'contribute to reduce vulnerability of people and goods exposed to natural hazards and risks; and to promote sustainable development within the CAN countries'⁹⁹. Education and communication was one of the working areas of PREDECAN which resulted in the creation of a series of documents aimed at facilitating and guiding DRR insertion in school curricula.

⁹⁹ <http://www.comunidadandina.org/predecan/predecan.html>

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Section 10. The Case Studies

Case 25: Egypt

Overview

In Egypt, DRR is generally well accepted at the mainstream strategic and policy levels (the Decree of the Prime Minister for the National Committee¹⁰⁰ and the National Strategic Plan¹⁰¹ were approved, the National Communication Plan¹⁰² developed, and Capacity Building project¹⁰³ implemented as a pilot in three governorates). But DRR in education has only been explicitly addressed

Introduction

The *Egyptian National Progress Report*¹⁰⁵ on the implementation of the Hyogo Framework for Action (2009-2011) states that regarding *Priority 3, core indicator 2*, the level of progress achieved is at level three, i.e., 'institutional commitment attained, but achievements are neither comprehensive nor substantial'. (UNISDR, 2011, 13). DRR is included in the national educational curriculum at the primary and secondary school levels usually under Environmental Sciences although no systematic Professional DRR training programmes are offered to teachers, administrators and students. According to the Ministry of Education's plan, schools regularly implement evacuation simulation exercises for different types of disasters at least three times per academic year. Reviewing and updating information on the existing school curriculum in terms of DRR is also required. For higher education, undergraduate DRR courses are still lacking and postgraduate inclusion of the DRR concept remains an unfulfilled recommendation. Criteria have not yet been set to monitor and evaluate the benefit to society from DRR training, awareness, education and cultural change.

Curriculum Development/Integration

- An initiative for developing the curriculum of basic education (Primary and Preparatory stages) was launched for 2007-2011 to:
Develop the National Standards and modernize curricula at all levels
- Shift from a teacher centred to a learner-centred approach
- Integrate concepts in contemporary life such as environment (including some DRR concepts), human rights, and democracy

in environmental sciences programmes. The National Reform Plan¹⁰⁴ for pre-university education foresees empowering students with the knowledge, attitudes and skills to deal with emergencies in local circumstances, such as earthquakes (after the 1992 earthquake), floods (after the 1994 event in Upper Egypt) and fire.

- Respond to the needs of the community and the labour market in light of the accelerated social and economic growth (and resultant new needs, personal specifications, and competencies and skills that qualify a person to compete in various business sectors)
- Develop positive attitudes and dispositions of learners towards different subject matters. These attitudes will in turn to learn by engaging with and presenting subjects using interesting and appealing methods. The subjects themselves will be more meaningful if they cover real life situations.
Provide learners with experiences that can be applied to real life, and develop their abilities to solve problems and make decisions.
(*Egypt National Strategic Plan for Pre-University Education, 2007/8-2011/12*)

There were limitations, however, in achieving integration and interdependence within and between the various subjects. In the National Plan of Reform of Education themes and issues of DRR have been addressed in four areas:

- The curriculum of basic and secondary school
- Student activities
- Evaluation
- Teacher training.

(Centre for Curriculum and Instructional Materials Development Centre, Ministry of Education, 2011).

The developed curricula (2007/2011) include contemporary issues, mainly those related to the security and safety of

¹⁰⁰ Decree of the Prime Minister No. 1537 (dated 27th May 2009).

¹⁰¹ IDSC (the Cabinet, Information and Decision Support Centre). (2010). *The National Strategy for Crisis/ Disaster Management and Disaster Risk Reduction*.

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Children participate in a group activity during a life-skills peer education session in Abu Tig in Egypt.



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students and the community at large. The curricula also seek to develop and empower students' life skills so they can cope with different aspects of disasters and crises, whether natural or human-induced.

The curricula also include definitions of disasters, disaster management phases, and traditional and non-traditional methods of treatments and solutions. They aim to develop knowledge, attitude, skills and behaviour through active learning and practices. The focus is primarily on earthquakes, floods, fire, desertification, and road and railways accidents.

In the new basic education curricula (grades 1- 9), DRR is covered in terms of knowledge and conceptual development through different subjects: Science, History, Arabic, Social Studies and Islamic Education. Several aspects of DRR are covered by these subjects: security precautions and safety in the case of earthquakes and volcanoes, preventive measures, planning for a crisis, management, procedures to overcome a crisis, preventive measures to reduce environmental risks, deforestation, floods, excessive use of pesticides, air pollution, natural reserves, clean energy, industrial waste, pollution, non-renewable energy, drought, attrition, earthquakes, volcanoes, hurricanes, water erosion (fluvial and marine), conflicts and wars, declining health and social services, high population density, high illiteracy rates.

Secondary education (grades 10-12) curricula are still under development although they contain several manifestations of DRR in subjects such as Environment and Geology, Geography and History. The following are some of aspects of DRR that are addressed: natural hazards, drought, desertification, floods,

hurricanes and storms, earthquakes and volcanoes, locusts, insects, air pollution, water pollution, soil contamination, population increase, illegal Immigration, pollution of the environment, deterioration of lakes, deforestation and marine pollution.

Pedagogy

In spite of the changes in the content of primary textbooks with introduction of new curricula, the ways in which knowledge and related student activities are presented are still traditional. They remain teacher dependent (Centre for Curriculum and Instructional Materials Development Centre, Ministry of Education, 2011)

Teaching methods at the secondary level are even more traditional. Students mainly focus on knowledge acquisition and retention for high scores to go to University. Therefore DRR domains and the other local and global issues included in the secondary school curricula are tightly taught at the knowledge level, ignoring the psychomotor (skills) and affective (interests, attitudes) domains.

Student activities are carried out mainly in schools through open discussion during lessons, communication channels directed by the teacher in search of suggestions and solutions. Some activities require searches on the internet (e.g., searches for the consequences of industrial pollution). This means that teacher is the hub of the learning process. This may be due to the lack of teacher training programmes in psychomotor and affective domains.

Learning may be more active in some private schools. For example, a celebration of the International Day for Disaster

¹⁰⁴ The National Reform Plan for Pre-University Education, 2007/8-2011/12, www.moe.gov.eg

¹⁰⁵ IDSC (the Cabinet, Information and Decision Support Centre. (2011). *Egypt Statement made at the Global Platform for Disaster Risk Reduction.* www.preventionweb.net/english/professional/policies/

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Reduction in Cairo was organized by the United Nations International Strategy for Disaster Reduction Secretariat - Regional Office for Arab States (UNISDR ROAS) at Manarat English (private) Schools, Cairo, on 16 Oct 2011. The workshop promoted DRR in the school, discussed the Children's Charter and played the Stop Disaster game. Discussions were held with students and teachers on broader DRR issues. Children were asked about the impact of disasters on their lives, the networks that exist in their communities to tackle disasters and their priorities for helping DRR to move forward¹⁰⁶.

UNESCO's Cairo Office in cooperation with UNISDR has also produced training and awareness kits that were distributed to some schools to support DDR education in the environmental sciences (UNISDR and UNESCO Cairo, 2010).

Student Assessment

Student assessment is carried out at the national level, (the national test for the baccalaureate at the end of the secondary stage) the governorate level or the school level. Unfortunately, all use achievement tests that aim to measure the lower three levels of Bloom's Taxonomy (knowledge, comprehension and application) while ignoring the remaining three levels (analysis, synthesis, and evaluation).

In terms of DRR, this leads only to the assessment of student knowledge in terms of how well they grasp of facts and concepts related to common disasters like floods, earthquakes and pollution. It does not assess the attitudes of students towards these disasters or how to deal with them in practical ways (skills). The same is true of other local and the global issues included in the curriculum for basic and secondary education.

The system of assessment in the pre-university education is currently under review with suggestions to move to a comprehensive assessment addressing all three (knowledge, psychomotor and affective) areas.

Teacher Professional Development/Guidance

The Academy for Teachers is the principal authority for teacher professional development in Egypt (as per education law). It regulates training, evaluation and assessment of teachers' qualifications and skills. It cooperates with faculties of education at different Egyptian universities and has many projects and initiatives with international organizations and donors communities.

These training programs do not have a direct relation to DRR concepts, attitudes or skills. However, some training of trainers (ToT) has been provided by International organizations (UNDP, UNESCO, UNICEF, EC and others). For example, the First PPRD South workshop for high-level officials, *Disaster Risk Reduction: Mechanisms and Methodologies in Civil Protection*, was organized by the EC in Cairo on 10-11 February 2010¹⁰⁷. Egypt also held the first UNDP-coordinated training on Disaster Risk Reduction in the Arab Region to discuss regional risk trends in May 2011¹⁰⁸. Stand alone training on specific topics, such as earthquakes, fire evacuation and road accidents, is usually conducted by IDSC (the Cabinet, Information and Decision Support Centre) and the Ministry of Education.

Learning Outcomes/Competencies

The *National Standards Document for Education in Egypt* (2004-2009) specifies the desired outcomes of learning for the students to achieve at the end of pre-university education

¹⁰⁶ www.unisdr.org/arabstates

¹⁰⁷ www.utlcairo.org/stampa/DRR, www.euromedcp.eu/.../10-national-platforms-risk-mitigation-policies,

¹⁰⁸ www.unisdr.org/arabstates/news, www.undp.org/cu/crmi/docs/unisdr-alignglobaldrp-rt-2011-en.pdf

(the secondary school). These outcomes include many DRR concepts and skills. However, although a student might possess DRR concepts by the end of the secondary education he/she has certainly not acquired the desired attitudes and skills (National Authority for Quality Assurance and Accreditation of Education, 2004-2009).

Policy Development, Planning and Implementation Aspects

The Strategic Plan of the Ministry of Education (2007/2012) is the source of the pre-university education policy. It includes three major tracks directly related to actual and potential DRR integration: curriculum development, evaluation and assessment, and teacher training.

In summary:

- DRR is generally well taken integrated in mainstream strategy levels and policies.
- DRR in education is not explicitly taught but is mainly included in environmental sciences.
- DRR knowledge is relatively well conveyed at different levels in the content of curriculum. Student activities seem to be very limited and infrequent.
- Teachers' manuals do not include anything directly related to DRR.

Training is a critical issue. It is very limited and if it does exist, it does not reflect a national plan, neither for teachers nor for students.

Monitoring and evaluation only exists in theory. There is no proof of their institutionalized presence.

Officials of the Ministry of Education are now aware of the importance of integrating directly DRR into curriculum, training and evaluation. They seem ready to cooperate but need assistance.

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Section 10. The Case Studies

Case 26: Bangladesh

Overview

Bangladesh offers an example of a highly centralized textbook-driven integration of DRR into formal school curricula, but one

in which pedagogical innovation and teacher capacity building thus far lag behind.

Curriculum Development/Integration

Bangladesh has a highly centralized school curriculum, with the same textbooks used throughout the country. The National Curriculum and Text Book Board (NCTB) has introduced disaster and climate change-related themes (i.e., hazards, vulnerability, preparedness) within chapters in a number of different textbooks, such as Bangla, English, Social Science, General Science (grades 5-7). Examples of topics included in textbooks are as follows:

- Bangla Language (grade 5): poetry on cyclones
- Social Science (grade 6): definitions of disasters, classifications of different types of disasters, planning for disaster mitigation
- English Literature (grade 6): fire (human-induced disaster), drought
- General Science (grade 7): floods, river bank erosion and drought in Bangladesh
- General Science (grade 8): natural disaster: cyclones and tidal surges (Islam, undated)

Chapters within textbooks are regularly updated and reviewed by the NCTB to make them more risk management oriented (Ministry of Women and Children's Affairs, 2010).

Considering there are four different geo-climatic zones in Bangladesh and that different regions are affected by different kinds of hazards (for example, drought in the north, cyclone and tidal surges in the south, river erosion and flood in the middle

of the country) (Das, 2010, 7), it is very questionable whether centralized textbooks can flexibly address regionally and locally specific hazards.

Pedagogy

In contrast to the above-mentioned textbook and knowledge oriented DRR integration in formal school curricula, awareness raising and skills oriented DRR learning examples exist through co-curricular and extra-curricular activities supported by local and international NGOs. For example, as part of a school-based initiative by the International Federation of Red Cross and Red Crescent Societies and Bangladesh Red Crescent Society, a co-curricular activity on DRR and climate change (i.e., a drawing and project design competition on building safer communities) has been developed. This has been shared with the National Curriculum Board of Bangladesh for their feedback and dissemination. Extra-curricular opportunities such as a one-day school fair (by Oxfam GB) and a student club (by Plan Bangladesh) were used for awareness-raising and student participation in school safety and disaster risk reduction (European Commission, 2010).

Because of the general scarcity of DRR learning support materials - not to mention ones using interactive methods - in Bangladesh, adaptation of learning materials from elsewhere so they align with the local culture and context could be regarded as an important and positive step. In 2005, the Sustainable Development Resource Centre supported by ActionAid Bangladesh adapted a learning kit titled *Let's Learn to Prevent Disasters! Fun Ways for Kids to Join in Risk Reduction*¹⁰⁹, and an accompanying

¹⁰⁹ http://www.unisdr.org/files/2114_VL108012.pdf

After Cyclone Sidr, Resma, 9, salvages damaged textbooks in what used to be her room, in the village of Amua, Bangladesh.



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educational board game, *Riskland*¹¹⁰. These first interactive learning materials in Bangla were pilot tested and received very enthusiastically by school children. Students expressed positive feedback on the learning kit. According to one student: 'This game has a lot of interesting things which created much interest among us' (UNISDR, 2007, 7). Another student commented, 'I hope we have similar interesting ways of learning every day' (Ibid, 7).

How to incorporate interactive ways of teaching and learning for DRR within the formal curriculum space remains a challenge. A working paper by ADPC and Action Aid Bangladesh (2010) highlights the issue: 'there is a need to give more emphasis on pedagogy', as 'at the present DRR is included only into TEXT version in different grades' (34).

Student Assessment

The research has thus far found no information on DRR student assessment.

Teacher Professional Development/Guidance

Current textbook-driven DRR curriculum integration is not paralleled by pedagogical support for teachers. There are only small-scale initiatives for teacher capacity building and teacher resource development. Hence, 'considering the sector size, the resources are inadequate' (UNISDR, 2011, 46). To fill the current gap, ADPC and ActionAid Bangladesh (2001, 34) have made a number of suggestions which include: the provision of teaching aids to teachers; providing regular training to newly recruited teachers by the National Teacher Training Institute;

allocation of budget for teacher training and materials development by the Ministry of Primary and Mass Education; developing a close partnership between the National Pedagogical Department and the Disaster Management Bureau.

Learning Outcomes/Competencies

The research has thus far found no elaboration of DRR learning outcomes and competencies.

Policy Development, Planning and Implementation Aspects

In Bangladesh, there are some national programmes and policies that enable DRR formal curriculum development.

For example, the Comprehensive Disaster Management Programme (CDMP)¹¹¹, led by the Disaster Management and Relief Division (DMRD) within the Ministry of Food and Disaster Management (MoFDM), works with 12 Ministries, including Education¹¹². CDMP aims at promoting and implementing a number of initiatives to strengthen disaster management and long-term risk reduction capacities (UNISDR, 2011). In phase one of the CDMP project (2004-2009), its specific focus area was 'professionalizing the disaster management system'. Substantial efforts were made in institutionalizing DRR issues in the educational system. MoFDM drafted the *Learning and Development Strategy*, in which the following objective was included: 'support to National Curriculum and Text Book Board (NCTB), public and private universities, and research institutes (under DM education and training network) to strengthen the capacities to incorporate new courses and carry out search initiatives' (Islam, undated).

¹¹⁰ <http://www.unisdr.org/2004/campaign/pa-camp04-riskland-eng.htm>

¹¹¹ CDMP is assisted by DFID, UNDP and the EC (Ministry of Women and Children Affairs, 2010).

¹¹² National Curriculum and Text Book Board (NCTB), Ministry of Education is one of the partners (Islam, undated).

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There are some education specific action agenda items in the *National Plan for Disaster Management 2010-2015*, whose broad vision is 'bringing a paradigm shift in disaster management from conventional response and relief practice to a more comprehensive risk reduction culture' (Disaster Management Bureau Disaster Management and Relief Division, 2010, III). Including DRR and climate change adaption in teacher training at all levels as well as embedding DRR and climate change adaption perspectives in all levels of education are highlighted (Ibid).

In order to address climate change, the *National Adaptation Programme of Action (NAPA)* proposes the inclusion of climate change themes and issues in secondary and tertiary curriculum (Ministry of Environment and Forest, 2005). *The National Education Policy, 2010*, includes the development of learners' awareness about climate change and the natural and social environment as one of the objectives and aims of education (Aktar, undated). Furthermore, the National Curriculum Coordination Committee approved incorporating disaster and climate risk reduction issues in textbooks for grades 2 to 7. This is a significant instance of governmental commitment to resource allocation for climate change and disaster risk reduction (UNISDR, 2011).

A widening of scope and purpose, allied with more commitment to pedagogical and teacher capacity building, will complement and enrich, and at the same time moderate, the prevailing focus on textbook-driven DRR-related curriculum development.

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Case 27: Maldives (synoptic case)

Maldives is threatened by multiple hazards including sea-level rise, beach erosion, storm surge and cyclones. More than 120,000 children, 30 % of the population of Maldives, are at increasing risk. With its 1.4 meter high waves, the December 2004 Indian Ocean Tsunami had a catastrophic impact on the low-lying coral islands. Schooling was disrupted for 18 months (Das, 2010). Following the 2004 Tsunami, the government of Maldives set up the National Disaster Management Centre (NDMC) to strengthen the national capacity for natural disaster preparedness as well as Tsunami reconstruction and rehabilitation. The existing primary and secondary school curricula at that time did not include information on disaster and risk management strategies and children were not aware of risks around them (UNDP, undated, a).

The Ministry of Education and UNDP began addressing DRR in schools, first, developing a school disaster preparedness manual and offering a pilot training of trainers on school based disaster preparedness planning in 2007 (UNDP, undated, a).

In 2009, the Education Development Centre for the Ministry of Education supported by UNDP began an eight-month project on mainstreaming disaster risk reduction into the primary and secondary curriculum. The main objective of the initiative was

'to minimize the impact of disasters through the dissemination of information' (Ibid). Although the initial intention of the project was to pilot the project in six schools (four in the capital Male and two on Fuvahmulah island), due to the level of enthusiasm and interest among school communities, the number of pilot schools was increased to 19.

Phase one of the project offered capacity building training on DRR to Ministry of Education staff, heads of school, school supervisors, and selected teachers from pilot schools. They were offered opportunities for both in-country and international training on DRR. The Philippines Centre for Disaster Management in partnership with the Ministry of Education offered the international training. Those trained then provided training in both pilot and non-pilot schools, thus reaching out to 473 teachers and 800 students from the 19 pilot schools¹¹⁵.

It is important to note that phase one of the project involved parents, atoll chiefs, community leaders and other stakeholders in some of the DRR training session. 'Since the concept of DRR is new in the country, this holistic approach was used to ensure that a solid foundation is laid toward embracing the program and its sustainability¹¹⁶'.

¹¹⁵ <http://www.undp.org/comtoolkit/success-stories/ASIA-Maldives-crisisprev.shtml>

¹¹⁶ Ibid.

A girl attending a class in which teachers supervise art and play activities to help children traumatised by their experience during the tsunami.



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During phase one of the project two students' books and two teachers' guides (grades 1-7, 8-9) were developed. The contents of these books were linked to a number of subject areas so that DRR could be integrated into the national curriculum: Biology, Chemistry, Dhivehi, English, Geography, General Science, History, Islam, Social Studies, among others¹¹⁷. Student books covered topics relating to broad environmental, social and cultural contexts of the Maldives, different kinds of risks, mechanisms of natural disasters, and personal and structural response mechanisms (Shakir, 2009). Similarly, the two teachers' guides covered a number of different types of natural hazards, disasters and disease epidemics.

In October 2009, a draft version of the teachers' guides and students' books were field tested in pilot schools with 145 teachers and 800 students participating. The Ministry of Education reviewed the final versions, updated after the field tests¹¹⁸. These materials were not printed during the phase one period of the project due to financial constraints but UNDP plans to print and distribute them during phase two of the project. During phase two, DRR training syllabuses for in-service and pre-service teachers are under development (UNDP, undated, b).

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¹¹⁷ Ibid.

¹¹⁸ Ibid.

Section 10. The Case Studies

Case 28: Nepal

Overview

The Nepal experience highlights the question of whether primarily textbook-driven curriculum development can meet the skills and dispositional learning outcome ambitions of DRR education.

It also raises important questions about centrally driven DRR curriculum development in a national context composed of diverse and proudly local communities often facing their own particular mix of natural hazards.

Introduction

Nepal's *National Strategy for Disaster Risk Management* promulgated by the Ministry of Home Affairs (MoHA) in March 2008 pointed out that the 'level of disaster awareness and knowledge on disaster risk management is conspicuously low at all levels,' and that, with the exception of a few initiatives, DRR was not included in the formal curriculum at any level, grade 1 through university (MoHA et al, 2008, 35; Upadhyay, 2009, 24). The recommended strategic activities proposed were therefore: developing/modifying national policy on education and implementing it such a way as to recognize schools as important centres for propagating disaster awareness, and implementing disaster education (MoHA et al., Ibid). The *National Strategy* has been interpreted as evidence of understanding that DRR yields economic and developmental benefits, especially for a high risk-prone country, and that education is key (Upadhyay, 2009, 18).

In Nepal increasing governmental commitment to disaster-related school curricula can, in large part, be attributed to the ActionAid *Disaster Risk Reduction through Schools* (DRRS) project (2006-2011). Implemented in Nepal and six other countries, a key strand of the project was 'advocacy work lobbying for the inclusion of DRR in school curricula' (ActionAid, 2011). The advocacy was primarily directed towards textbook reform.

Curriculum Development/Integration

Upadhyay (2009, 27-8), a national consultant on DRR in education, has reviewed current Nepali textbooks. In Social Studies he has found three topics on natural disasters (role of local agencies, causes of droughts and famines, effects of cyclones) and two

topics on human-induced disasters (careless use of electricity, consequences of development on the environment) in grade 9. In grade 10 Social Studies he has found one natural disaster-related topic (covering earthquakes, volcanoes, floods and landslides). (Ibid. 27).

In the Science curriculum, he has discovered a grade 1 and 2 lesson on the effect of storms and one on the dangers of electricity, a grade 5 topic on natural disasters (environmental balance, landslides, soil erosion, volcanoes, human consequences of natural disasters), a grade 6 topic on fire, a grade 8 lesson on air pollution and its effects, a grade 9 lesson on natural disasters (covering floods, landslides, earthquakes, volcanoes) and a grade 10 lesson on pollution and its health effects (Ibid. 27).

Investigating the population and environmental education textbook, he has found topics on floods, landslides and soil erosion (grade 6), earthquakes, cyclones, floods, landslides and soil erosion (grades 7/8), environmental degradation and its disaster outcomes (grade 8) and natural disasters (volcanoes and earthquakes (grade 9). (Ibid. 28)

The Nepali language textbooks cover tsunami precautions (grade 2), causes of landslides (grade 5), drought and environmental pollution (grade 6) and the consequences of deforestation, floods, desertification, heavy rain, scanty rain, soil erosion and prevention (grade 9) (Ibid).

Upadhyay's conclusion is that the Nepali curriculum and textbooks 'are not fully disaster sensitive until now' but that 'substantial scope' exists to include DRR content (Ibid. 29).

Children sit on a rooftop, watching the approach of a storm, in Sawa Khola Village, Mugu District of Nepal.



© UNICEF/NYHQ2009-0870/Sokol

'Disaster curriculum,' he writes, 'is not included as a crosscutting subject in the school level curriculum and textbooks of Nepal. 'He goes on to develop a full schema of DRR topics and 'messages' for implementation, grades 6 to 8 (Ibid. 36-41), something that that the Centre for Policy Research and Consultancy had also covered in their August 2007 report on behalf of the Action Aid DRRS project (see below). (CPRc, 2007, 21-2).

Pedagogy

The textbook-driven nature of DRR curriculum development reflects the centrality of the textbook to teaching and learning in Nepal. Textbook reform, the chosen strategy of DRR-related curriculum advocates and developers (and the focus of the both the Centre for Policy Research and Upadhyay in their respective reports on disaster-related topics in the curriculum of 2007 and 2009), is a pragmatic approach insofar as it more easily secures a greater presence for DRR in the Nepali curriculum. It is an approach, however, that often leaves the requisite active pedagogy for realizing the skills and dispositions for disaster risk preparedness, prevention and mitigation undeveloped.

'At present,' the Centre for Policy Research and Consultancy report states, 'the textbooks are of vertical type and currently CDC is attempting to give the curriculum and textbook a horizontal shape...Pedagogy has a key role in knowledge transmission and learning competencies' (CPRc, 2007, 17). Two years later, Upadhyay asks that pedagogy be considered while developing curriculum on DRR education (2009, 29).

A headline in an ActionAid retrospective on its 2006-11 project reads: 'Our work is still not done ...so further work on pedagogy' (ActionAid, undated, a).

Student Assessment

No details of DRR-specific student assessment have been found.

Teacher Professional Development/Guidance

The Centre for Policy Research and Consultancy (2007, 16) and Upadhyay (2009, 28) both review available disaster-related content in teacher guides but make no reference to any guidance on the actual conduct of DRR lessons.

According to the CPRc 2007 report, CDC officials reported that there were no teacher training programs focusing on DRR at that time (Ibid. 16). A presumably more recent ActionAid document refers to the organization's involvement in training teachers and developing teacher guides (ActionAid, undated, a) while some recent CDC disaster-related curriculum developments involve preparing for teacher orientation to the new curriculum (see below).

Learning Outcomes/Competencies

No list or statement of DRR-related learning outcomes or competencies has been located.

Policy Development, Planning and Implementation Aspects

In 2006 ActionAid launched the Nepal arm of its *Disaster Risk Reduction through Schools* project in cooperation with the Centre for Policy Research and Consultancy (CPRc). Efforts were directed to persuading the Curriculum Development Centre (CDC) of the Ministry of Education of the importance of integrating DRR in the curriculum.

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Case 28: Nepal

A first step was to hold a sensitization workshop to alert Ministry of Education, CDC, teacher unions, media, disaster expert and teaching personnel to the government's declared commitment to HFA Priority 3, core indicator 3.2. In this way, the CDC staff was made aware of the political commitment to building disaster resilience through education. (ActionAid, undated, a).

A second one-day workshop on how to integrate DRR education into the curriculum in light of HFA followed. Workshop participants included CDC staff and other educational and disaster experts. The workshop identified 'key and essential steps' and recommended forming a taskforce of CDC personnel, other educationalists and disaster experts to move things forward (Ibid). The taskforce, including CDC membership, undertook a mapping of school texts, grades 1 to 10, to identify existing disaster-related topics and to identify further windows of opportunity for the integration of DRR. In the mapping process, two workshops with CDC subject committee experts were held to cull reactions on the relevance of DRR to specific subjects as well as ideas on potential areas for DRR integration, and to lobby for inclusion of DRR-related curriculum within national curricula and textbooks (CPRcC, 2008, 7). A report, *Disaster Sensitivity of School Curriculum, Textbooks, and Teacher Training Packages* (CPRcC, 2008) was eventually produced.

The outcome was the integration of DRR strands, especially in the Science textbook for grade 9, but also, to some extent, in Social Science and environment and population textbooks (see above). While textbook coverage of disasters from prior to the project had focused on climatological and geological

causes, the revisions also encompass issues of disaster preparedness as well as behaviour during disasters (ActionAid, undated, a).

CDC, supported by UNDP, is now engaged in an 'ongoing process' of introducing DRR-related content into school textbooks (UNISDR, 2011, 58). CDC is also presently conducting a DRR lower secondary level curriculum review. 'The exercise will be instrumental in revising the existing curriculum at Lower Secondary Level (Grade 6-8) and the curriculum is expected to be revised very soon.' DRR reference materials for students and a teacher orientation package have been prepared (Ibid).

The Nepalese approach raises a number of issues. One concerns the centralized ('one text fits all') nature of curriculum development given the disparate nature of hazards facing communities. 'The country faces different hazards in different parts and they have diverse resources to cope with disasters' (ibid. 59). In addition, Nepal is characterized by closely-knit rural communities, in which school is a cornerstone of daily life and local culture (Upadhyay, 2009, 18). An overly centripetal curricular approach to DRR leaves little space to capitalize upon these realities. A promising development, however, is that 'CDC is planning to adopt flexibility in curriculum allowing schools to introduce contextual curriculum and textbooks,' a move that would be responsive to the 'emerging context of New Nepal with (its) possible federal system of governance' (CPRcC, 2007, 17).

Adherence to textbook-driven curriculum development also tends to emphasize what is achieved towards knowledge-based DRR goals with less emphasis given to the development of

DRR-related skills and dispositions underpinned and reinforced through practical engagement.

Textbooks are not the most effective vehicles for a holistic DRR education intent upon addressing DRR skills and dispositional learning outcomes (honed by praxis), building cross-curricular synergies, connecting curricular to co-curricular initiatives, taking learning into the community, aligning that learning with community culture, and harnessing community solidarity behind schools that are cornerstones of tight-knit communities.

Recommendations for the future in the Nepal national progress report on implementing *Hyogo Framework for Action*, priority 3, core indicator 2 (UNISDR, 2011, 58) include:

- Reviewing existing school curricula from primary to higher secondary level and including DRR content in a systematic way
- Conducting orientation training for teachers at the national and regional level and developing training of trainers (who should 'carry out similar training to all teachers throughout the country'); additionally, up-scaling the training to cover hazards in specific geographical areas
- Developing practical training materials for teachers and providing training not only to enhance their understanding of DRR issues but also their ability to contextualize the content to local risks and needs.

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Case 29: Benin

Overview

Benin offers a handbook-led project approach to DRR within selected subjects at the lower secondary level using climate change education as the vehicle. The production of guides for teachers and students spearheaded curriculum development.

An initial project has just been completed. Consolidation and dissemination of the achievements of the project are highly dependent on the availability of further funding.

Introduction

Since the 1992 Rio Summit, Benin has developed institutional and regulatory frameworks to address environmental challenges and to integrate environment related issues into education. In particular, the 1994 *Environmental Action Plan* puts forward strategies for the introduction of environmental education into Benin's educational system. The Joint Evaluation of the Vulnerability to Current Climate Variations and Extreme Weather Events in Benin (ANCR-GEM), formulated in 2008, identifies broad capacity development needs for climate change management in Benin. In terms of education, ANCR-GEM identified the support needed to develop teaching materials on climate change themes as well as for the integration of climate change issues into school and university syllabuses and training modules. Some teaching aids for environmental education had previously been developed. However, they have hardly been used except at for the primary level. Those teaching aids also lack a well-developed treatment of climate change issues (Ministry of Secondary Education et al. 2009a).

Curriculum Development/Integration

A capacity building project for Benin secondary schools on the impact of climate change and adaptation strategies was implemented from 2009 to 2011 by the non-governmental organization, GARDIEN, supported by CC DARE¹¹⁹. In Because over 46 percent of the population in Benin is under 15 years old, integrating issues of climate change at the secondary school level is considered to be the most effective way of addressing the long-term threats of climate change (Ministry of Education et al, 2009a).

During the first stage of the capacity building project a curriculum review was conducted to identify existing opportunities for integrating issues of climate change into the secondary school curriculum. Document analysis and questionnaire surveys consisting of a sample of 300 students and 90 teacher revealed a lack of a focus on climate change in the existing syllabus, a lack of knowledge of climate change issues among both teachers and students, and a shortfall in teacher capacity to facilitate climate change learning (Ibid).

The curriculum review identified that three clusters of subjects (i.e., Physics, Chemistry and Technology, Life and Earth Sciences, and History and Geography) were best equipped to integrate climate change themes. Specific integration points in which climate change issues could be best addressed within the three clusters were identified (Ibid). The table below identifies integration points for climate change issues in the History and Geography curriculum (Ministry of Education et al, 2009a, 18-19; Ministry of Education et al, 2009c, 22).

Tables of integration points were also created during the curriculum review for Physics, Chemistry and Technology and Earth and Life Sciences, teachers being encouraged to 'refer to those tables when preparing lessons to take into account the learning situations concerned and, in particular, issues linked to climate change in their subjects' (Ministry of Education et al, 2009c, 20).

¹¹⁹ CC DARE is a UNDP and UNEP-led programme providing technical and financial support to countries in Sub-Saharan Africa and Small Island Developing States for flexible and targeted actions to address climate change adaptation challenges within their development and decision making frame works. This case study discusses one of two climate change adaptation projects selected for implementation in Benin. <http://ccdare.org/>

Table 14. Integration Points for Climate Change Issues in the Benin History and Geography Curriculum

Year of secondary curriculum	Learning situation (LS)	Integration points	Issues
Year 1 (age 11/12)	LS 2 Local environment and idea of environment (my life environment and idea of environment)	III. Importance of my environment in my life, for my community and my country B. How I should behave vis-à-vis my environment	Awareness of climate change Knowledge of climate change (cause, effects and impacts) Development of response strategies (adaptation, mitigation)
	LS 4 Tropical environment of Africa	III. Threat to tropical environment of Africa A. Deterioration of plant life, soil and loss of biodiversity B. A few examples of threats	Impact of climate change
		IV. Actions to protect and safeguard the tropical environment of Africa	Strategies to adapt to the impact of climate change (e.g. reforestation, fight against coastal erosion, protection of riverbanks)
Year 2 (age 12/13)	LS1 Temperate environments and human activities	III. A few possible solutions	Strategies to reduce greenhouse-gas emissions (e.g. encouragement of the use of public transport, control over industrial pollution, use of electric, hydrogen or biofuel engines, adaption of nuclear power)
	LS 2 Polar environments and human activities	III. Economic activities and way of life A. In Arctic environments - Consequences of modern activities in the Arctic	Melting of glaciers Rising sea levels Strategy to reduce greenhouse-gas emissions (control of industrial pollutions)
Year 3 (age 13/14)	LS 3 Natural environment in Benin	B. Natural environments threatened and possible protective measures - Possible actions to protect natural environments in Benin	Adaptation strategies (preservation or restoration of natural environments, reduction of burning of vegetation), limitation of destructive forestry practices and charcoal burning
Year 4 (age 14/15)	LS 4 Resources and development processes in Benin: restrictions and challenges	II. Impact of poor management of resources on the development process	Reduction of resources (quantity, quality) such as water and wood Increase in vulnerability faced with the impacts of climate change

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Case 29: Benin

Pedagogy

Based on the findings of the curriculum review, the second stage of the project developed two separate secondary school student and teacher guides on climate change, its impact and adaptation strategies. In the teachers' guide, there is a section on 'Teaching techniques, methods and strategies to take on board climate change concerns'. It explains that the goals of Benin's education system are primarily based in socio-constructivist and cognitive models, valuing learning through problem solving and project development. Teachers are considered as guides or facilitators who motivate learners. However, lecture style teaching was predominant and learner-centred practical approaches had been rarely used in the classroom. Examples of suggested teaching and learning methods are: discussion, debate, survey (gathering and analyzing information), simulations and role play (Ministry of Education et al, 2009c, 64-69).

The guide for secondary students aims at building their capacities in matters relating to climate change. It has two sections: first, general information on climate change globally and in Benin, the future impact of climate change, and climate change adaptation measures; second, thirty 'reinvestment situations' in which students can apply acquired knowledge in order to develop their cross cutting skills and interdisciplinary/multi-disciplinary skills¹²⁰. One activity example of a reinvestment situation is the creation of an information pack to raise awareness among local authority officials in the drought affected northern region of Rama (Ministry of Secondary Education et al. 2009b).

Student Assessment

Developing student assessment details was not the part of the project¹²¹.

Teacher Professional Development/Guidance

The teacher's guide has the following four sections: 1. analysis of environmental education in Benin and of existing curriculum opportunities for integrating climate change in the secondary education syllabus; 2. general information as well as specific details necessary for understanding the climate change phenomenon, its impact on different sectors, and response strategies; 3. teaching techniques, methods and strategies to effectively address climate change within the existing secondary school syllabus in Benin; 4. a list of opportunities ('reinvestment situations') to which students apply what they have learned through problem-solving activities involving everyday difficulties and developing small projects in order to mobilize interdisciplinary and cross-cutting skills (Ministry of Secondary Education et al. 2009c).

In the process of developing the two guides, a few workshops with teachers were held around the country to integrate their feedback. Participating teachers expressed great enthusiasm for the guidebook development. Previously there had been no hands-on teaching materials for teachers on climate change in the country¹²². However, teacher training in using the materials has thus far not taken place and, given lack of funding (see below), is not a future prospect at this point.

¹²⁰ Cross-cutting skills and multidisciplinary/interdisciplinary skills which Ministry of Secondary Education (et al. (2009c) suggest are in fact a mixture of skills and attitudinal goals. Under the heading of 'cross-cutting skills', examples include 'making use of available information', 'working in cooperation', 'being ethical' and 'communicating clearly and appropriately'. Examples of 'multi-disciplinary/interdisciplinary skills' include 'acting individually and collectively

in mutual respect and in an open-minded way' and 'following responsible living habits in terms of health, sexuality and safety'.

¹²¹ Johnson Nkem, CC-DARE/UNDP Nairobi, to Fumiyo Kagawa, 22 November 2011 (telephone interview).

¹²² Ibid.

Children attend class at a school recently damaged by floods in Kpoto, a village in Zagnanado Commune of Benin.



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Learning Outcomes

Developing learning outcomes was not part of the project remit¹²³, although outcomes can be inferred from the tables of integration points (see above).

Policy Development, Planning and Implementation Aspects

At the time of writing, this secondary school capacity building project has just been completed. To mark the end of the project, the final pedagogical workshop on the curriculum took place with 40 ministry level participants in November 2011. It was followed by an official ceremony at which all the project documentation was passed over to the Ministry of Education who approved the materials development. With a preface written and signed by the Minister of Environment and Minister of Education, the teacher and student guidebooks are ready for distribution. It is the intention of UNDP to distribute them widely, in hard copy free-of-charge, across the country. However, this plan has not yet been realized given the lack of funding in the foreseeable future. It is also UNDP's intention to share the project outputs widely across the region. Thus far Togo, Senegal and Niger have expressed their interest in replicating and disseminating the materials developed in Benin. There is also an emerging intention to capitalize on the project experience in a new UN CC Learn pilot project (2011-2013)¹²⁴ in Benin¹²⁵.

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¹²³ Ibid.

¹²⁴ Benin has recently selected to be one of the three countries to implement a UN CC Learn pilot project (2011-2013) to strengthen national capacity for human resources, learning and skills to address climate change. http://www.unclearn.org/news/un_cclearn_steering_group_selects_pilot_count

¹²⁵ Johnson Nkem, Ibid

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Case 30: Nigeria

Overview

Nigeria is currently undertaking a formal curriculum review with a view to integrating climate change adaptation, disaster risk reduction and gender issues at all levels of curricula.

Its emphasis on linking gender issues with DRR and climate change adaptation will be worth monitoring, especially given that DRR and climate change are rarely approached through a gender lens in school.

Introduction

At the time of writing (November 2011), climate change and DRR curriculum integration at both the primary and secondary level are ongoing but in their early stages in Nigeria.

The National Education and Research and Development Council (NERDC), the government agency responsible for curriculum development, is undertaking a DRR curriculum review in conjunction with the National Emergency Management Agency (NEMA). Their curriculum development initiative falls under the Africa Adaptation Programme (AAP)¹²⁶, launched in 2010 by the United Nations Development Programme (UNDP) in partnership with the United Nations Industrial Development Organization (UNIDO) and UNICEF with financial support from the Government of Japan¹²⁷. In addition to developing national climate change policy, an advocacy network, hydropower generation and more adaptive farming practices, AAP for Nigeria undertakes school curricula reviews as well as the development and implementation of teacher education programmes on climate change. UNICEF-led components include improving skills-based education to address issues of climate change at the basic education level (UNICEF WCARO, 2011).

Curriculum Development/Integration

Upon the completion of the curriculum review by NERDC and NEMA climate change, DRR and gender issues will be integrated into relevant subjects¹²⁸.

There is agreement among the key stakeholders involved in the curriculum review and development process that no new subjects will be created and DRR themes and topics will be infused into carrier subjects.

The latest DRR curriculum planning document (drafted by NERDC, NEMA, experts from the University, Fire Service, Primary and Secondary School system) are structured according to a consistent three to five key themes for all grades at primary, junior secondary and senior secondary school levels. They are: 'You and Disaster', 'Disaster Risk Reduction Practice', 'Disaster Management', 'Disaster Risk Reduction Administration', 'Safety Measures against Disasters'. At the junior secondary level, the topic of civil unrest appears under these themes (NERDC/ NEMA, 2011).

Pedagogy

Pedagogical approaches are to be developed once the curriculum review is completed. The *Teacher's Guidance Pack on Climate Change Adaptation, Disaster Risk Reduction and Gender Issues*, currently under development, is being drafted as a collaborative venture between the Fresh & Young Brains Development Initiative, the Federal Ministry of Education and UNICEF (FME/ UNICEF, 2011a).

The *Teacher's Guidance Pack* lists of curriculum integration points for teaching about climate change adaptation, DRR and gender issues in the following subject areas: Agriculture, Biology, Chemistry, Computer Science, Economics, English, English Literature, Elementary and Integrated Science, Fine and Applied Arts, Food and Nutrition, Geography, History, Home Economics, Introductory Technology, Mathematics, Other Languages, Physical and Health Education, Physics, Religious and Moral Instruction, Social Studies. Examples include:

- *Mathematics*: simple calculations of carbon and ecological food prints, equations and gender equality

¹²⁶ Alice Akunga & Judith Giwa-Amu, UNICEF Nigeria, to Fumiyo Kagawa, 19, 31 October 2011.

¹²⁷ <http://www.undp-aap.org/>

¹²⁸ Kayode Fagbemi, National Emergency Management Agency, to Fumiyo Kagawa, 29 November 2011.

Students learn proper hygiene practices, in Inyima Village, Nigeria.



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- *Home Economics*: rain and floodwater harvesting, school gardening, the impact of fuel wood cooking on women and children, gender roles, personal hygiene
- *Geography*: demography and population, coastal population, vulnerability to flood, drought and desertification, urban and rural planning, weather and seasonal forecasting, infrastructural construction, dredging and waterways, drainage systems, erosions, landslides, cyclones, transportation and emissions, hydrology (Ibid).

The *Teacher's Guidance Pack* indicates that 'teaching methods should be more student-centred than teacher-centred' (Ibid). More specifically, it advocates using a variety of pedagogical methods and resources at primary level: stories; cartoons/ comic books; jokes; puzzles; games; sports; core theatre presentations (dance, drama, fiction, poetry); creative arts; graphics/special drawings/colouring; photography and short films; printed, electronic and social media with children as producers and presenters; songs; role plays and simulations; quizzes and debates; child-focused group discussions; children's parliament (Ibid).

At the junior secondary level, the following pedagogical approaches and resources are proposed: hands-on experience, quiz competitions, video films, theme clubs and groups on social media, drama, debates, excursions, exchange programmes and field trips (Ibid).

At the senior secondary level, the *Teacher's Guidance Pack* reminds teachers of the diverse cultural, ethnic, religious, socio-economic backgrounds of students and calls for

'sensitivity, particularly in handling wide-ranging, cross-cutting and currently evolving subjects such as gender and climate change' (Ibid).

Student Assessment

Student assessment details are not currently available. Forms of assessment may be developed once the current curriculum review is completed.

Teacher Professional Development/Guidance

The *Teacher's Guidance Pack* aims to:

- Help teachers to enhance their knowledge of climate change and sustainability concepts;
- Empower them to organize pupil/student activities and build up their skills in strategic planning and the implementation of school curricula on climate change and Disaster Risk Reduction;
- Promote a collaborative culture among teachers in which there is a sharing of experiences within intra-school and inter-school spheres;
- Include an educational pack to demonstrate ways to conduct climate change education programmes (Ibid).

The *Pack* includes a section on gender and climate change. It overviews basic gender concepts and gender perspectives and explains the relevance of integrating gender with climate change adaptation and DRR in school curricula, while highlighting existing tools for gender mainstreaming into climate change initiatives (Ibid). Examples of gender specific themes at the junior secondary level include: 'You, Gender Equity, Climate Change and Disaster', 'Gender, Climate Change, Disaster Risk

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Case 30: Nigeria

Management and Administration', 'Gender Climate Change Response and Disaster Risk Reduction' (Soetan, 2011).

Another teacher manual, currently under development, is *Skills-based Learning Material and Packages on School Gardening as a Core Strategy for Climate Change Adaptation at the Basic Education Level*. It 'aims at alerting the learners on the importance of school gardening as a platform for learning skills and how food security could be ensured'. Moreover, 'it is considered very important for the learners at the Basic Education level' the manual states, to 'be empowered with some of the preventive and mitigating strategies of climate change on (sic) school gardening' (FEM/UNICEF, 2011b). It is not clear at this juncture how the proposed six modules are to be linked to subjects.

Learning Outcomes/ Competencies

Learning outcomes/competencies might be fully developed once the curriculum review and integration process is completed. In the draft DRR curriculum planning document mentioned above, each DRR topic has 'performance objectives' indicating student competencies to be developed. They are exclusively knowledge-based competencies. Students are expected to obtain understandings of key DRR concepts, causes and effects of disasters, public and private disaster management mechanisms, first aid, road safety, risk identification and avoidance, and communication during an emergency.

Policy Development, Planning and Implementation Aspects

Incorporating DRR into school curriculum is highlighted in the *Nigerian National Disaster Framework*: 'Disaster risk reduction strategies shall be incorporated into education curriculum at all levels' (Federal Republic of Nigeria, 2010, 39).

The new DRR curriculum documentation is soon to be scrutinized by experts on DRR and curriculum development. DRR curriculum infusion will then need to be approved by the National Council on Education comprising all stakeholders in the Education sector. Once approved, it will become compulsory for all schools in Nigeria. Curriculum is reviewed in Nigeria every five years: the next review is due in 2012. It is anticipated that DRR curricula will be part of the next review with implementation starting from either 2012 or 2013¹²⁹.

In terms of scaling up, it is also important to note the different informal efforts at different levels that are being made. In the B-Field office of UNICEF which covers eight South-West and South-South Nigerian states, awareness building about CCA has been undertaken. Further efforts in this direction are to begin with the dissemination of the finalized draft of the materials to schools beyond the two AAP pilot states. School competitions which have commenced at the state-level (Cross River and Niger states quiz, debate and drama competitions) will be extended to regional and national levels in the next programme year since a few other Nigerian states have, by other than UNICEF efforts, advanced in the area of climate change adaptation interventions¹³⁰.

¹²⁹ Ibid.

¹³⁰ Alice Akunga to Fumiyo Kagawa, 25 November 2011.

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Section 11. Checklist of Optimal DRR Curriculum Practice

By way of summary, this study closes with a checklist of what have emerged as key features of effective disaster risk reduction curriculum implementation and practices.

DRR Curriculum

- Are students receiving cumulative exposure to disaster risk reduction through the primary and secondary grade levels?
- Are students within each grade level receiving reinforced exposure to disaster risk reduction across the curriculum?
- Does the disaster risk reduction curriculum consider multiple hazards?
- Is there space within the curriculum for students to consider and address local and community hazards and disaster risk reduction practices?
- Does the curriculum explain the causes and effects of hazards?
- Does the curriculum explain that disaster risk multiplies according to the level of hazard and degree of vulnerability but that it can be reduced according to societal and individual capacity to cope?
- Does the curriculum concretely address disaster prevention, mitigation, preparedness and resilience building?
- Does the curriculum establish synergies with co-curricular or extra-curricular disaster risk reduction initiatives?
- Does the curriculum treat both rapid onset and slow onset disasters?
- Does the curriculum include climate change education?
- Does the curriculum explore gender aspects of disaster risk reduction?
- Does the curriculum consider disaster risk reduction education within a framework of education for sustainable development?
- Does it also establish synergies with emergency education, environmental education, child and human rights education, child-friendly education and life skills education?

DRR Pedagogy

- Is learning and teaching directed towards realizing skills and attitudinal and dispositional learning outcomes as much as knowledge and understanding learning outcomes?
- Does learning stay in the classroom or does it also take place in wider school and community contexts (the 'field')?
- Are students given opportunities to practice disaster risk reduction skills in real life contexts through action learning?
- Are children offered the opportunity to assume a catalytic role and horizontal forms of leadership within local community disaster risk reduction?
- Is interactive learning a regular feature of the DRR classroom?
- Is experiential learning (around both actual and surrogate experience) a regular feature of DRR lessons?
- Do students work in teams to undertake DRR-related enquiry and research?
- Are students encouraged to engage with hazard and disaster at an emotional/feelings level?
- Are students called upon to exercise their imaginations through DRR learning?
- Are efforts made to use textbooks in interactive and action-oriented ways?
- Are special efforts made in terms of sensitive classroom facilitation when disaster risk reduction learning is happening in post-trauma contexts and/or contexts also marked by slow onset disaster?

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 equal assessment space given to DRR-related skills and attitudinal development as to 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?

DRR Teacher Professional Development

- Is a DRR handbook or manual made available to teachers?
- Does the handbook or manual offer guidance on both DRR lesson content and the facilitation of interactive learning?
- Is DRR teacher training made available covering both DRR content and practice in interactive learning?
- Is post-training aftercare made available to teachers in the form of trainer visits to schools, follow-up sharing sessions and structured co-evaluation of lesson facilitation?
- Is intermediate and advanced training to hone the professional skills of the 'DRR reflective practitioner' made available?
- Is training in the facilitation of affective (emotional) learning offered so as to meet the psychosocial needs of students?
- Is DRR teacher guidance available on a website or through a practical professional journal?
- Are principals trained in DRR curriculum and in the leadership of DRR developments in their schools?
- Are school inspectors and local school system administrators made familiar with DRR curriculum initiatives through training sessions so they are best placed to support in-school curriculum development?
- Is inter-sectorial training in DRR made available so that teachers, media personnel and others can reinforce DRR messages in formal, non-formal and informal learning settings?
- Is initial teacher training in DRR teaching and learning available?
- Is university-based in-service professional development in disaster risk reduction education available?

Section 11. Checklist of Optimal DRR Curriculum Practice

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 widened and deepened grade by grade?
- Are learning outcome lists periodically evaluated and revised in the light of accumulating experience?
- Is the range of learning and teaching approaches employed fit for purpose in terms of realizing the spread of agreed learning outcomes?
- Have clear and direct linkages between learning outcomes and forms and styles of assessment been established?

Integrating Disaster Risk Reduction in the Curriculum

- Are legal/regulatory mechanisms and educational policies in place to enable the mainstreaming of DRR curricula?
- Is DRR curriculum development working in step with the national cycle of curriculum review and revision?
- Is ongoing textbook and learning materials development happening to widen, deepen and further systematize integration of DRR curricula and effect qualitative improvement across the DRR provision?
- Are the means in place to ensure textbooks contribute to the participatory learning that DRR requires?
- If DRR curriculum development is part of a pilot project, are strategies and actions of sufficient impact and influence in place to ensure continuance and movement to scale?
- Is there a national initiative in train to identify core messages, key concepts, key knowledge and key competencies and skills for DRR and to embed them in the national primary and secondary curriculum?
- If a special subject for DRR is being developed, are efforts in place to also ensure that DRR appears elsewhere in the curriculum?
- Is DRR being folded into significant and already existent crosscutting curriculum themes and dimensions such as education for sustainable development, environmental education, education for citizenship?
- If schools are participating in 'special events' in disaster risk reduction, are they ensuring that learning from the experience is connected to classroom learning?
- 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?

- Are other key stakeholders fully and actively involved at national and local level?
- Is DRR curriculum development and implementation being evaluated and researched and are findings being fed back into improving practice?
- Is there at least one educational research centre or higher education unit in the country undertaking systematic research and enquiry into DRR curriculum, teaching and learning?
- Can DRR practices be described as 'research informed practices'?
- Are coordination and dissemination mechanisms in place for sharing of noteworthy practice in place?
- Is a sustained funding flow available for DRR curriculum development and integration, and for movement to scale?

Section Photographs

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Young girl in class, Ethiopia, 2005.
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Rebuilding schools after the 2010 earthquake, Haiti.
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Congoese children during a lesson at the Mugosi Primary School close to the Kahe refugee camp. The school, which is still under construction, is mainly visited by children from the camp and nearby villages, the Democratic Republic of Congo.
© UNESCO/M. Hofer

Section 2:

page 12
A teacher helps a girl who is working at a whiteboard, during a first-grade class in SDN Meunasah Krueng Elementary School in the sub-district of Peudada, Bireuen District, in Aceh Province. The area was not affected by the tsunami, but suffered years of conflict between a separatist rebel group and the government. The school is one of 160 quake-resistant, child-friendly schools built with UNICEF assistance in Aceh and Nias. An additional 180 schools are under construction and 235 semi-permanent school units were also completed.
© UNICEF/NYHQ2008-1280/Josh Estey

On 3 October, 14-year-old Andy Wahyu pauses amid the rubble to look through a book at a learning centre destroyed during the earthquakes, in the coastal city of Padang, capital of West Sumatra Province. The centre was housed in a two-storey office building.

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After the earthquake that hit Haiti on 12 January 2010 - The Saint Louis de Gonzague School Complex in Port-au-Prince.
© UNESCO/Fernando Brugman

Section 3:

page 16

On 26 April, girls attend class in a tent at Celie-Lilavois Primary School in the centre of Port-au-Prince, the capital. UNICEF has set up tent classrooms and provided educational supplies at the school. Some 4,700 schools were damaged or destroyed, affecting some 700,000 school-age children. UNICEF assistance includes: clearing rubble from school sites, installing water and sanitation facilities, and providing 'school-in-a-box' kits, recreation kits and other supplies. UNICEF is also supporting the nationwide 'movement for learning' to encourage a return to school and to promote first-time attendance by the estimated 55 per cent of children who have never attended school.

© UNICEF/NYHQ2010-0734/Roger LeMoyne

On 30 June, a girl studies outside her tent in the town of Petit-Goave, near Port-au-Prince, the capital. The town's water system, which had served only one third of the population before the earthquake, was badly damaged during the disaster. The French Red Cross, with support from UNICEF, has repaired many of the pipes, but the system needs a major overhaul.
© UNICEF/NYHQ2010-1356/Marta Ramoneda

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Rebuilding schools after the 2010 earthquake, Haiti.
© UNESCO/E. Abramson

Section 4:

[page 22](#)

Children raise their hands in a second-grade Spanish class at the Villa del Sol Educational Institute Primary School in the municipality of Bello, near Medellín, capital of Antioquia Department.
© UNICEF/NYHQ2009-1752/Susan Markisz

An adolescent girl walks through the flooded yard in front of her home near the Sinú River, in the northern municipality of Cotorra in Córdoba Department. Beside her is a bicycle.
© UNICEF/NYHQ2009-1818/Susan Markisz

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School children on top of a dune/ Aral, Kazakhstan.
© UNESCO/ Zhanat Kulenov

[page 27](#)

Primary School in Serelau, Lospalos, Timor-Leste. Primary school students lining up to get porridge. January 2011.
© UNESCO/G. Leite Soares

Section 5:

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A girl carries a slate and book bag outside Likoli, a UNICEF-supported primary school in the village of Zakpota, in central Benin. UNICEF provides Likoli and surrounding schools with supplies, classroom furniture, and training for teachers. The book bag bears the UNICEF logo.
© UNICEF/NYHQ2006-2865/Julie Pudlowski

On 23 October, boys play football in the flooded yard of the A et B Hinde School in the city of Cotonou.
© UNICEF/NYHQ2010-2125/Olivier Asselin

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School children, Florida Valle, Colombia.
© UNESCO/Ministerio de Educación

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A girl clutches a book and slate at the Pachim Gumdandi School in Boalkhali Subdistrict, near the southern port city of Chittagong of Bangladesh.
© UNICEF/NYHQ2006-0984/Noorani

Section 6:

page 34

On 1 August, girls attend a class on the first day of the restart of classes at Aman Kot Girls' Primary and Middle School, in the town of Aman Kot in Swat District in North-West Frontier Province (NWFP). Over 400 girls' schools were damaged or destroyed during the recent fighting.

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On 23 August, a girl carries buckets of water near a camp for people displaced by flooding, in Sukkur, a city in Sindh Province.

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Section 7:

page 38

Children attend class at a UNICEF-assisted primary school in the village of Douakankro, near the central city of Bouaké in the rebel-controlled zone.

© UNICEF/NYHQ2006-2757/Bruno Brioni

On 2 May, 12-year-old Achille Pihigomeca sits on a bamboo bench in the village of Koaro, near the Liberian border.

Achille and his family fled to Liberia to escape the post-election violence. They returned to find their home had been damaged and looted. "They took everything," he said. "They stole all my books."

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page 41

The Maldives Islands - Some school books spared by the tsunami (26 December 2004) are slowly sun-drying.

© UNESCO/ Hameed A. Hakeem

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UNDAC and UNESCO Bangkok teams visiting Baan Khem (Phang Nga province), one of the hardest hit villages during the tsunami of 26 December 2004.

© UNESCO/CSI/LINKS, Bangkok/ Derek Elias

Section 8:

page 44

Children stand outdoors with new exercise books and pencils after a distribution of school supplies at Comboni Primary School in Rumbek, the capital of Lakes State, in Southern Sudan. The books bear the UNICEF logo. UNICEF is providing educational materials at the school, which is run by the Comboni Missionaries.

© UNICEF/NYHQ2006-0876/Mariella Furrer

Textbooks and other destroyed educational materials cover the floor of a vandalized school bookstore in the village of Fata Burno in North Darfur. The bookstore was looted during a raid by militia. A UNICEF-supported publication on girls' education is in the foreground.

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Mullaitivu, a town in the Northeastern Sri Lanka ravaged by the tsunami of 26 December 2004. Toys and pictures lying in the debris of what was once a school.

© UN Photo/ Evan Schneider

page 49

In the aftermath of the tsunami of 26 December 2004.

Destroyed homes in Galle.

© UNESCO/ Nigel Swann

page 51

A Congolese girl concentrates on her assignment in a half finished class room at the Mugosi primary school close to the Kahe refugee camp in the north eastern part of the Democratic Republic of Congo.

© UNESCO/M. Hofer

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Kosovo Primary School Emin Duraku.

© UNESCO/J. Idrizi

Section 9:**page 54**

Children and a woman teacher play a game in a circle, in front of a shipping container that bears the UNICEF logo, in the Galagayin settlement for internally displaced persons (IDPs), in the district of Sabirabad, 180 km south of Baku, the capital. The container serves as a temporary kindergarten for some 60 children from the local community. It is 1 of 34 UNICEF-assisted facilities providing early childhood care and development services for 2,600 internally displaced and refugee children in 14 districts. UNICEF also provides roofing materials, educational supplies, and toys and recreational equipment.

© UNICEF/NYHQ2004-0605/Giacomo Pirozzi

A boy with a knapsack walks down a road past oil wells in the Bayeleva area of Baku, the capital. Oil production in this resource-rich country has contributed to widespread pollution, which is partly responsible for high rates of respiratory infections.

© UNICEF/NYHQ1997-0893/Roger LeMoyné

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School overtaken by the dune/ Aral, Kazakhstan.

© UNESCO/ Zhanat Kulenov

Section 10:**page 60**

In 2006 in China, children, all of whom are toting school backpacks, walk arm-in-arm around the Barkhor, which is the 'kora' or pilgrim's sacred path, encircling the Jokhang Temple in Lhasa capital of the Tibet Autonomous Region.

© UNICEF/NYHQ2006-1037/Palani Mohan

On 21 May, three students, wearing face masks, stand in front of the ruins of Juyan Middle School, which collapsed during the earthquake, killing 400 students, in the town of Dujiangyan, in Sichuan Province. The students were in the school at the time of the quake, but managed to escape.

© UNICEF/NYHQ2008-0459/Adam Dean

Country Case Study Photographs

Armenia

page 63

2006, Sureu, a 13 years old child, in the 'container district' in the town of Gyumri, Shirak district, N.W. Armenia. Sureu, a child considered at risk, attends after school lessons and activities at the Shirak center, an NGO supported by UNICEF.
© UNICEF/ITAL2006-0017/Lodi

Georgia

page 65

(Left-right) Rusudan Kedelashvili, 12, is assisted by Inga Zakaidze, a teacher trained in first aid, during a simulation exercise that is part of disaster risk reduction training, 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.
© UNICEF/NYHQ2011-1584/Bell

Kazakhstan

page 71

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.
© UNICEF/NYHQ2011-1591/Bell

page 73

Aruzhan, 6, learns about earthquakes and how best to respond in the event that one should occur, at Kindergarten No. 53 in the city of Almaty. Her school is one of the first in Kazakhstan to implement the Disaster Risk Reduction (DRR) Programme.
© UNICEF/NYHQ2011-1588/Bell

Russian Federation

page 75

Aleksandr Pogrebnoy, 14, photographs in his former classroom at School No. 1 in the town of Beslan. Aleksandr, a former hostage, is one of 13 children participating in a UNICEF-organized photography workshop marking the one-year anniversary of the siege.
© UNICEF/NYHQ2005-1309/Pirozzi

Turkey

page 83

(Right) Yaprak, 10, and a classmate examine a globe at their school in the village of Karaali in Ankara Province. Today is the last day of school and Yaprak is wearing a red velvet dress to celebrate. The 'child-friendly' school offers a free education to local pupils (all the girls of the village are enrolled), as well as boarders, many of whom are orphans or otherwise at risk. Child-friendly schools promote free, compulsory education for all children in a safe, clean learning environment that respects diversity and the rights of the child. Yaprak's father works for a local landowner in exchange for a house and a small stipend.
© UNICEF/NYHQ2005-1156/LeMoyne

page 87

Turkey, August 1999: Asumain, 7, sits beside her grandmother outside the tent where the family is now living near their destroyed house in the north-western town of Gulcuk, epicentre of the massive earthquake that struck North-West Turkey that left more than 14,000 people dead, tens of thousands missing and 600,000 homeless.

© UNICEF/NYHQ1999-0683/Horner

Cambodia

page 89

A small boy listens as villagers, including his parents, discuss the removal of landmines and other UXO with officials from the Cambodian Mine Action Centre (CMAC), as well as which areas to clear first, in the village of O Chheukram near the western town of Pailin. This area, near the border with Thailand, is one of the most heavily mined in the world.

© UNICEF/NYHQ2004-0766/Thomas

page 93

A girl holds a poster showing different signs that warn of the presence of landmines, at Boeng Prolith Primary School near the western town of Pailin in Cambodia, as part of landmine awareness efforts. The two bottom images on the poster show broken twigs and crossed sticks - landmine warnings used by villagers when they encounter possible mine-contaminated areas, until official warning signs can be put up.

© UNICEF/NYHQ2004-0763/Thomas

Fiji

page 95

Fijian Girl, 2003. © UNICEF/FJIA2003-00001/Ah Sam

Indonesia

page 99

On 6 October, boys sort through school books and other salvaged educational materials at destroyed Elementary School 17 in the coastal city of Padang, capital of West Sumatra Province. Several hundred schools were among more than 180,000 buildings damaged or destroyed during the earthquakes. Over the past two days, UNICEF has distributed 15 school tents in the area, and an additional 228 are en route.

© UNICEF/NYHQ2009-1516/Estey

Lao PDR

page 105

In 1996 in the Lao People's Democratic Republic, sitting around a coffee table, women who work for the British demining company MAG, discuss landmine awareness posters designed by them at the company's office in Vientiane, the capital.

© UNICEF/NYHQ1996-0843/Semeniuk

Myanmar

page 109

Students attend class for the first time since the cyclone, at State Primary School No. 32 in Hlaing Thar Yar Township in the southern Yangon Division. Prior to reopening, the school was used as a temporary relief camp for those affected by the cyclone. UNICEF has provided the school with roofing and other repair materials, two 'school-in-a-box' kits, each with teaching and learning materials for 80 students, and a recreation kit containing sports equipment and games.

© UNICEF/NYHQ2008-0559/Naing

The Philippines

page 111

On 4 January, a girl stands inside Consolation Elementary School in the city of Cagayan de Oro in Northern Mindanao Region. The school was damaged by floods from Tropical Storm Washi. Eight of the city's schools are being used as evacuation centres, and 12 were flood-affected. Despite major challenges, schools reopened on 3 January, but needs remain great.

© UNICEF/NYHQ2012-0006/Maitem

page 115

A girl watches a video called 'Happy Tales' at Rosauo Almarino Primary School in Tondo, a neighbourhood of Manila, the capital of the Philippines to promote environmental awareness through story-telling and other activities. This was done in the framework of the child-friendly schools programme, promoted by UNICEF globally, and which strive to create safe, protective and inclusive spaces for all children, especially girls, and

encourage the involvement of parents and the community.

© UNICEF/NYHQ2006-1468/Pirozzi

Angola

page 117

A boy does arithmetic at the blackboard during a class in Menino NECO Primary School No. 5013 in the Rangel neighbourhood of Luanda, the capital UNICEF supports child-friendly activities at the school, including installation of safe water and sanitation facilities and hygiene education.

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Lesotho

page 119

In 2008 in Lesotho, a boy presses his face against a window in a school in Maseru, the capital.

© UNICEF/NYHQ2008-1776/Pirozzi

Madagascar

page 123

Boys laugh as they perform an exercise in a pre-school class at the public primary school in Soavinandriana District, Itasy Region. This school is one of 360 in the country offering public pre-school classes. The Government, with assistance from UNICEF, is introducing early childhood development programmes in schools throughout the country.

© UNICEF/NYHQ2009-1243/Pirozzi

Malawi

page 129

(Left-right) Mary Kapalamula, 16, and her sister Sungeni, 11, do their homework at their home in the Safalao market area in Ndirande Township on the outskirts of the city of Blantyre. Their father, brother and uncle were killed by AIDS, while their mother died of an unknown illness in 1997. Mary, Sungeni and their sister Mwaiwao, 13, who has a mental disability, were looked after by their grandmother until her death in 2004. Now, as the eldest, Mary heads the household, while Mwaiwao lives with friends. They have been shunned by most of the family, and live in a small house, where they sleep on the floor. Mary fears for their safety, because boys have been pounding on the door in the middle of the night, raising the spectre of rape or murder. As their situation deteriorates, they have begun begging for food. Despite their poverty, both girls go to UNICEF-supported schools. Mary dreams of becoming a doctor or a teacher.

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France

page 135

A child drawing in primary school classroom in La Varenne Saint-Hilaire, France.

© UNESCO/Dominique Roger

Japan

page 139

Yuuna Sasaki, 8, photographs Kobuchi Beach, in the city of Ishinomaki, Miyagi Prefecture. Debris towers behind her. Yunna is among 14 children participating in a UNICEF photography workshop in the city. "I won't be able to forget the heap of rubble. I photographed it because every piece holds people's memories. I don't want them to be forgotten," she said. Ishinomaki's pre-quake population was 160,826, but 3,144 of its people died in the tsunami, and 890 are still missing. Coastal areas essential to the whaling trade and the cultivation of oysters – sources of livelihood for many residents – were also destroyed. Severe depopulation is another challenge for the city.

© UNICEF/NYHQ2011-2265/Pirozzi

New Zealand

page 143

Staff and parents at a Whanau hui or family meeting of Te Kotuku Kohanga Reo on the Te Atatu Peninsula, Auckland, New Zealand, 2010.

© UNESCO/J. Carlin

British Virgin Islands

page 149

A regional workshop on Climate Change Education for Sustainable Development in the Caribbean, organized by UNESCO in June, 2011, in the British Virgin Islands.

© UNESCO/Julia Heiss

Chile

page 151

In 1994 in Chile, a boy stands in the main square of the town of San Pedro de Atacama.

© UNICEF/NYHQ1994-1356/Wichenberger

Costa Rica

page 153

Guaymi Indigenous Reserve.

© UNESCO/Johny Esquivel Tenorio

Cuba

page 157

A smiling boy sits outdoors with other children at the Renato Guitart primary school in Havana, the capital.

© UNICEF/NYHQ1995-0397/Barbour

page 161

Girls and boys play a game with wooden blocks at the Isabel Rubio rural school in the La Guasasa community, Pinar del Rio Province, Cuba.

© UNICEF/NYHQ1995-0409/Barbour

Nicaragua

page 163

A girl smiles as she stands by a running tap connected to a water tank provided by UNICEF for displaced families in the town of Palacaguina, 105 km north of Managua, the capital.

© UNICEF/NYHQ1998-0678/Balaguer

Peru

page 167

Students reach for an assignment in a primary school in Llacuash, a farming community in the district of Huallanca. The two teachers hike an hour through the mountains each day to reach the school, which approximately 25 children attend. The school is a part of the national system, and classes are conducted in Spanish. Although most of the children speak Spanish in addition to their native language of Quechua, students who only speak their native language have difficulty understanding the lessons. Providing learning materials in indigenous languages helps to ensure that students reap the rewards of their education.

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Egypt

page 173

Children participate in a group activity during a life-skills peer education session at the UNICEF-supported Abu Tig Youth Centre in Abu Tig, a town in Asyut Governorate.

© UNICEF/NYHQ2007-2718/Noorani

Bangladesh

page 177

Resma, 9, salvages damaged textbooks in what used to be her room, in the village of Amua in Barisal District, one of the area's hardest hit by Cyclone Sidr. The roof of her family's home blew off in the storm.

© UNICEF/NYHQ2007-1805/Noorani

Maldives

page 181

A girl draws in a classroom at Huraa School on Huraa Island, 15 kilometres from Male, the capital. She is attending a weekly class in which specially trained teachers supervise art and play activities to help children traumatized by their experience during the tsunami.

© UNICEF/NYHQ2005-0273/Pirozzi

Nepal

page 183

Children sit on a rooftop, watching the approach of a storm, in Sawa Kholā Village, Mugu District. The villagers are members of the Dalit community, considered the lowest caste in Nepal, and so they are among the country's poorest. They report that price hikes have rendered basic food items unaffordable. Many are selling assets and reducing meals to cope.

© UNICEF/NYHQ2009-0870/Sokol

Benin

page 187

On 27 October, children attend class at a school in Kpoto, a village in Zagnanado Commune. The school's roof sustained damage in the recent flood, which destroyed most of the village. Most villagers are now living in a nearby makeshift camp.

© UNICEF/NYHQ2010-2221/Asselin

Nigeria

page 191

Students learn proper hygiene practices, in an environmental health club run by Albert Ach (standing), in Inyima Village in Yakurr LGA (Local Government Area) in the southern Cross River State. The class teaches the importance of hand-washing with soap after using the latrine, to protect against water-borne diseases. The children then share what they learn with their families and peers. The village was one of the first 21 communities in Yakurr to participate in the EU-supported UNICEF WASH programme, which began in 2005.

Residents have also built household latrines.

© UNICEF/NYHQ2010-1746/Eseibo

Colophon

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Disaster Risk Reduction in School Curricula:

Case Studies from Thirty Countries

While education systems are greatly affected by disaster, they are also key to reducing risk and strengthening disaster resilience. Quality education can deliver life-saving and life-sustaining knowledge, skills, and attitudes that protect children and young people during and after emergencies.

What people know, and what they have been exposed to is of paramount importance when it comes to saving lives and reducing loss. Therefore the inclusion of disaster risk reduction (DRR) in school curriculum will increase the safety of education systems and the resilience of disaster prone communities.

Governments and actors supporting the integration of disaster risk reduction in school curricula are thus seeking more systematic knowledge on what is already being done, and a better understanding on whether the measures taken are successful.

This publication captures key national experiences in the integration of disaster risk reduction in the curriculum, identifying good practice, noting issues addressed or still lacking, and reviewing learning outcomes. The study researched DRR related curriculum development and integration, pedagogy, student assessment, teacher professional development and guidance, learning outcomes and policy development, planning and implementation aspects covering thirty countries.

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