Resilience in Formal School Education in Vanuatu: A Mismatch with National, Regional and International Policies

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Abstract
Analysis of school curricula in Vanuatu, the world’s most disaster-prone nation, shows that in-depth learning about disasters, and climate change does not occur until the end of secondary education, when only 13% of primary level 1 children are still in school. Furthermore, such education in resilience is confined to optional subjects. We demonstrate that this situation does not match the objectives of Vanuatu’s policies on resilience and sustainable development, the Framework for Resilient Development in the Pacific, nor key international policies, and argue for the inclusion of suitable learning materials at earlier curricular levels.

Keywords: Vanuatu, resilience, disaster, climate change, education, attrition

INTRODUCTION

Vanuatu, an archipelago of over 80 islands in the south-west Pacific (Figure 1), is the planet’s most at-risk country to natural hazards. The 2019 World Risk Index, calculated for 180 countries on the risk of disasters arising directly from earthquakes, cyclones, floods, droughts and sea-level rise, multiplies the values of two dimensions—exposure and vulnerability. Vanuatu’s index for 2019 was 56.71, almost double that of the next country, Antigua and Barbuda (30.80) (Bündnis Entwicklung Hilft, 2019, p. 56). In August 2020, Vanuatu had an estimated population of 308,089.
Figure 1 Map of Vanuatu Showing Active Volcanoes and the Tracks of Category 5 Cyclones Pam (2015) and Harold (2020)

Source: The authors.
(World Population Review, 2020), of whom an estimated 32% live in the two main urban areas of Port Vila and Luganville (Trundle et al., 2018, p. 57).

The Ministry of Climate Change (MCC), one of the first in the world, was established in December 2013 (MCC, 2015, p. 12). Since then, public education on disaster risk reduction (DRR) and climate change adaptation (CCA) has strengthened, largely through the efforts of this Ministry, the Vanuatu Meteorology and Geo-Hazards Department (VMGD), the National Disaster Management Office (NDMO) and non-government organizations such as Care International, Save the Children, Oxfam, Red Cross, World Vision and Wan Smolbag. However, formal school education on disasters and climate change has not kept pace.

This article examines the extent to which education on disasters and climate change is taking place in primary and secondary schools in 2020 and compares this with the objectives for formal education stated in resilience policies at the national, regional and international levels.

**METHODS**

For information on educational matters, the authors analysed documents from the Curriculum Development Unit (CDU) in Vanuatu’s Ministry of Education and Training (MOET): the National Curriculum Statement and National Timetabling Policy; new syllabi for primary years 4–6 and senior secondary years 11–13 in geography, earth science and development studies; teacher’s guides for science and social science for primary year 5; and social science text books for junior secondary years 7–10. They consulted educational statistics from the MOET for 2007 and 2019 and utilized data supplied by officers in the MOET and the deputy principal of Vanuatu’s leading English-medium secondary school. For details of national, regional and international policies on formal education for CCA and DRR, including a review of progress towards the attainment of the 2030 Agenda goals in Vanuatu, online sources were examined.

**RESULTS**

**Education on Disasters and Climate Change in Primary and Secondary Schools**

The formal education sector has a key role in combatting the impacts of climate change (CC) and disasters, exploring strategies for adaptation and mitigation, and promoting carbon-neutral, sustainable lifestyles (Anderson, 2012, p. 193; Kagawa & Selby, 2012, p. 210; Mochizuki & Bryan, 2015, pp. 7–8; Vize, 2013, p. 225). Investment in universal primary and secondary education, especially in developing countries, is regarded as the most effective strategy for enhancing the adaptive capacity to CC (Lutz et al, 2014; Striessnig et al., 2013, p. 1). Highly educated individuals and societies have better preparedness and response to disasters, suffer lower negative impacts and can recover more quickly (Muttarak & Lutz, 2014, p. 1). It is within this context that we look at Vanuatu.
In Vanuatu, education on CC and DRR is delivered through national curricula in 479 primary and 111 secondary schools in either English or French, as of 2019 (MOET, 2020, p. 8). All curricula have been in the process of revision since the MOET formulated the Vanuatu National Curriculum Statement in 2010 to undertake a major review of existing programmes and ensure that English- and French-medium schools would offer common content in their syllabi from primary to senior secondary level (years 1–13).

**Primary Level**

In the revised curricula for primary schools (years 1–6), aspects of resilience are covered in social science and science during years 4–6 (CDU, 2013) and are already being taught in 2020. In social science, CC and DRR are included in the sub-strand caring for our environment, principally in years 5–6, but total teaching hours are just 22 (11%) of social science’s 198 hours for the 3-year period. Table 1 exemplifies how resilience issues are taught in year 5, covered over a 5-week period in Term 2, with 2 hours per week (MOET, 2019a).

In science, CC topics (causes, adaptation and mitigation) and DRR are taught in the sub-strand our changing earth (CDU, 2013, p. 144), with total teaching hours of only 11 (5.5%) of science’s 198 hours in years 4–6 (MOET, 2019b).

In summary, important issues about CC and DRR are raised at upper primary level, with useful practical activities for the learners, but the allotted teaching hours over years 4–6 are minimal—11% of total social science time and 5% of total science time. The Ministry of Education requires schools to provide primary students with 28 hours

| Table 1 | Content and Activities in Caring for Our Environment, Year 5 |
|---------|---------------------------------------------------------------|
| **Week** | **Content**                                                  | **Suggested Activities** |
| Term 2, week 7 | The natural environment (ecosystem)—definition and examples | Field excursion, drawing food chain, creating poster on conserving an ecosystem |
| Term 2, week 8 | Environmental modification by humans—how and why, including pollution and climate change | Tree planting, comparing pictures of an environment past and present, discussion of human activities |
| Term 2, week 9 | Climate change—definition, causes, impacts, mitigation and adaptation | Discussing causes of climate change, prepared talks on local impacts, role plays on adaptation |
| Term 2, week 10 | Natural activities/hazards that damage our environment—examples, impacts, preparation and minimizing damage | Interviewing community members about traditional signs of disasters, creating posters on preparations for a cyclone |
| Term 2, week 11 | Solutions to reducing damage to our environment—traditional and modern methods of conservation, agro-forestry, personal actions | Tree planting, clean-up campaign, posters on minimizing CC impacts, awareness campaign, discussion on reef conservation |

Source: Adapted from MOET (2019, pp. 73–76).
of ‘contact time’ per week over three 11-week terms per year (MOET, 2015, p. 6). Thus, the total teaching time for all subjects amounts to 2,772 hours over a 3-year period. Teaching about resilience takes up just 33 hours, or 1.2% of this time.

**Junior Secondary Level**

Revised curricula for the junior cycle of secondary education (years 7–10) are still under development. Currently, schools rely upon pre-2010 content in which fairly limited coverage of CC and disasters is provided through basic science and social science. In social science, for example, global warming and cyclones are briefly covered in the last unit of year 10—Our Changing Society.

To enhance learning about CC at junior secondary level, initiatives were taken in 2011 by several donor agencies to develop an educational resource for use across curricula in five Pacific countries—Fiji, Kiribati, Samoa, Tonga and Vanuatu. The resource, *Learning about Climate Change the Pacific Way*, comprises a set of 16 colourful pictures and a comprehensive country-specific teacher’s guide aimed at teaching students about CC and how they can become more resilient to its impacts (SPC & GIZ, 2014). In Vanuatu, picture sets and teacher’s guides were distributed to all junior secondary schools during 2013–2015, with teacher-training workshops held on their use. However, the subsequent deployment of this valuable resource seems to have stalled, for several reasons—destruction of schools and materials during Tropical Cyclone (TC) Pam, frequent transfer of teachers between schools, and pressures to focus on the content of official textbooks so as to guarantee greater success in the Year 10 Leaving Examination. As a result, investigations by the authors in 2019–2020 reveal that many science and social science teachers are unaware of the resource or of how to use it.

**Senior Secondary Level**

Education on resilience (CC and DRR) falls within the context of education for sustainable development. As such, curricula should ‘equip students with the knowledge, understanding, skills and attributes needed to work and live in a way that safeguards their environmental, social and economic well-being, both in the present and for future generations’ (Leal & Pace, 2016, p. 2).

Resilience education, particularly at senior secondary level, requires learning that is interactive, experiential, reflexive, creative and participatory (Kagawa & Selby, 2012, p. 214; Stevenson et al., 2017; UNICEF, 2012, p. 29), with curricula, teachers and pedagogies promoting an understanding of the climate challenge to the extent that it leads to greater national action and commitment to the attainment of a country’s nationally determined contributions (NDCs) under the Paris Agreement on Climate Change (UNESCO, 2020a, p. 6). Within this context, we analyse the new curricula for the senior cycle of education in Vanuatu.

The revised curricula were first implemented at the start of 2019 at Year 11 level, and will not be completely in place until 2021. Resilience issues feature in the curricula for geography, development studies and earth science through strands that are delivered in increasing complexity through the 3 years of the senior secondary
course (CDU, 2018). Figure 2 compares the three subjects in terms of total teaching hours spent on resilience, while Tables 2, 3 and 4 show the importance of resilience issues within their overall syllabi.

Students who choose geography spend 25% of their time on resilience issues, almost equally divided between CC and DRR. Those who opt for development studies spend only 13% of their time on resilience, largely on CC. But those who study earth science spend 72% of their time on resilience, of which two-thirds is on CC. Thus the most comprehensive treatment of resilience issues is in earth science, which has a heavy emphasis on climate science and geology but also examines mitigation, adaptation and vulnerability in some detail and gives students a valuable technical background in renewable energy and the management of water resources. Development studies has the least amount of teaching hours on resilience, and most of them occur in years 12 and 13; CC and DRR are placed within the framework of sustainable development, and there is some acknowledgement of the ethical and traditional values involved in resilience education. Geography gives adequate time to resilience but focuses on geological and hydro-meteorological processes, their features, distribution and impacts rather than on mitigation and adaptation. In none of the three syllabi is there explicit mention of fieldwork or practical training on strategies for CCA or DRR.

If we look in more detail at geography, the most popular of the three optional subjects, we find three principal knowledge strands and a fourth strand devoted to generic geographic skills and ideas. A student who completes years 11, 12 and 13 is exposed to 462 teaching hours of geography, of which 89 hours (19%) cover the nature, causes and impacts of disasters and climate change, and 28 hours (6%) are on mitigation and adaptation—with half of that time on conservation.

![Figure 2](image_url)

**Figure 2.** Percentage of Total Teaching Time Spent on Resilience, Years 11–13

**Source:** The authors.
| Year | Strand | Topic or Sub-strand Relating to Climate Change or Disasters | Aspect of Resilience Education (CC = Climate Change) | Estimated Teaching Hours on Disasters and CC per Year | % of Teaching Time (All Strands Years 11–13) on Resilience |
|------|--------|----------------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|
| 11   | Natural processes | Geological processes: plate tectonics, earthquakes, volcanoes | Nature and causes of disasters and climate change | 6 | 1 |
| 12   | Natural processes | Atmospheric processes: weathering, fluvial and/or coastal | Nature and causes of disasters | 30 | 1 |
| 13   | Natural processes | Geological processes: weathering, fluvial and/or coastal | Nature and causes of disasters and CC | 12 + 6 = 18 | 4 |
| 11   | Cultural processes | Geomorphology and geology of the Pacific islands | Nature, causes and impacts of disasters/CC/ENSO. Mitigation and adaptation | 4 | 1 |
| 11   | Cultural processes | Biodiversity, ecosystems and conservation | Nature, causes and impacts of disasters/CC | 2 | 1 |
| 11   | Cultural processes | Climate of Vanuatu | Nature and causes of disasters/CC | 2 | 1 |
| 11   | Cultural processes | Islands and geography of Vanuatu | Nature and causes of disasters/CC | 2 | 1 |
| 11   | Local, regional and global studies | Climate of Vanuatu | Nature, causes and impacts of disasters/CC | 2 | 1 |

*Table 2 continued...*


| Strand | Year | Topic or Sub-strand Relating to Climate Change or Disasters | Aspect of Resilience Education (CC = Climate Change) | Estimated Teaching Hours on Disasters and CC per Year | Total Teaching Hours for the Strand per Year | % of Teaching Time (All Strands Years 11–13) on Resilience |
|---|---|---|---|---|---|---|
| Climate and climate change in the Pacific region | 13 | Issues relating to climate change | Nature and impacts of CC | 6 | 25 | 1 |
| SPREP and conservation issues in the Pacific | 13 | Treaties relating to biodiversity and conservation | Biodiversity and conservation | 6 | 25 | 1 |
| Geographical skills and ideas | 11 | Practical skills | Communication skills | $3 + 3 = 6$ | 30 | 1 |
| | 12 | Practical skills and key geographic ideas | | $3 + 3 = 6$ | 30 | 1 |
| | 13 | Practical and planning skills. Research | Planning and research skills | $3 + 3 = 6$ | 45 | 1 |
| Internal assessment | 12 | Internal assessment | | 30 | ? | |
| | 13 | Internal assessment | | 35 | ? | |
| All strands | 11 | | | 20 + 19 = 39 | 132 | 30% |
| | 12 | | | 19 + 23 = 42 | 165 | 25% |
| | 13 | | | 21 + 15 = 36 | 165 | 22% |

Source: The authors, based on analysis of the official curriculum for geography (CDU, 2018b).
| Strand                             | Year | Topic or Sub-strand Relating to Climate Change or Disasters | Aspect of Resilience Education (CCA = Climate Change Adaptation) | Estimated Teaching Hours on Disasters and CC per Year | Total Teaching Hours for the Strand per Year | % of Teaching Time (All Strands Years 11–13) on Resilience |
|-----------------------------------|------|----------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------|------------------------------------------|--------------------------------------------------|
| What is development?              | 11   | –                                                        | –                                                               | 0                                                    | 16                                       | 0                                                |
|                                   | 12   | –                                                        | –                                                               | 0                                                    | 30                                       | 0                                                |
|                                   | 13   | –                                                        | –                                                               | 0                                                    | 20                                       | 0                                                |
| Economic development              | 11   | –                                                        | –                                                               | 0                                                    | 16                                       | 0                                                |
|                                   | 12   | –                                                        | –                                                               | 0                                                    | 45                                       | 0                                                |
|                                   | 13   | –                                                        | –                                                               | 0                                                    | 35                                       | 0                                                |
| Promoting development             | 11   | International aid                                       | Aid for DRR and CCA                                              | 1 + 1 = 2                                            | 24                                       | 0.5                                              |
|                                   |      | Non-government organizations                            | Role of NGOs in DRR/CCA                                          | 2 + 2 = 4                                            | 24                                       | 1                                                |
|                                   | 12   | Rural development                                       | Community awareness on DRR/CCA. Role of NGOs/gov. in CCA/DRR    | 1 + 1 = 2                                            | 25                                       | 0.5                                              |
|                                   |      | Local and national organizations                        |                                                                  | 1 + 1 = 2                                            | 25                                       | 0.5                                              |
|                                   | 13   | Regional and international organizations               | Role of int. and regional organizations in CCA/DRR              | 1 + 1 = 2                                            | 15                                       | 0.5                                              |
| Development and environment       | 11   | The earth’s natural environment                        | Causes of climate change                                         | 7                                                    | 38                                       | 2                                                |
|                                   | 12   | Environmental degradation and sustainable development   | Environmental conservation and sustainable development           | 10                                                   | 20                                       | 2                                                |
|                                   |      | Land and energy issues                                  | Renewable energy                                                 | 2                                                    | 20                                       | 0.5                                              |

(Table 3 continued)
| Strand | Year | Topic or Sub-strand Relating to Climate Change or Disasters | Aspect of Resilience Education (CCA = Climate Change Adaptation) | Estimated Teaching Hours on Disasters and CC per Year | Total Teaching Hours for the Strand per Year | % of Teaching Time (All Strands Years 11–13) on Resilience |
|--------|------|------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------|--------------------------------------------|----------------------------------------------------------|
| 13     |      | Climate change, ozone depletion and environmental treaties  | Nature causes and impacts of CC. Mitigation and adaptation of CC and DRR. Treaties on CC and DRR | $2 + 12 = 14$                                     | 20                                         | 3                                                       |
|        |      | Natural disasters and development                          |                                                               |                                                   |                                            |                                                         |
|        |      |                                                            |                                                               |                                                   |                                            |                                                         |
| Social, cultural, spiritual and political development | 11   | –                                                          | –                                                            | 0                                                | 38                                         | 0                                                       |
|        | 12   | Women and youth in development                             | Role of women and youth in CCA/DRR                             | $1 + 1 = 2$                                      | 20                                         | 0.5                                                     |
|        |      | Cultural and spiritual influences on development           | Moral, spiritual and traditional values that build resilience | $1 + 1 = 2$                                      | 20                                         | 0.5                                                     |
|        | 13   | Spirituality and development                               |                                                               | $3 + 3 = 6$                                      | 40                                         | 0.5                                                     |
| Research project | 12   | Research project                                           |                                                               |                                                   | 25                                         | ?                                                       |
|        | 13   | Research project                                           |                                                               |                                                   | 35                                         | ?                                                       |
| All strands | 11   |                                                            |                                                               |                                                   | 132                                        | 10%                                                     |
|        | 12   |                                                            |                                                               |                                                   | 165                                        | 12%                                                     |
|        | 13   |                                                            |                                                               |                                                   | 165                                        | 17%                                                     |

Source: The authors, based on analysis of the official curriculum for development studies (CDU, 2018a).
| Strand                                                                 | Year | Topic or Sub-strand Relating to Climate Change or Disasters | Aspect of Resilience Education (CC = Climate Change) | Estimated Teaching Hours on Disasters and CC per Year | Total Teaching Hours for the Strand per Year | % of Teaching Time (All Strands Years 11–13) on Resilience |
|----------------------------------------------------------------------|------|-------------------------------------------------------------|------------------------------------------------------|-----------------------------------------------------|---------------------------------------------|----------------------------------------------------------|
| Planet earth, its geology and its external and internal movements   | 11   | Solar radiation and climate                                | Nature of climate, atmosphere and oceans             | 16                                                  | 80                                          | 4                                                        |
|                                                                     |      | Atmospheric and oceanic movement                           |                                                      | 16                                                  | 80                                          | 4                                                        |
|                                                                     |      | Earth realms                                               | Holistic approach                                    | 2 + 4 = 6                                           | 80                                          | 1                                                        |
|                                                                     |      | Internal structure of the earth                            | Nature of earthquakes                                | 8                                                   | 80                                          | 2                                                        |
| 12                                                                   |      | The lithosphere and plate tectonics                        | Nature/causes of disasters and atmospheric processes | 8                                                   | 80                                          | 2                                                        |
|                                                                     |      | Earth as a heat engine                                     |                                                      | 3 + 1 = 4                                           | 80                                          | 1                                                        |
|                                                                     |      | Measuring geological time                                  | Nature/causes of climate change                      | 4 + 4 = 8                                           | 80                                          | 2                                                        |
| 13                                                                   |      | Mineralogy                                                 | Impacts of disasters                                 | 10                                                  | 80                                          | 2                                                        |
|                                                                     |      | External geological processes                              | Nature/causes of disasters                           | 10                                                  | 80                                          | 2                                                        |
| Climate change and disaster risk reduction                           | 11   | Earth realm in peril                                       | Ozone layer                                          | 6                                                   | 28                                          | 1                                                        |
|                                                                     |      | Climate change issues                                      | Climate, weather, variability, causes                | 8                                                   | 28                                          | 2                                                        |
|                                                                     |      | Mitigation of climate change                              | Mitigation of GHG emissions                          | 7                                                   | 28                                          | 2                                                        |
|                                                                     |      | Disaster risk                                              | Disaster risks and vulnerability                     | 7                                                   | 28                                          | 2                                                        |
| 12                                                                   |      | Earth realm in peril                                       | Greenhouse effect                                    | 9                                                   | 43                                          | 2                                                        |
|                                                                     |      | Climate change issues                                      | CC causes/impacts                                    | 12                                                  | 43                                          | 3                                                        |
|                                                                     |      | Mitigation and adaptation of CC                            | International efforts.Mitigation and adaptation       | 12                                                  | 43                                          | 3                                                        |
|                                                                     |      | Disaster risk reduction                                    | Vulnerability                                         | 10                                                  | 43                                          | 2                                                        |

(Table 4 continued)
(Table 4 continued)

| Strand | Year | Topic or Sub-strand Relating to Climate Change or Disasters | Aspect of Resilience Education (CC = Climate Change) | Estimated Teaching Hours on Disasters and CC per Year | Total Teaching Hours for the Strand per Year | % of Teaching Time (All Strands Years 11–13) on Resilience |
|--------|------|------------------------------------------------------------|--------------------------------------------------|--------------------------------------------------|---------------------------------------------|--------------------------------------------------|
| 13     |      | Earth realm in peril                                       | Sources of GHGs                                  | 8                                                | 43                                           | 2                                               |
|        |      | Climate change issues                                     | Impacts of CC                                    | 10                                               | 43                                           | 2                                               |
|        |      | Adaptation to CC                                          | Adaptation to CC                                 | 12                                               | 43                                           | 3                                               |
|        |      | Disaster risk reduction                                   | Hazards resilience                               | 13                                               | 43                                           | 3                                               |
| 11     | Renewable energy | Solar energy, Wind energy, Marine energy | CC mitigation (renewables)                      | 4                                                | 12                                           | 1                                               |
| 12     | Renewable energy | Geothermal energy, Hydraulic energy, Solid biomass: wood | | 6                                                | 21                                           | 1                                               |
| 13     | Renewable energy | Biomass: biogas, Biomass: biofuel | CC mitigation (renewables)                      | 10                                               | 21                                           | 2                                               |
| 11     | Water Supplies and management of water reserves | Exploitation of water resources | Impacts of CC and disasters                       | 3 + 3 = 6                                         | 12                                           | 1                                               |
|        |      | Pollution of fresh water                                 |                                                  | 6 + 6 = 12                                       | 12                                           | 3                                               |
| 12     | Water Supplies and management of water reserves | Managing reserves | Climate change adaptation and disaster risk reduction | 5 + 5 = 10                                       | 21                                           | 2                                               |
|        |      | Water purification                                        |                                                  | 10 + 11 = 21                                     | 21                                           | 4                                               |
| 13     | Water Supplies and management of water reserves | Desalination |                                                  | 5 + 5 = 10                                       | 21                                           | 2                                               |
|        |      | Rain water catchment                                      |                                                  | 11 + 10 = 21                                     | 21                                           | 4                                               |
| 11     | Internal assessment                                       | Internal assessment                              | (Included in hours for content strands)          |                                                  |                                              |                                                 |
| 12     | Internal assessment                                       | Internal assessment                              |                                                  |                                              |                                              |                                                 |
| 13     | Internal assessment                                       | Internal assessment                              |                                                  |                                              |                                              |                                                 |
| 11     | All strands                                              | 26 + 76 = 102                                    |                                                  | 132                                             | 462                                          | 77%                                             |
| 12     | All strands                                              | 40 + 75 = 115                                    |                                                  | 165                                             | 462                                          | 70%                                             |
| 13     | All strands                                              | 49 + 66 = 115                                    |                                                  | 165                                             | 462                                          | 70%                                             |

Source: The authors, based on analysis of the official curriculum for earth science (CDU, 2018a).
and sustainable development. Ethical principles involved in CC—prevention of harm, equity and justice for the most vulnerable, sharing of knowledge and technologies (UNESCO, 2019, pp. 13–15)—are not addressed. Also lacking are specific skills such as risk mapping and fostering of community awareness, attitudes such as avoidance

**Table 5** Specific Learning Outcomes in Geography for the Sub-strand 13GEO3.2 on Issues Relating to Climate Change

| Identify | Describe the major elements in climate change. |
|----------|-----------------------------------------------|
| Describe | ways these elements interact to result in climate change. |
| Explain  | why the interactions of these elements result in climate change. |
| List     | some local, regional and global characteristics of climate change. |
| Describe | the characteristics of climate change. |
| Describe | the major global patterns of climate change. |
| Compare  | the major global patterns of climate change. |
| Discuss  | the effects of climate change on the environment, using specific examples. |
| Discuss  | the effects of climate change on people, using specific examples. |

**Source:** CDU (2018b, p. 53).

**Table 6** Goals of Vanuatu’s Two Current Policies on Resilience

| Vanuatu Climate Change and Disaster Risk Reduction Policy 2016–2030 | National Sustainable Development Plan 2016–2030 |
|---------------------------------------------------------------------|-------------------------------------------------|
| **Priorities for achieving the strategic goal of ‘resilient development’, classified by themes** | **Environmental pillar 3: Climate and disaster resilience: Policy objectives** |
| **Climate change adaptation and disaster risk reduction** | A strong and resilient nation in the face of climate change and disaster risks posed by natural and man-made hazards |
| • Vulnerability and impact assessment | • **ENV 3.1** Institutionalize climate change and disaster risk governance, and build institutional capacity and awareness |
| • Community-based adaptation | • **ENV 3.2** Improve monitoring and early warning systems |
| • Loss and damage | • **ENV 3.3** Strengthen post-disaster systems in planning, preparedness, response and recovery |
| • Ecosystem-based approach | • **ENV 3.4** Promote and ensure strengthened resilience and adaptive capacity to climate related, natural and man-made hazards |
| **Low carbon development** | • **ENV 3.5** Access available financing for climate change adaptation and disaster risk management |
| • Energy road map | |
| • Renewable energy | |
| • Energy efficiency | |
| • Mitigation and REDD+ | |
| • Blue carbon | |
| **Response and recovery** | |
| • Planning and preparedness | |
| • Community awareness | |
| • Early warning systems | |
| • Post-disaster assessment | |
| • Recovery | |

**Sources:** Adapted from Government of the Republic of Vanuatu & SPC (2015, pp. 17–25) and DSP-PAC (2016, p. 14).
of consumerism (Kagawa & Selby, 2009, p. 241) and environmental responsibility (Wahlstrom, 1998, p. 65), and the promotion of behaviours such as CC advocacy and environmental care. Pedagogical approaches are not promoting the kind of participatory, field and affective learning needed to engage with communities and build proactive citizenship (UNICEF & UNESCO, 2012, p. 8). Thus many aspects emphasized in Vanuatu’s two key environmental policies—the Climate Change and Disaster Reduction Policy 2016–2030 and the National Sustainable Development Plan 2016–2030—are missing. Contrast the specific outcomes for the geography sub-strand that contains the fullest treatment of CC (Table 5) with the goals of the two key policies (Table 6).

A comparison of Table 6 with the development studies syllabus for year 13 (Table 7) shows a greater degree of correspondence, and with earth science year 13 (Table 8) much more so, but even in these two subjects, practical work on CCA and disaster mitigation is minimal.

On a broader scale, we praise the inclusion of resilience issues in these three school subjects, but question whether any of them will have done enough to promote behaviours that can create ‘a more sustainable future in terms of environmental integrity, economic viability and a just society for present and future generations’—the goal of the United Nations Decade of Education for Sustainable Development (UNESCO, 2020b, p. 1).

Table 7 Specific Learning Outcomes in Development Studies for the Sub-strands 13DST4.3 and 13 DST4.4 on Climate Change and Natural Disasters

| Identify | some of the changes in climate that have occurred in geological history. |
|---|---|
| List | the major causes of the changing climatic patterns in the Pacific region. |
| Describe | the impacts of climate change on people and the environment. |
| Describe | important treaties and conventions addressing environmental problems. |
| Discuss | opinions on the difficulties in reaching agreement over international conventions on climate change. |
| Summarize | important treaties and conventions that have been made regarding climate change, biodiversity and the mitigation of natural disasters. |
| Propose | specific actions to offset climate change, e.g., re-afforestation, multiple water sources for humans and animals, cultivation of heat- and drought-resistant crops, walking to school/work. |
| Evaluate | the effectiveness of various forms of adaptation, and measures that will help slow down the rate of ozone depletion, using examples. |
| Describe | a natural disaster (e.g., earthquake, volcanic eruption, flood, landslide, drought or tsunami) and its impacts on development. |
| Give | examples of methods of disaster reduction management, e.g., warnings, building designs. |
| Summarize | measures that can be taken to mitigate some of the harmful effects of natural disasters. |

Source: CDU (2018c, pp. 36–37).
### Table 8 Specific Learning Outcomes in Earth Science for the Sub-strands 13ESC2.1, 13ESC2.2, 13ESC2.3 and 13ESC2.4 on Earth Realms in Peril, Climate Change Issues, Climate Change Adaptation and Disaster Risk Reduction

| Identify sources of carbon dioxide emissions. |
|---|
| **Identify** sources of carbon dioxide emissions. |
| **Carry out and write** a report on a research into the carbon dioxide content of the atmosphere since before the start of the Industrial Revolution until today. |
| **Analyse** data on CO2 emissions per household in a country of your choice. |
| **Carry out and report** on a research into the methane content of the atmosphere since before the start of the Industrial Revolution until today. |
| **List** the sources of methane. |
| **Explain** how different sources of methane (CH4) world-wide affect the concentration in the atmosphere. |
| **List** the impacts of climate change on the atmosphere, the oceans, ecosystems and human society. |
| **Explain** the impacts of climate change on the atmosphere. |
| **Explain** the impacts of climate change on the oceans. |
| **Explain** the impacts of climate change on ecosystems. |
| **Explain** the impacts of climate change on human society. |
| **Compare** rainfall totals during wet and dry seasons in Vanuatu. |
| **Analyse** predictions for changes in Vanuatu’s temperature, rainfall and the number of extreme events. |
| **Predict** a scenario for the likely consequences and impacts of these future climatic changes in Vanuatu. |
| **Define** sustainable livelihoods. |
| **Name** the different measures being taken to adapt to climate change at community levels in Vanuatu. |
| **Explain** the scientific basis of these measures taken at community level in Vanuatu. |
| **Evaluate** and report on the practicality of these measures being taken to adapt to climate change at community level in Vanuatu. |
| **Discuss** how adaptation measures need to be adopted in order to provide sustainable livelihoods for Vanuatu communities in the future. |
| **Define** ‘hazard’. |
| **Define** ‘disaster’. |
| **Define** ‘hydro-meteorological hazards’. |
| **Explain** the difference between a hazard and a disaster. |
| **Analyse** the nature of hydro-meteorological hazards such as drought. |
| **Analyse** the causes of hydro-meteorological hazards such as drought. |
| **Analyse** the consequences of hydro-meteorological hazards such as drought. |
| **Analyse** the nature of hydro-meteorological hazards such as cyclones. |

(Table 8 continued)
Resilience in Formal School Education in Vanuatu: A Mismatch with National

Analyse the causes of hydro-meteorological hazards such as cyclones.

Analyse the consequences of hydro-meteorological hazards such as cyclones.

Analyse the nature of hydro-meteorological hazards such as floods.

Analyse the causes of hydro-meteorological hazards such as floods.

Analyse the consequences of hydro-meteorological hazards such as floods.

Research and report on ways of becoming more resilient to these hydro-meteorological hazards.

Analyse the nature, causes and consequences of geological hazards such as earthquakes, volcanic eruptions, ash falls and tsunamis.

Research and report on ways of becoming more resilient to these geological hazards.

Analyse the nature, causes and consequences of biological hazards such as pests and diseases.

Research ways of becoming more resilient to these biological hazards.

Explain the major causes of people’s vulnerability to disasters.

Relate development frameworks (Sendai Framework for Disaster Risk Reduction, etc.) to the strengthening of people’s resilience.

Source: CDU (2018a, pp. 34–36).

Student Attrition and Resilience Education

Education is not compulsory in Vanuatu, but the Government subsidizes school attendance. Tuition fee grants are provided to all children at pre-primary level and to pupils at primary and junior secondary levels (years 1–10) in government and government-assisted schools. For senior secondary pupils (years 11–13/14), a smaller ‘operational grant’ is given, but because of the restricted number of schools at this level, such students can no longer live in their home villages and must meet additional travel and boarding costs. This is one factor accounting for the high rate of student attrition in the country (Table 9). Another relates to national examinations at the end of years 8, 10 and 12, which permit only those with higher grades to continue. In practice, 84% of year 8 primary students continue on to year 9, and 61% of year 10 students move on to year 11. In 2019, there were only 1,864 students who had reached year 11 and 1,064 who were enrolled in year 13, as compared with 10,367 in year 1 (MOET, 2020, p. 17): this represents attrition rates of 82% and 90%, respectively. More accurately, statistics for 2007 reveal that when the current year 13 students were in year 1, they numbered 8,150 (MEYDT, 2007, p. 25): thus the exact attrition rate between years 1 and 13 is 87%.

Regarding the numbers of students learning about resilience through the three optional subjects, an example can be given from Malapoa College, the nation’s leading and largest English-medium secondary school. In 2020, there are 347 students enrolled in year 11. All take English, mathematics and various optional subjects, but only 133 (38%) study geography, 91 (26%) take development studies and 64 (18%) learn earth science. Out of the 266 students in year 12, the percentages are
| Year 1  | Year 2  | Year 3  | Year 4  | Year 5  | Year 6  | Year 7  | Year 8  | Year 9  | Year 10 | Year 11 | Year 12 | Year 13 | Year 14 | Total  |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 16,445 | 10,367 | 10,728 | 10,426 | 8,609  | 7,716  | 6,974  | 5,314  | 4,542  | 3,797  | 3,064  | 1,864  | 1,533  | 1,064  | 201    | 92,644 |
| +3.5%  | −2.8%  | −17.4% | −10.4% | −9.6%  | −23.8% | −14.5% | −16.4% | −9.3%  | −9.2%  | −7.8%  | −0.6%  |        |        |        |

**Table 9.** Total Students in Vanuatu Schools Enrolled in Each Level, 2019

| ECCE<sup>a</sup> | Year 1  | Year 2  | Year 3  | Year 4  | Year 5  | Year 6  | Year 7  | Year 8  | Year 9  | Year 10 | Year 11 | Year 12 | Year 13 | Year 14<sup>b</sup> | Total  |
|------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------------|--------|
| 16,445           | 10,367 | 10,728 | 10,426 | 8,609  | 7,716  | 6,974  | 5,314  | 4,542  | 3,797  | 3,064  | 1,864  | 1,533  | 1,064  | 201            | 92,644 |
| % change between successive years | +3.5%  | −2.8%  | −17.4% | −10.4% | −9.6%  | −23.8% | −14.5% | −16.4% | −9.3%  | −9.2%  | −7.8%  | −0.6%  |        |                |        |

**Source:** MOET (2020, p. 17).

**Notes:**
- <sup>a</sup>Early Childhood Care Education (kindergarten/pre-primary)
- <sup>b</sup>Year 14 only exists in French-medium senior secondary schools. It is being phased out as the new Vanuatu National Curriculum for years 1–13 is implemented, and will be discontinued after 2021.
similar—32% for geography, 16% for development studies and 25% for earth science (Obed, L. personal communication, October 23, 2020).

Since most learning about CC and DRR only takes place in the senior cycle, especially in years 12 and 13, and is restricted to three optional subjects, the vast majority of young people in Vanuatu are not benefiting from formal exposure to resilience education. In 2020, the most effective in-depth study of CC and disasters occurs in all three years of earth science and in year 13 of development studies, but these two courses are taken by a minority of those students who managed to reach year 13, who themselves represent just 13% of those who began in primary level 1 in 2007.

Policies and Frameworks on Resilience

Vanuatu’s Climate Change and Disaster Risk Reduction Policy (VCCDRRP) 2016–2030 has been developed within the context of international policies such as the Sendai Framework for Disaster Risk Reduction 2015–2030, the Paris Agreement of 2015 and the United Nations Sustainable Development Goals 2015–2030, and of regional policies such as the Framework for Resilient Development in the Pacific (FRDP) 2017–2030 (Government of the Republic of Vanuatu & SPC, 2015. p. 3). The broad goals of the relevant policies are summarized in Table 10.

The vision of the VCCDRRP is that ‘Vanuatu is a resilient community, environment and economy’. Its implementation involves the mainstreaming of CCA and DRR into all sector policies, plans and strategies (Government of the Republic of Vanuatu & SPC, 2015, p. 5), including the Vanuatu National Curriculum Statement (VNCS). However, the VNCS was published in 2010, well before any of the above policies were produced; there is no specific mention of DRR, and CC is only cited briefly in the context of environmental education for sustainability (MOE, 2010, p. 44). The VCCDRRP itself makes only a few specific references to capacity-building for resilient development through formal primary and secondary education (Table 11). Similarly, Goal 3 of the National Sustainable Development Plan’s (NSDP) environmental pillar refers to climate and disaster resilience (Table 6), but there is no reference to formal school curricula.

This lack of specific guidance on resilience education in national policies contrasts with the objectives of regional and international policies. There are clear references to capacity-building through formal school education in the FRDP (Table 12), the Sendai Framework (Table 13) and the document Strategic Approach to Capacity Development for Implementation of the Sendai Framework (Table 14).

Vanuatu, as a signatory to the Paris Agreement, made its first submission to the PCCB (Paris Committee on Capacity Building) in 2017, providing information on capacity-building activities for the implementation of its nationally determined contributions (NDCs) (Republic of Vanuatu, 2017). This submission focused on the first-ever post-secondary Technical Vocational Education and Training (TVET) course on climate change and disaster risk reduction taking place at the Vanuatu Institute of Technology. Efforts to teach school students about resilience were not mentioned. Vanuatu’s 2016 submission to the UNFCCC mentions the need for ‘awareness raising at all levels’, and ‘capacity-building, including institutional capacity’ (Government of the Republic of Vanuatu, 2016, pp. 6). However, there is no specific reference to resilience education.
Table 10 Broad Goals of National, Regional and International Policies on Resilience

| Policy | Overall Goals | Reference |
|--------|---------------|-----------|
| **Vanuatu’s National Policies** | | |
| Vanuatu Climate Change and Disaster Risk Reduction Policy (VCCDRRP) 2016–2030 | Vanuatu’s strategic goal for climate change and disaster risk reduction is ‘resilient development’, which includes activities that enable and strengthen capacities to absorb and quickly bounce back from climate and/or disaster shocks and stresses. | Government of the Republic of Vanuatu, and Secretariat of the Pacific Community (2015, p. 8) |
| National Sustainable Development Plan (NSDP) 2016–2030 (‘The People’s Plan’) | Vanuatu’s goals for resilient development are given under three pillars of sustainability—society, environment and economy. Goal ENV 3.4: A strong and resilient nation in the face of climate change and disaster risks posed by natural and man-made hazards. | Department of Strategic Policy, Planning and Aid Coordination, Republic of Vanuatu (2016, pp. 9, 14) |
| **Regional (Pacific) policies** | | |
| Framework for Resilient Development in the Pacific (FRDP) | Goal 1: Strengthened Integrated Adaptation and Risk Reduction to Enhance Resilience to Climate Change and Disasters
Goal 2: Low Carbon Development
Goal 3: Strengthened Disaster Preparedness, Response and Recovery | Pacific Community et al. (2016, p. 3) |
| **International policies** | | |
| Paris Agreement (COP 21) | Its goal is to **limit global warming** to well below 2, **preferably to 1.5 degrees Celsius**, compared to pre-industrial levels. Article 82 calls upon all parties to ensure that education, training and public awareness, as reflected in Article 6 of the Convention and in Article 12 of the Agreement, are adequately considered in their contribution to capacity-building. The Paris Committee on Capacity-building (PCCB) aims to address current and emerging gaps and needs in implementing and further enhancing capacity-building in developing countries. | UNFCCC, 2015, p. 12
UNFCCC (2015)
UNFCCC (2020) |
| Sendai Framework | Substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries. | UNDRR (2015, p. 11) |
| Sustainable Development Goal SDG13 (Climate Action) | SDG13 aims to ‘take urgent action to combat climate change and its impacts’. It includes 13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning. | UNDESA (2015, p. 27) |

Source: Authors and agencies indicated.
Vanuatu’s own set of 15 SDGs, outlined in its NSDP, are aligned with the United Nations 17 SDGs and the 2030 Agenda for Sustainable Development. SDG 13 is expressed as policy objective ENV 3.4 (Table 10). A review of the implementation of the 2030 Agenda (Republic of Vanuatu, 2019) states that ‘steady progress’ has been made with the implementation of SDG 13 (Republic of Vanuatu, 2019, pp. 22–23). Regarding resilience education, Table 15 summarizes the findings from this review (Republic of Vanuatu, 2019, pp. 77–79), indicating that ‘as of 2017, the National Curriculum at all levels now incorporates climate and disaster modules’.

**DISCUSSION**

Article 82 of the Paris Agreement of 2015 calls upon all parties, including Vanuatu, to ensure that education contributes to capacity-building for resilience to CC. The Sendai Framework urges the incorporation of disaster risk knowledge in formal and non-formal education, encourages primary and secondary schools to incorporate resilience programmes that include DRR lessons in the curriculum, advocates the provision of curricular material to teachers, and reminds us that children and youth are agents of change who should be given the space and means to contribute to disaster risk reduction. The 2030 Agenda for Sustainable Development includes Target 13.3 to improve education, awareness-raising and human and institutional capacity on CC mitigation, adaptation, impact reduction and early warning, stating that this will be indicated when a country has integrated those aspects into primary, secondary and tertiary curricula.

On a regional level, the Framework for Resilient Development in the Pacific urges the strengthening of knowledge on causes, impacts and responses to CC, hazards and disasters, as well as capacity-building for adaptation and risk management measures, to take place through formal and non-formal education systems. It asks for capacity-building on the use of renewable energy and ecosystem conservation to occur in schools and communities, and it emphasizes the key role of training and education in building resilient communities.

Within the context of these international and regional policies on resilience, Vanuatu has developed its VCCDRRP and NSDP, each setting objectives for the 15-year period to 2030. The VCCDRRP asks for school curricula to adopt an integrated
## Table 12  References in the FRDP to Capacity-building in Schools

| Goal                                                                 | Stakeholder                                                                 | Priority Actions                                                                                                                                                                                                 | Page No. in FRDP |
|---------------------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| 1. Strengthened integrated adaptation and risk reduction to enhance resilience to climate change and disasters | National and subnational governments and administrations                    | q) Strengthen knowledge on the causes, local impacts and responses to climate change, hazards and disasters, and build capacity for local adaptation and other risk management measures, through formal and non-formal education systems, including for loss and damage.  
  r) Improve understanding and applications of successful strategies to increase resilience by documenting traditional, contemporary and scientific knowledge, and lessons learned, to develop and utilize appropriate awareness, communication, education and information materials for communities, media, schools, training providers and universities. | 15 16            |
|                                                                     | Regional organizations and other development partners                      | n) Work in close collaboration with member countries and other stakeholders to develop and deliver relevant capacity-building programmes, including emerging priorities such as loss and damage as a result of climate change. | 17              |
| 2. Low carbon development                                           | Civil society and communities                                              | b) Lead and contribute to awareness campaigns and capacity-building in schools and communities, to promote and facilitate energy and ecosystem conservation and the increased use of renewable energy, through changes in attitudes and behaviour. | 20              |
| 3. Strengthened disaster preparedness, response and recovery        | National and subnational governments and administrations                   | f) Support existing and additional capacity-building and awareness raising for governments and communities (including churches and schools), to improve their disaster preparedness, response and recovery capabilities, acknowledging they are often the first responders in the event of a disaster. | 23              |

*Source: SPC et al. (2016, pp. 15–17, 20, 23).*
Table 13  Specific References to Formal Education on DRR in the Sendai Framework

| Objective                                                                 | Code/Page Number |
|---------------------------------------------------------------------------|------------------|
| Prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience. | 17 (p. 11)       |
| Promote the incorporation of disaster risk knowledge, including disaster prevention, mitigation, preparedness, response, recovery and rehabilitation, in formal and non-formal education, as well as in civic education at all levels, as well as in professional education and training. | 24 (l) (p. 14)   |
| Promote national strategies to strengthen public education and awareness in disaster risk reduction, including disaster risk information and knowledge, through campaigns, social media and community mobilization, taking into account specific audiences and their needs. | 24 (m) (p. 14)   |
| Children and youth are agents of change and should be given the space and modalities to contribute to disaster risk reduction, in accordance with legislation, national practice and educational curricula. | 36 (a) (ii) (p. 22) |

Source: UNDRR (2015, pp. 11, 14, 22).

Table 14  Actions to Promote Capacity Development for DRR Through Education

- Encourage/empower schools (primary, secondary and university) to incorporate resilience programmes that address risk through a multitude of means (e.g., changing the organizational culture, DRR lessons in the curriculum and instituting enterprise risk management).

- Provide teachers with curriculum materials and training of trainer courses to enable broad-reaching exposure of risk reduction education and messaging.

- Incentivize and support the mainstreaming of DRR into standard curricula.

- Provide the materials and support that enables embedding of DRR materials and messages into existing professional training programmes, including employee on-boarding, staff technical training, and other avenues for entry across all government and societal sectors.

Source: UNDRR (2020, p. 53).

approach to CC and DRR and to include traditional knowledge of early warning and coping mechanisms and lessons learned on disaster risk reduction. The NSDP includes resilience education under its objective ENV 3.4, stating that the objective is for public schools to use CC and DRR modules in the national curriculum at all levels.

Thus there is clear evidence that key international and regional policies stress the importance of educating students at all levels about resilience issues—mentioned also by Mochizuki and Bryan (2015, pp. 7–8) and Reid (2019)—and that this is echoed in general terms by Vanuatu’s own policies on climate change, disasters and sustainability. However, a closer look at what is actually happening in Vanuatu
Table 15  Vanuatu’s NSDP Policy Objectives on Resilience Education Aligned to SDG Targets and Indicators

| SDG Target | SDG Indicator | Vanuatu’s NSDP Objectives and Achievements |
|------------|---------------|------------------------------------------|
| Goal 13: Take urgent action to combat climate change and its impacts | 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning. | ENV 3.4.1 Percentage of public schools using the climate change and disaster risk reduction modules in national curriculum at all levels. |
| | 13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula. | • As of 2017: National curriculum at all levels now incorporates climate and disaster modules. |
| | 13.3.2 Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions. | |

Source: Republic of Vanuatu (2019, pp. 77–79).

schools in 2020, 5 years into the lifespan of these policies, reveals that the reality on the ground is different. Four reasons are suggested.

Firstly, although the VCCDRRP says that CC and DRR have been mainstreamed into the National Curriculum Statement (NCS), this statement pre-dates the VCCDRRP: thus DRR is not cited, and CC is only mentioned briefly. All current primary and secondary curricula are being developed on the basis of the NCS, and the guidelines for curriculum writers on resilience issues are minimal. The 2019 review of progress towards Vanuatu’s implementation of SDG and NSDP goals states that the National Curriculum has since 2017 incorporated climate and disaster modules at all levels of schooling. This is not correct, since even in 2020 these modules only exist or are planned for years 5, 6, 11, 12 and 13.

Secondly, the implementation of revised curricula is slow. In 2020, new primary curricula are being rolled out as far as year 5 level, junior secondary curricula are still being written, and senior secondary curricula are only being taught in years 11 and 12, without any official teaching resources (Obed, L, personal communication, October 23, 2020). Thus while students in years 5, 11 and 12 are learning about CC and disasters, those in other years are dependent on out-of-date curricula in which resilience issues have minor significance. Effective learning resources introduced in 2014–2015, such as Learning about Climate Change the Pacific Way, have been largely forgotten.

Thirdly, the most effective education on CC and disasters appears in curricula at senior secondary level, by which time most students are no longer in school: statistics from 2019 show that students in year 13 are just 13% of the number who started in year 1 in 2007. Furthermore, such education is confined to three optional subjects—geography, earth science and development studies—each taken by one-third or less of all who reach this level. Thus the number of students benefiting from the most effective resilience education is only a minor proportion of the total.
Fourthly, the content of curricula on resilience education, in terms of knowledge, skills, attitudes and behavioural traits gained, must also be questioned. While years 4, 5 and 6 curricula in social science and science teach basic knowledge and involve skill-sets and field experience, the number of teaching hours over this 3-year period is only 1% of the total time spent in the classroom. At the upper end of secondary school, learners in the three optional subjects have more learning hours on resilience issues, but the syllabi make no mention of fieldwork or practical training on adaptation or mitigation strategies. Indeed, none of the syllabi include teaching approaches that promote participatory, field and affective learning, nor attitudes such as the avoidance of consumerism, a holistic approach to the environment and the value of traditional knowledge, nor behaviours such as climate change advocacy and environmental stewardship. Further, the effectiveness of resilience education at all levels depends not only upon the amount of curricular time, but also on materials used, pedagogy, teacher enthusiasm and commitment, and student motivation—factors that are not being analysed in the present article.

We have demonstrated that in 2020, there is a mismatch in Vanuatu between formal school education on resilience and the policies that advocate such education. As far as the Vanuatu government is concerned, its 2019 review of progress towards the objectives of the nation’s sustainable development goals states that modules on CC and disasters are being taught at all levels of school education. In reality, they are not.

CONCLUSION AND RECOMMENDATIONS

Vanuatu’s revised school curricula do not fully reflect the requirements for formal school education on resilience contained in national, regional and international policies—a situation that is inconsistent with the nation’s status as the world’s most disaster-prone country. Furthermore, implementation of the new syllabi has been slow, so that in 2020, 10 years after the launching of the NCS, modules on resilience are not yet being taught in all years of primary and secondary education, contrary to the government’s statement that the national curriculum has since 2017 ‘incorporated climate and disaster modules at all levels of schooling’.

At present, the most effective delivery of education on climate change and disasters occurs in years 12 and 13, by which time the vast majority of students have already left school. Furthermore, such delivery only takes place in three optional subjects that are taken by a minority of those who do reach these higher levels.

In order to reach the majority of school-age students, we recommend that more intensive learning about resilience takes place at upper primary and junior secondary school levels. The following approaches are suggested:

- Those currently writing the junior secondary syllabus can be asked to ensure that the content of social science and science courses addresses the most up-to-date issues on CC and DRR and includes hands-on and field experiences that engage the learners.
Requests can be made to donor partners to fund the printing of suitable learning resources to be used across the curriculum at junior secondary level. Examples are the 16-picture toolkit and its accompanying teacher guide. Funding will also be needed to run short teacher-training courses on these new materials.

Teachers involved in the senior cycle need to have appropriate teaching and learning materials for their students. At present, they rely on internet resources, and there is considerable variation from teacher to teacher. The Vanuatu Institute of Technology is already teaching accredited certificate courses on CC and DRR at TVET level, and the unit learner guides and workbooks from these courses can be adapted for use in years 11–13. Specialist writers must be recruited to do this, and funding found for the production of resources.

Staff from the Department of Climate Change, the National Disaster Management Office and non-government organisations can be approached to assist with running relevant short courses for all secondary teachers, particularly those in key subjects.

Teachers in Vanuatu are ready to help their students contribute towards the nation’s vision of being a ‘resilient community, environment and economy’. They need to be given the tools—materials and in-service training—to be able to do so.

**Disclosure Statement**

The lead author was involved in the writing and translation of the Vanuatu National Syllabi for Earth Science and Development Studies at senior secondary level (years 11–13) during 2012–2014, while working in Vanuatu as a lecturer at the Vanuatu Institute of Teacher Education. He has 35 years of experience in educational institutions in Vanuatu.

The second author was the lead contributor to Vanuatu’s submission to the UNFCCC-PCCB in 2017 (Republic of Vanuatu, 2017).

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