

# A multimodal education response to the resilience challenge

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## Abstract

Tonga is a small island nation in the Pacific. While it has been COVID free, it is susceptible to many natural disasters, such as the recent Tsunami and earthquake. Resilience is a fundamental requirement of the Tongan education system which has been partially addressed with accelerated use of technology and open, distance, and online learning, broadening access to quality education.

Supported by a grant from the Global Partnership for Education (GPE), the Tonga Ministry of Education and Training (MET) partnered with Inclusiv Education, UNICEF, Save the Children Australia, and Kultura. The MET took an evidence-based approach. Two National school closure days were trialled to evaluate the viability of multimodal teaching approaches during future school closures brought about by COVID19 or other emergencies.

In this way Tonga has now started to build a resilient education system, addressing issues of learning loss due to school closures and increasing equitable access to technology for teaching and learning.

This paper reports on the National level educational resilience project implemented in 2021, based on the research carried out in 2020, to deliver a comprehensive multimodal and flexible approach to education, encompassing print, radio, television and online delivery.

Key learnings and future plans are also discussed.

## Background

Tonga is a small island nation in the Pacific. While Tonga was COVID free until late 2021, it is susceptible to many natural disasters, such as the recent Tsunami and earthquake. Resilience is a fundamental requirement of the Tongan education system which has been partially addressed with accelerated use of technology and open, distance, and online learning, broadening access to quality education.

## Demographics

In order to understand Tong's unique school population, and investing in it sustainably, it is necessary to appreciate the Participation Rates in Schools and the Dependency Rates (Psacharopoulos, 2003).

Tonga's overall school enrolment rate for 4-15 years of age, as of the 2016 Census, was high at 95%, with most enrolling in primary and secondary schools. Females enrolment was higher than males. The lowest rate was recorded for male's enrolment in the two Niuas (85.3%).

Table 1 Tonga Participation Rates

	<b>TONGA</b>	<b>Tongatapu</b>	<b>Vava'u</b>	<b>Ha'apai</b>	<b>'Eua</b>	<b>Two Niuas</b>
<b>Males</b>	<b>94.3</b>	94.3	93.4	95.7	96.3	85.3
<b>Females</b>	<b>94.8</b>	94.7	95.2	95.9	94.3	91.7
<b>Total</b>	<b>94.5</b>	<b>94.5</b>	<b>94.3</b>	<b>95.7</b>	<b>95.3</b>	<b>88.2</b>

### Dependency Rate

From the 2016 Tonga's Population and Housing Census, more males than females are less than 15 years of ages. Further, a high dependency rate of 82% of the total of Tonga's population falls within those under 15 and over 60 years old, with a higher dependency ratio for males (85%) than females (79%). This means for every 100 heads of population, 82 are in the dependent age groups.

Table 2 Tonga Dependency Data<sup>1</sup>

Dependency Age category	Total	Male	Female
Less than 15 (0 – 14 years of age)	36,534	18,996 (52%)	17,538 (48%)
Working age (15 - 59 years of age)	55,305	27,188 (49%)	28,117 (51%)
Older population (60 years & older)	8,771	4,048 (46%)	4,723 (54%)
<b>Total</b>	<b>100,610</b>	<b>50,232 (50%)</b>	<b>50,378 (50%)</b>
Children Dependency Ratio (< 15 years)	66	70	62
Aged Dependency Ratio (60 years & older)	16	15	17
<b>Total Dependency Ratio</b>	<b>82</b>	<b>85</b>	<b>79</b>

About a third of the total population of Tonga are in the compulsory school age group, having a high rate of economic dependency. So, any plans for effective curriculum and content delivery must consider carefully the family's economic situation given the high dependency rate of this group.

<sup>1</sup> 2016 Tonga's Population and Housing Census

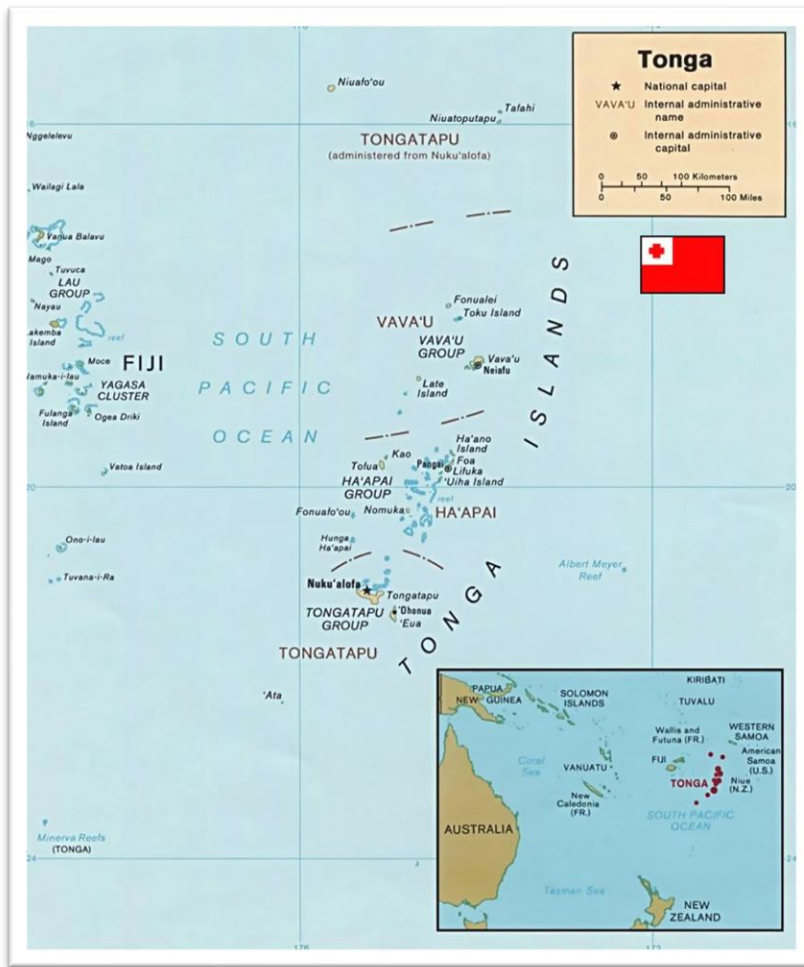


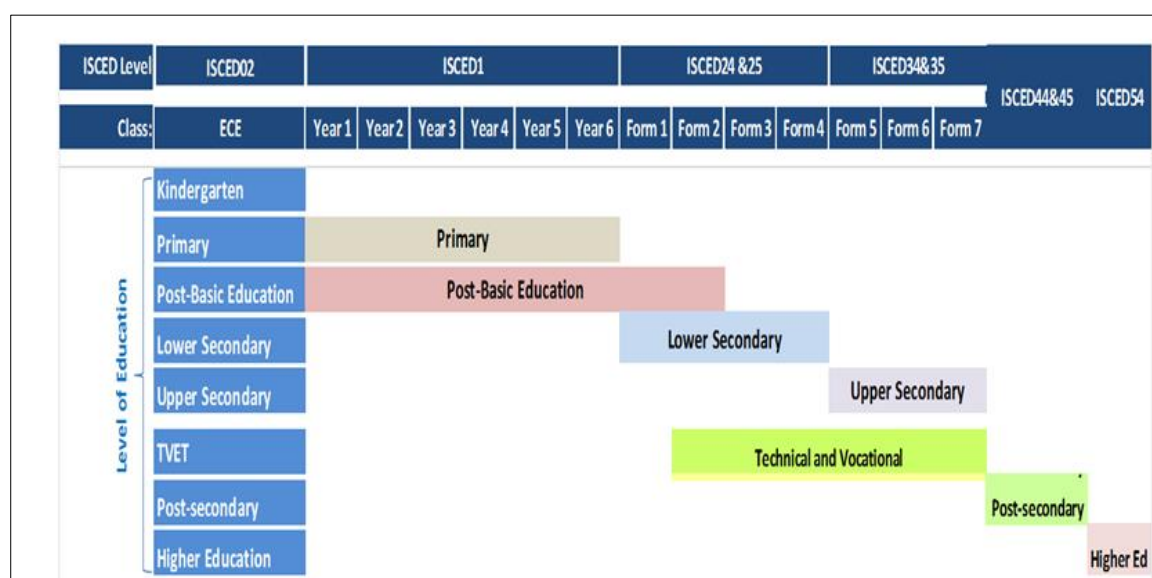
Figure 1 Map of Tonga (Source: <https://www.mapsland.com/oceania/tonga/detailed-political-map-of-tonga-with-other-marks>)

## Educational Environment

The Ministry of Education and Training (MET) is responsible for the administration and management of all education and training programs and learning activities. MET has made every effort *‘to create an environment in which all education systems, communities, schools, teachers, students, donor and development partners, and the Ministry can work together in partnership and in harmony to achieve maximal benefit for all students at all levels, and in which all students can equitably access quality education that is relevant and sustainable’*<sup>2</sup>.

<sup>2</sup> Ministry of Education and Training website <http://www.edu.gov.to/about-us/roles-responsibilities.html>

Table 3 Year Levels of Schooling in Tonga



Tonga’s education system consists of Early Childhood Education (ECE, 3-5 years old), primary education (5-10/11 years old), secondary and to post-secondary (11+ years old). Primary school levels are composed of Class 1 – Class 6, while secondary school (Lower and Upper) starts at Form 1 to Form 7; 12-13 years of compulsory schooling. Post-secondary education encompasses those in TVET and in tertiary and higher education. Note that this proposal caters for basic education, up to Form 2 of secondary schooling, according to the UNESCO definition<sup>3</sup>.

Below is the UNESCO’s Institute of Statistics 2020<sup>4</sup> school-age population by education levels in Tonga. The total student population in Tonga is 44,767, 80% (36,016) of which falls within the compulsory education age group.

Table 4 Tonga School Enrolment (2020, UNESCO)

Levels	Number
Pre-primary	4,984
Primary	14,746
Secondary	16,286
Tertiary	8,751
Total School Population	44,767

The Local Education Group in Tonga is made up of different education systems and each system is represented in the Tonga National Council of Directors of Education Systems. The Council members included:

- MET
- Free Wesleyan Church of Tonga (FWC) (Siasi Uesiliana ‘o Tonga)

<sup>3</sup> <http://uis.unesco.org/en/glossary-term/basic-education>

<sup>4</sup> <http://uis.unesco.org/en/country/to?theme=education-and-literacy#slideoutmenu>

- Free Church of Tonga (Siasi Tau'atina 'o Tonga)
- Roman Catholic Church (Siasi Katolika Loma)
- Ocean of Light International School
- Acts Community School
- Anglican Church (Siasi 'Ingilani)
- Seventh Day Adventist Church (Siasi 'Ahofitu)
- Tokaikolo Christian Church (Siasi Tokaikolo 'ia Kalaisi)
- Church of Jesus Christ of the Latter-Day Saints (Siasi 'o Sīsū Kalaisi 'o e Kau Mā'oni'oni 'I he Ngaahi 'Aho Kimui ni)

Almost all of Tonga's different education systems have schools in all of its islands. Tongatapu is the main island and the outer islands are made up of Vava'u, Ha'apai, 'Eua and the two Niuas (consisting of Niua Fo'ou and Niua Toputapu, two of the most remote islands of Tonga).

### Completion Rates

In the 2016 Census, the majority of those who dropped out of schools, did so for personal reasons (52%). School fees and other financial factors were not even rated as high, which means accessibility to education in Tonga then was not to do with lack of money to support students. For example, more than 95% of children have their own school uniforms and other resources relevant to their studies. The challenge however, as communicated in the 2016 Census lies *with improving access to the items that help to support study at home such as books suitable for their age, a study space/table and additional tutoring if needed.*<sup>5</sup> In a COVID-19 situation, these home resources must be considered for a successful delivery of teaching and learning at home.

About a third of the total population are of the compulsory school age (as of August 2020, Cabinet passed the law that the compulsory school age is from 4-18 years old) and dependent, so any plans for effective curriculum and content delivery will have to consider the breadth of work that is required to adequately cater for this group.

Looking at the school attendance by area, there is not much disparity in between urban and rural areas but breakdown by islands shows some disparity between islands. Vava'u shows not much disparity whilst Ha'apai, Eua and Ongo Niua shows disparity in the school attendance.

Having considered the demographic and educational context of Tonga, we now turn to the potential role of multimodal education within this context.

### How can multimodal education assist in educational continuity?

Remote locations, such as Tonga have a long history of using Distance Education technologies in the delivery of education (Allier-Gagneur, 2020; Goldie-Scot et al., 2018; Latchem, 2017; Tiony et al., 2016) and the impact of COVID-19 made them even more important (Espino-Díaz et al., 2020; Haßler et al., 2020; UNHCR AEWG, 2020). There have been many proposals for appropriate responses to the pandemic with Education Technology (Bella, 2020; Bozkurt et al., 2020; Fegert et al., 2020; Kabugo, 2020; Toquero, 2021). Not only have the challenges of the pandemic been a focus, but also new opportunities presented by the need for learning away from schools (Jordan, 2020; Liberman et al., 2020; UNESCO, 2020) have been considered (Azorín, 2020; Banerji, 2020; Hernandez-Agramonte et al., 2020; Liberman et al., 2020; McBurnie & Haßler, 2020; Panda, 2020; Traxler & Smith, 2020).

Most of the studies which are available focus on either a single intervention or broad policy-level prescriptions. This paper considers an integrated approach to the response to the pandemic, describing a multimodal approach,

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<sup>5</sup> 2016 Tonga's Population and Housing Census

with numerous interventions, as well strong support from National policy and development funding. In this sense it addresses the ‘Challenge and the Burden’ of such a response (Fegert et al., 2020) as well as shedding light on new, integrated approaches which are only starting to appear in the literature.

The particular approach here, which we call ‘multimodal learning’ (Allela et al., 2020; Fjørtoft, 2020) applies an existing concept to the new context of school closures resulting from the pandemic. The implementation here includes the development of multiple media forms (text, graphics, audio, video) delivered via multiple platforms (hardcopy, radio, TV, online). Two key factors make this work: firstly, the media are coordinated through curricular activities, and secondly, training is provided to teachers and parents to support the implementation.

## Collecting the evidence – trialling home learning

Tonga has engaged in a project that is unique in the region – to implement two trial ‘learn at home’ days to prepare children, teachers and care givers for the possibility of children being unable to attend school and having to learn at home. The First Trial day was implemented June 30<sup>th</sup> 2020 and the feedback from it informed the design of learning activities for the Second Trial, which was held on September 8<sup>th</sup> 2020.,

The trial days were a central component of the Government of Tonga (GOT) COVID-19 Education Planning, Preparedness and Response Framework (EPPRF)<sup>6</sup> (Phase 1, Preparedness and Prevention) in which national lockdown procedures have been trialed, in this case for the education sector. The aim of the ‘learn at home’ days was to prepare for learning continuity when schools are closed, and to familiarize children, teachers and care givers with the possible approaches that can be taken in times of social dislocation. While the immediate impetus for these trials was to prepare for school closures due to the COVID-19 pandemic, the learnings from the Trial Days were also found to be a sound investment for future responses to natural hazards such as cyclones, given Tonga is cyclone prone between November and March.

The ‘learn at home’ trial was led by MET and supported by LEG, UNICEF and Inclusiv Education. The latter is a social venture of Save the Children, and the trial was made possible through the financial support from the Global Partnership for Education (GPE) Catalytic Fund. Parents and care givers were provided with a daily schedule of learning for children in each year level to follow. This was distributed in print form and downloadable from the MET web site, and some lessons were delivered through radio and TV broadcasts. A dedicated free-call phone number was made available for parents to address concerns, and a comprehensive evaluation was carried out. The success of the Trial Days was reflected in the evaluations; a draft report is currently available from the MET.

Key findings of the First Trial Day identified the need for:

- a multimodal approach to education delivery in lockdown;
- additional audio and video educational resources to be developed;
- provision of relevant information and support for parents and care givers who would be teachers during lockdown; and
- capacity development for teachers to be able to deliver teaching and foster learning effectively to remotely located children using a range of technologies.

The second Trial Day was conducted on September 8<sup>th</sup> and while a complete evaluation has not been conducted, initial feedback indicated that the approach taken by the MET was supported by parents. The findings from the first Trial Day were confirmed. In response to the question “I was able to easily follow the instructions and activities devised by the Ministry and my Teacher for my learning at home” over 55% either agreed or strongly agreed while over 57% of parents agreed or strongly agreed that “My child really enjoyed their learning at home”. There was also support for the range of delivery options proposed in this submission (print, radio, TV, online with SMS and telephone support) being combined appropriately. It has been noted that some of the most enthusiastic users of the online resources were located on outer islands, counter to some expectations.

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<sup>6</sup> <https://www.gov.to/press-release/tongas-covid-19-education-planning-preparedness-and-response-framework/>

This project responded to these findings and the GOT is strongly in support of the teaching and learning approaches which have been devised and tested during the Trial Days.

## Designing the intervention

COVID-19 has the potential to have a devastating impact on an isolated location such as Tonga. Should the virus have entered the country at that time, strong measures to ensure safety would have been required. Schooling may have had to stop on some (or all) islands, and children may have needed to stay home for some time. Learning continuity in this context required innovative strategies. In this new reality marked by uncertainty, children may be more vulnerable due to school closures, lockdowns and other stressors.

MET had developed and published Tonga's COVID-19 Education Planning, Preparedness and Response Framework (EPPRF) and convened a COVID-19 Technical Working Group to coordinate the strategies in the plan. The plan is aligned with Tonga's National COVID-19 Action Plan<sup>7</sup> and had two priority outcomes:

**Outcome 1** - The physical and emotional health of learners and teachers across all education levels is supported through safe learning environments

**Outcome 2** - The education system is more resilient, and all students have access to continuing educational opportunities

After consultation with the EC and in consideration of the findings of the Trial Days, MET has been proactive in responding to the two priority outcomes. Outcome 1 was to be addressed internally by MET, given the focus to the development of the outputs from Outcome 2 of the EPPRF for the GPE COVID-19 accelerated funding window. These outputs of the project were as follows:

- Output 2.1 Home-schooling guides for ECE, IE, Primary and Secondary students are developed
- Output 2.2 Audio lessons for ECE, IE and primary students and video lessons for secondary students are produced to complement home-schooling packages
- Output 2.3 Develop home-based learning and support guidance and modality for parents
- Output 2.4 Develop teachers' capacity so they are effective in using new modes of distance/flexible learning
- Output 2.5 Update / develop MET policies and Standard Operating Procedures (SOPs) on preparedness, response, disaster risk reduction, and resilience building

These outputs were in line with the National Education in Emergencies Policy goal 1: *To be better prepared for and to respond and recover after an emergency* and form part of the Tonga Strengthen Disaster Risk Reduction Management program. MET aims to strengthen system resilience and speed of response to a future COVID-19 outbreak (or other disaster).

The selected outputs and activities were endorsed and developed into a Concept Note which was reviewed by the EC and refined by MET, finalized and endorsed by the EC on (9<sup>th</sup> April 2020). MET has selected Save the Children as the accredited grant agent and this decision and the protect described here were endorsed by the LEG on 18<sup>th</sup> September 2020.

## Major findings and lessons learned

In terms of each output, the following were achieved in the one-year project:

- Output 2.1 Packages of materials were developed in paper, audio and video formats for delivery. Over 4 weeks of instruction were catered for.

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<sup>7</sup> TONGA's National Action Plan for COVID-19 was developed by Tonga's National Emergency Management Committee and the National Task Force for Covid-19

- Output 2.2 Over 650 video lessons and accompanying audio tracks were produced across the curriculum for all levels up to junior secondary schools
- Output 2.3 Materials for over 200 households were produced
- Output 2.4 80 Ambassador teachers were trained in online teaching skills and these teachers then trained over 240 teachers, providing a total training footprint of over 320 teachers across the curriculum and year levels. This provides a good base on which to work in the future.
- Output 2.5 Training was provided to school leaders to allow them to review their policies and respond to disasters in a more comprehensive manner.

The trials of home schooling in 2020 and 2021 for all the schools in Tonga had demonstrated the importance of multimodal education. Although, the students were able to receive the hardcopy of the lessons, they still fully supported the arrangement of having the lessons to be broadcast on the radio and television. These modes allowed the teachers to explain the lessons in more details and also guided the students through the printed materials they already received. In the television, the students can actually watch the teachers' actions when they are doing any exercises or experiments, especially in mathematics and science subjects.

The lessons, both in written materials and video, were also available in an electronic platform called Hama e-Learning Platform (HeLP) where the students can access it through the Internet. This mode allowed the students to access the lessons in any time that is convenient to them. They can also download the materials or replay the video as many times as they want.

Therefore, by allowing the lessons to be delivered in different modes during home schooling, the students have different options available to them to ensure that they will be able to continue their studies from home in the event of a lockdown due to pandemic or any disasters as relying on one mode cannot guarantee that the lessons will reach everyone.

After the home-schooling trials in 2020 and 2021, it became apparent that there was a need to pre-record all the lessons for the whole academic year, from the Early Childhood Education to Form 7 in the secondary schools, in video and store them in the HeLP. So, that in the event of schools' shutdown, the material can be easily pulled out and delivered in different modes to all the students.

There should be an effort to support the students in accessing the Internet, by subsidising their laptops, arranging with the telecom operators to allow free access to the HeLP and some cheaper rates for the students to access the Internet.

Moreover, MET should have their own radio station as the commercial radio stations already have their own prebooked programs and MET might not be able to have the timeslots they want or not being able to broadcast the lessons at all.

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