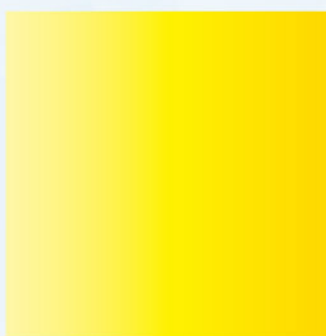
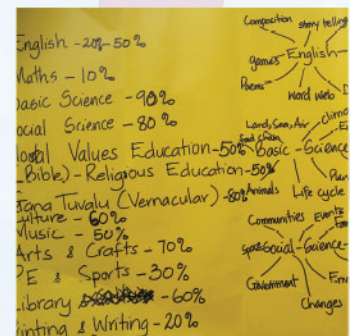
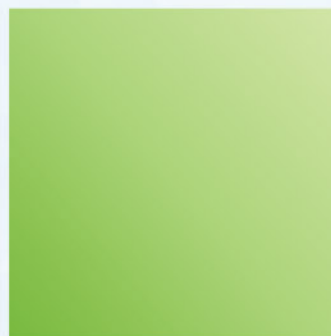


Integrated Island Biodiversity Technical Series

Biodiversity in Schools

Report on Training Of Trainers Workshop:
Integrating Biodiversity into School Programs
Tuvalu



SPREP Library Cataloguing-in-Publication Data

Biodiversity in Schools – report on training of trainers workshop :
integrating biodiversity into school programs. Apia, Samoa : SPREP,
2019.

62 p. 29 cm.

ISBN: 978-982-04-0694-0 (print)
978-982-04-0695-7 (ecopy)

1. Biological diversity conservation – Education – Tuvalu.
 2. Biodiversity conservation – Education – Tuvalu.
 3. Environmental awareness – Threats & risks – Tuvalu
- Oceania. 4. Ecosystem management – Training – Oceania.
- I. Pacific Regional Environment Programme (SPREP). II. Title

371.302 8



PO Box 240, Apia, Samoa
+685 21929
sprep@sprep.org
www.sprep.org

*Our vision: A resilient Pacific environment sustaining our
livelihoods and natural heritage in harmony with our cultures.*

BIODIVERSITY IN SCHOOLS

REPORT ON TRAINING OF TRAINERS WORKSHOP: INTEGRATING BIODIVERSITY INTO SCHOOL PROGRAMS

Compiled by Live & Learn Environmental Education under a consultancy agreement with the
Department of Environment, Tuvalu Islands and the
Secretariat of the Pacific Regional Environment Program (SPREP)

TABLE OF CONTENTS

Table of Contents	1
Acronyms	2
Section 1: Introduction	3
Executive Summary	3
Background	4
Pre-Activity Preparation:	4
Training Schedule	5
Section 2: Methodology	7
Toolkit	7
Presentations:	7
Presentation 1	8
Presentation 2	8
Presentation 3	8
Presentation 4	8
Activity: Curriculum Inventory	9
Activity: Developing Lesson Plans:	9
Activity: Developing School Strategies	9
Activity: Fieldtrip	10
Activity: Self-Assessment Evaluation	10
Section 3: Key Outcomes:	11
Summary of Outcomes	11
Outcome 1: Increased Awareness and Knowledge	11
Linkages to Culture and Lifestyle	11
Inter and Intra Specie Linkages	13
Genetic, Specie and Island Diversity	14
Outcome 2: Identification of Integration Pathways in Existing School Curriculum	15
Outcome 3: School Strategies for Biodiversity Action	18

Strategies Forward: School Action Plans	19
Outcome 4: Biodiversity Champions and Communication Plan	21
Section 4: Training Reflections and Recommendations	23
Concluding Remarks	23
Section 5: Appendix	24
Appendix 1: Evaluation by Teachers	24
Appendix 2: Lesson Plans Developed by Teachers	28
Appendix 3: Fieldtrip Teachers Evaluation	41
Appendix 4: Participants List and Contact Details	43
Appendix 5: Lesson Plans for Tuvalu 2016	44
Appendix 6: Traffic Lights Self Evaluation Form	54

Acronyms

NBSAP	National Biodiversity Strategic Action Plan
UN	United Nations
SPREP	Secretariat of the Pacific Regional Environment Program
MOE	Ministry of Education
NAPA	National Adaptation Programme of Action
SDA Primary	Seventh Day Adventist Primary School
Nauti	Nauti Primary School
FSS	Fetuvalu Secondary School
LLEE/Live & Learn	Live & Learn Environmental Education

Section 1: Introduction

Executive Summary

Tuvalu signed the Convention on Biological Diversity in 1992 and ratified it in 2002. In 2010, Tuvalu approved its own National Biodiversity Strategic Action Plan (NBSAP) following the submission of a national report to the UN Convention on Biological Diversity in 2009; which had noted that the threats to the environment in Tuvalu developed from deleterious human actions and negative attitude which results in littering, over fishing and hunting, ignorance and climate change.¹

With the increasing effects of climate change, there is growing recognition on the need for education on understanding the significance of the existing biodiversity in our environment and the importance implementing innovative and proactive actions towards the conservation of biodiversity.

The engagement of Live & Learn Environmental Education to deliver a training workshop with teachers and stakeholders to explore linkages on biodiversity in the existing school curriculum; and to raise awareness on the meaningful engagement of child advocates in biodiversity conservation follows a similar training delivered in the Cook Islands in 2015. Resource materials; mainly “Discovering Biodiversity Education Guide” developed by Live & Learn was used as a basis for the training course; drawing on creative application of lesson plans trailed successfully in schools across the region to raise awareness on how biodiversity can be integrated into the school activities.

The training took an approach to enhance participants’ knowledge on biodiversity values and connections; and provide platforms for discussion for participants to themselves identify the relevancy and significance of biodiversity to the community’s wellbeing and ‘way of life’. This created an enabling environment for teachers to also identify entry points for biodiversity into the existing school curriculum, develop lesson plans to engage student interest and identify various strategies to engage meaningful participation of their schools in biodiversity conservation.

With this participant oriented approach, the program succeeded in facilitating creative and forward thinking and for the first time, teachers have designed and collated biodiversity action plans and have identified pathways for integration of biodiversity awareness in the school curriculum. The platforms also facilitated open discussions regarding the challenges to implement these actions and the role of government and NGO stakeholders that can support the successive implementation of the identified activities.

This report will not provide the details of the tools used because they are in the Tool Kit (annexed). It will only provide a brief of the sessions as they are delivered and the outcomes.

The focus is on the summary of deliverables and lessons learnt for future trainings. This report is expressed in four sections:

- **Section 1:** Introduction
- **Section 2:** Methodology
- **Section 3:** Outcomes
- **Section 4:** Training Reflections and Recommendations
- **Section 5:** Appendix

¹ Tuvalu National Report https://sustainabledevelopment.un.org/content/documents/1174226TUVALU%20NATIONAL%20SIDS%20REPO_RT1.pdf

Background

Live & Learn Environmental Education was engaged by the Department of Environment, Tuvalu, through Secretariat of the Pacific Regional Environment Program (SPREP) to plan and conduct a training of trainers with teachers from the primary and secondary schools to integrate biodiversity conservation into the school lesson plans and to strengthen the awareness on the importance of the concept amongst the children through the existing curriculum. The toolkit and presentations used for this training is a replica of a similar training carried out in the Cook Islands for primary and secondary schools in an engagement with the National Environment Services in 2015, modified to include local examples with references made to the Tuvalu NBSAP and the Tuvalu National Adaptation Program; and to accommodate the trainees level of exposure to environmental programs; where there is a discernable difference in the initial reception towards incorporating biodiversity awareness in school programs.

The training is noted to be the first of its kind in approach in Tuvalu, taking biodiversity initiatives and awareness to be incorporated in existing school curriculum and as extra-curricular activities.

The program activities were designed along the following objectives:

- Developing positive attitudes and values on biodiversity conservation
- Sharing participative approaches for promoting Biodiversity conservation using the
- Discovering Biodiversity Education Guide
- To identify sustainable actions that are relevant and measurable at school level
- To provide opportunities to establish networks amongst teachers

The expected outcomes of this training to achieve the above objectives are for:

- Participants being able to link how values and positive actions can contribute to Biodiversity
- Conservation
- Participants are able to adapt lessons from the guide into school curriculum
- Sustainable Action Plans developed by participants and are able to take ownership while implementing actions in schools
- Formation of working cluster groups

Pre-Activity Preparation

The design of the program was based on the feedback provided by Department of Environment and the Ministry of Education (MOE). A pre-brief meeting was carried out with the Department of Environment and MOE to review the lesson plans and program for the event. All changes made during the program are done in consultation with the Department of Environment.

The training schedule was re-arranged according to the availability of teachers. While the duration of the program was initially agreed to start at 8.30am and end at 3.30pm from the 28th July to the 30th of July, an alteration to the program was made accordingly to the availability of the teachers as participants. Notably, only the schools in the main island were able to attend because of the school term. The program was adjusted to begin when school had ended at 1.00pm and the program was extended to a four day session to be able to cover the main modules of the trainings and to include a field trip on the third day.

Training Schedule

28th Tuesday : Day 1 – Theme : Discovering & Valuing Biodiversity		
Time	Activity	Objective
1.30pm	Registration	
2.00pm	Workshop Opening – Address made by Chief Guests	Tuvalu Department of Environment, Ministry of Education
2.20pm	Perceptions and Expectations	Fun introductory activity to help participants understand the importance of Biodiversity & introduce themselves.
2.50pm	Overview of LLEE & Workshop Objectives	Brief power point presentation on the work LLEE does followed with a background of what the 3 day workshop would encompass.
3.15pm	Pre-Self-Assessment	Noting Teacher's expectations, rules for the Workshop and Self-assessment tool
3.30pm	Afternoon Tea	
3.45pm	Module 1 & 2	Discovering & Valuing of Biodiversity Power Point Presentation, Focus Group Discussion, Participatory Activities
4.30pm	Biodiversity Connections	Links in our ecosystems
5.00pm	Relevance and Significance of Biodiversity to 'our way of life'	Biodiversity Linkages: Focus Group Discussion and presentation
5.10	Module 3	Understanding the threats to Biodiversity PowerPoint Presentation and Focus Group Discussion
5.30pm	Exercise	Raising Awareness on Biodiversity Threats
5.50pm	Recap & Homework	Homework: Conservation Strategies
6.00pm	Dinner Time & End of Day 1	

29th Wednesday : Day 2 – Enabling Environment for Biodiversity action		
Time	Activity	Objective
1.30pm	Arrival Time	
1.45pm	Recap and Overview of Day 2 Objectives	Brief power point presentation on Recap,
2.00pm	Module 3 & 5	Power point presentation: Biodiversity and Culture Ethno-biodiversity, Focus Group discussion
2.45pm	Nation Commitment to Biodiversity	Tuvalu NSAB and day 2 objectives
3.00pm	Homework Exercise	Group Activity and Homework Presentation on Conservation of Biodiversity
4.00pm	Developing Strategies	4.00pm
4.30pm	Biodiversity in Schools: Challenges in Implementation	4.30pm
5.00pm	Module 5: Biodiversity in Schools	5.00pm
5.45pm	Homework	5.45pm
30th Thursday : Day 3 – Theme : Taking Action		
1.30pm	Arrival Time	
1.45pm	Overview of Day 3 Objectives	Brief power point presentation on day 3 objectives
2.00pm	FIELDTRIP	Agriculture Nursery
4.00pm	Module 5: Cont'd	Group Presentations
4.30pm	Teacher's Facilitation	Facilitation of Prepared Lesson Plans
5.30pm	Presentation of Final Networking Plan	Teachers.
5.45pm	Learning Circles	Sustainable /Measureable actions to be undertaken in schools
5.55pm	Group Presentation	Presentation of Action plans
6.00pm	Energizer	From the participants
	The way forward	Networking
1st July Friday : Day 4 – Theme : Certification		
1.45pm	Overview of Day 4 Objectives	Brief power point presentation on day 3 objectives
	The way forward	Networking
2.00pm	Presentation of Certificate	PS Ministry of Environment
3.00	School Action Plans	Finalization and
3.20pm	Evaluation of Day 3	Gathering groups perceptions on group dynamics
3.30	Closing Address	Tuvalu Department of Environment

Section 2: Methodology

To reach the outcomes of this exercise, a toolkit was compiled consisting of a set of activities that allowed teachers to deliberate the following:

1. What is Biodiversity and how is it relevant?
2. What is Ethno-biodiversity and what is its importance?
3. What are the threats to Biodiversity and how can we conserve it?
4. How can we integrate Biodiversity awareness and conservation into our existing school programs:
 - School curriculum
 - Extra-curricular activities
5. What is the nation's stand on Biodiversity and what is our role as Educators?
6. What is the way forward for positive change to recognizing and advocating for biodiversity conservation?

Toolkit

The set of activities are determined based on previous school activities carried out in the region with reference made to the "Discovering Biodiversity" resource guideline. The program is delivered through the following tools:

- Interactive Presentations:
- Participatory activities/and open discussion
- Focus groups discussion
- Creative arts: Role Play, poetry and song, storytelling, drawing
- Individual planning activities
- Field trip
- Activity and lesson planning sessions
- Participant led facilitation
- Self-assessment evaluation (Traffic lights indicators)

The detailed lesson plans of the activities and the presentations facilitated are annexed to this report. All presentation copies, resources and lesson plans were stored in a storage disk that was handed out each participant.

Adjustments to the program was made again on the second the day to include a field trip to the nursery managed by the Ministry of Agriculture, to highlight that there are innovative practices currently undertaken to improve soil quality. Notably, there was a need for this adjustment to present practical activities that are being practiced to increase awareness and to address some of the challenges that were echoed by the teachers in the first and second day.

Presentations

The presentations provided direction for discussion on various tools and strategies used by Live & Learn Environmental Education in the various education programs to engage student interest and meaningful participation. The presentations also introduced the concept of biodiversity, on the linkages between species, the relevance of the resiliency in variety of species and how it is linked to our way of life, current actions that threaten biodiversity and the importance of biodiversity conservation.

Presentation 1: Introduction to Live & Learn Environmental Organization, Structure and Processes, guiding principles; linking to the three day program and objectives for the workshop.

This presentation introduced the underlying principles that guided the development of the Biodiversity Conservation Guide produced by Live & Learn Environmental Education and the guiding handbook for the three day training. There are many approaches for transfer of knowledge; and to link knowledge to change, the process to reach the overall outcome is equally important as the outcome itself. The presentation included examples of various projects carried out recently by Fiji LLEE team, outlining the various approaches to engage target groups. Also shared with the participants are links to resources available on the LLEE website that are products of various programs delivered in the region.

Presentation 2: Introduction to Biodiversity, Relevance of Biodiversity, threats to Biodiversity, Biodiversity Conservation

This interactive presentation covered the basic concepts of biodiversity; portraying the inter-connectivity links between genetic diversity, species diversity and ecosystem diversity. Interactive discussion was carried out using a ridge to reef scene for a discussion on ecosystem links and potential threats that impact an ecosystem and its ripple effects to its surrounding environment. The presentation also covered local policy and government's commitment for biodiversity conservation linking discussion to the national commitment and the role of teachers as trainers of the future leaders.

Presentation 3: Group Presentation: Methods of Biodiversity Conservation, Biodiversity and Culture, Ethnobiobiodiversity and Traditional Environmental Knowledge

This presentation was participant oriented and participant led. The groups are given the opportunity to think about aspects of the culture where traditional conservation methods are practiced. The presentation covered the importance and relevance of biodiversity conservation to the traditional way of life and cultural identity and the monetary loss the identified biodiversity threats have created. Also highlighted in this presentation is how the loss of traditional knowledge in the use of and in the conservation practices for the natural environment, increases our vulnerability, in particular for the coming generations who will be limited in choices.

Homework exercises are also distributed around this presentation. Discussion was carried out of various uses of flora and fauna for traditional costumes, medicinal treatments and livelihood. Group work identified the various tools that can be used to raise awareness and strengthen the appropriate processes.

Presentation 4: Developing and planning Action Plans, lesson plans and school activities to encourage biodiversity conservation; Discovering Biodiversity Educator's Guide

This presentation covered the thinking processes taken by the organization when planning annual strategies or activities. The presentation briefly covered various resources that have been developed by Live & Learn Environmental Education (LLEE); namely the Discovering Biodiversity Educator's Guide. Participants are given guidelines to develop strategies that address biodiversity threats within their school community. Also provided are guidelines to prepare lesson plans similar to those present in the resources developed by LLEE. With the support of the Ministry of Education, teachers are asked to link plans and activities developed to the curriculum and official school activities.

This presentation supplemented the below focus group discussions activity that was carried out in Day II and Day III of the training program:

- Curriculum Inventory
- Developing Lesson Plans

Activity: Curriculum Inventory

Following the presentation on the LLEE’s “Discovering Biodiversity Educators Guide” and with the support of the Ministry of Education, the trainers are divided into two groups: - high school and primary school; and carried out a curriculum inventory of all units where biodiversity conservation can be incorporated. Group discussions were also carried out on aspects of the Primary and Secondary School curriculum where linkages and opportunities for biodiversity awareness can be made.

Activity: Developing Lesson Plans

An individual exercise, using the resources provided as reference, the teachers are asked to develop lesson plans; similar to those present in the guides. This activity allowed teachers to critically think of strategies to engage the students interest and meaningful participation in Biodiversity and the importance of biodiversity conservation, within the school curriculum. In developing lesson plans, the teachers are able to think through each step of the lessons developed to identify best approach to create an enabling environment for child advocates for biodiversity conservation. With biodiversity conservation being a cross-cutting concern, the teachers are also given the opportunity to explore and identify the curriculum links where the lesson plans can be used. Teachers are also provided a number of resources from Live & Learn Environmental Education to draw inspiration and examples from.



Participants working on individual action plans for their schools.

Activity: Developing School Strategies

Throughout the four day sessions, discussions were carried out on what can be done in school, relevant to the issues faced within the community to support biodiversity actions and biodiversity conservation education. Discussions were carried out within groups on workable strategies for their school to address issues of threat to biodiversity and the environment and school action plans to be undertaken this year to address the threats and concerns within the school area. While compiling the plans, open discussion was carried out within groups identifying the relevant partners and suitable timeline to implement activities within the school action plans identified.

Activity: Fieldtrip

A field trip was organized by the Department of Environment to the nursery managed by the Ministry of Agriculture. The nursery contained seedlings of resilient crop and vegetable varieties and mature plants that are kept for the distribution of cuttings. The fieldtrip provided an opportunity for awareness of various farming methods to enhance soil water-holding capacity.

The fieldtrip took an outside the classroom' learning experience approach to learning and appreciating the living things in our community. The activity enlightened the group to exploring outdoor activities with students for learning experiences within the curriculum. This is evident in the lesson plans developed.

Awareness was also raised on certain measures that are taken around the region to establish marine and terrestrial conservation sites to protect diminishing, threatened, native species that have been expensive exercises to establish and maintain, throughout the Pacific and linkages are drawn to dying cultural practices that are fundamentally conservation acts that encouraged the sustainable use of environmental resources. This session also raised awareness on the extent of domination the invasive plants had within a habitat such as the "*widelia*" and "*sargassum*" which have become noticeable in the recent years, and their impact on the terrestrial and marine life.

Activity: Self-Assessment Evaluation

A self-assessment exercise was carried out for teachers to evaluate themselves and make key statements with regards to their commitment and abilities as "Biodiversity Champions". The self-assessment exercise feedback aims to reflect the key beliefs of the teachers and to explore their confidence in their abilities as 'champions' for biodiversity.

Activity: Post Evaluation

This exercise allowed participants to note down what they had learnt during the four day course and to also provide feedback in areas where there can be improvement for future trainings; by both the trainees and the trainer.

Section 3: Key Outcomes:

This section expresses the overall outcomes of the four day workshop. Selected responses are reflected in the outcomes. Full accounts of the participants feedback is annexed to this report.

Summary of Outcomes

All the activities resulted in the following outcomes. The training:

1. Demonstrated and increased the awareness on the significance of biodiversity conservation and relevancy to the Tuvaluan islanders' 'way of life'.
2. Enlightened and enhanced the trainers scope on the different tools applicable to engage the student interest and commitment for biodiversity conservation identified in the Biodiversity Conservation Guide
3. Enabled a space for the trainers to develop lesson/unit plans for biodiversity awareness within the school curriculum
4. Enabled a space for the trainers to identify strategies and develop and design a school action plan for implementation in the various school
5. Facilitated an atmosphere where trainers felt comfortable to share their experiences and challenges faced in integrating biodiversity conservation awareness in schools and the community; and to identify supportive roles for the Department of Environment, Tuvalu and Ministry of Education in supporting the activities developed within the workplan developed by the trainers
6. Identified champions and key agents for implementation of the workplan to advocate biodiversity conservation
7. Enabled a space for trainers to develop a networking strategy for sharing of experiences in activities in school that advocate and encourage biodiversity

Outcome 1: Increased Awareness and Knowledge

There is an increase in knowledge and awareness in understanding and acknowledging the relevancy and significance of biodiversity in linkages to culture and lifestyle, in intra and inter specie relationships, in understanding genetic, specie and geographical diversity and its contribution to survival of a specie.

(i) Linkages to Culture and Lifestyle

There is an increased awareness on the linkages of biodiversity to daily activities and cultural identity. Initial perceptions gathered during the introductory activities indicated that there is a general understanding on the definition of "Biodiversity", where the feedback largely noted that biodiversity encompassed "all living things" and refer to the "diversity of species".

The activities during the training allowed the participants to unpack the term and make linkages to their 'reality' and 'way of life'. The post workshop evaluation reflects that these connections are not normally associated to the term 'Biodiversity'.

Through the training, discussions were carried out on the relevance of biodiversity. This is reflected in the table below:

Table 1: Participants Reflections on Relevance of Biodiversity

Term	Relevance	Example and How it is used
Culture	Food	Different Fish (Baked, Roast and Raw)
	Medicine	Pandanus Roots Noni Fruits / Leaves Coconut leaves
	Shelter	Pandanus wood/ leaves
	Transport	Canoe (puka tree/ mei)
	Dancing Costumes	Coconut Leaves Pandanus Leaves
	Handicrafts	Shells Pandanus leaves
	Sports	Pandanus leaves Coconut leaves Tiale woodball Coconut string
	Body/Hair beautification	Coconut cream Pua leaves/flowers Gasu leaves
	Fishing	Hooks from Gie Fishing net
	Tools	Stones and clam shells
	Traditional delivery method	Coconut cream Red toddy
Economy	Economy can only grow if depends or use of Biodiversity wisely	1) Fisheries A lot of revenue are from obtaining licensing from fishing vessels (internationally and locally) Exporting of fish Observers – salaries will help the economy Sea-shells (from craft work) 2) Agriculture Fatoga Fiafia – is supplying the country with fruits and vegetables The News Project – growing fruit trees with the idea that it will provide food to the country instead of importing from other countries
Medicine	Plants - Use for local medicine	Gasu – conjunctivitis Noni – boil, rash/wound Pandanus roots – flu, cough Lime – Steam, tea for weight loss Coconut – good skin
	Animals – use for local medicine	- Fatty oil – boil/wound
		Fish fins – medicine Fish oil – brain health Microorganisms – modern medicine (present in hot springs and mud pools for rejuvenating during health baths)

Family / Food Security & Livelihood	For continuity of the human race <ul style="list-style-type: none"> To be content Happy for stability And health Plenty food = happy family, stable and healthy Food = Live	<ul style="list-style-type: none"> We need food in order to live Continue cycle of life (plants and animals) A continuous supply of food (to have a variety and for it to be affordable) Hybrid The place of GM food? Organic? Source of income/ daily sustenance Fishing methods
Physical Health & Nutrition	<ul style="list-style-type: none"> Encourage Fishing Benefits physically Balanced Diet 	<ul style="list-style-type: none"> Fresh food (low cost of living) Healthy living Medicine (local) Prevent soil erosion Beautify the environment Earn money Saves money (government)

Inter and Intra Specie Linkages

There is increased awareness on the relationship between species. Knowledge on the interconnectivity relationship between species; and how there is an increase in vulnerability on a number of various species when particular specie is threatened contributed to the following understanding:

The impact of invasive species: - in occupying local biodiversity niches, affecting crop and human health and the importance of biosecurity and health check-ups when arriving from an exotic country.

The impact of exploitation of certain species and the importance of legislations and local laws that enforces moratoriums during spawning periods of various marine lives, and forestry regulations.

The significance of good waste management - relating how human action impacts the biodiversity system.

A group discussion on conservation practices is reflected in the table below.

Table 2: Biodiversity Conservation

Group Ref	Why is Conservation of Our Biodiversity Important	Ways to Conserve our Biodiversity
1	For future generation Food security – continuity Maintain culture and identity Balance ecosystem Helps the economy e.g tourist	Conservation area – marine life Control the cutting down of trees Control the killing of turtles Implement laws to ban the catch/sale/consumption of undersize fish More accessible literatures
	Physical health and nutritional well being Control pollution	Encourage gardening (school, communal, backyard) Encourage the use of local food and medicine Create more awareness – medium Implement – monitor – execute Biosecurity laws (enforce) Food preservation e.g salted and smoked fish

2	Sustainability e.g of culture, food source, environment, economy	Culture: taught, practiced and appropriately applied (in proper occasions) Environment: proper waste management Tapui nui (not allowed to take any) Food: organic food Health: plant and use traditional medicine Economy: managing natural resources wisely Other ways we can conserve our biodiversity: Conservation area By laws Awareness Traditional practices and customs eg planting young coconuts, fishing at certain times Education
3	Secure our food Preserve our culture / land Affordable way of living Less/ no damage to the environment Provide shelter for endangered species To raise knowledge in people Healthy lifestyle	Creation of by-laws Community awareness e.g community workshops (Follow-up comments: awareness can also be raised to the community through the children) Encourage youth, church, island community to implement program on conserving our biodiversity To get a hard copy/books (documentation) on traditional life-skills e.g cutting toddy, Kaia (local fertilizer) Preserving food to prevent over-harvesting Suae Kapupu Takatoka Ika masima/Pakupaku Puaka masima Manu tauaki Pulaki tauaki/buried Utanu (germinated coconuts)

Genetic, Specie and Island Diversity

Increased awareness on genetic diversity also contributed to the understanding of how species can be resilient or vulnerable based on their genetic diversity and its contribution to the adaptive capacity of existing ecosystems, where the genetic diversity serves as a way for populations to adapt to changing environments.

Table 3: Selected Post Workshop Participants Evaluation

“Gained knowledge on the inter-connectivity of living things in the sea and living things on land. There is a connection between living things so if one living thing is affected, then it might also affect other living things.”

“Learn new and interesting facts about Biodiversity”

“Honestly, biodiversity and its concept became clear into mind at this very first day. I just found out the importance of biodiversity and also the significance to our daily lives. Though, I know that biodiversity is all living organisms around, but its importance, how it is linked and the threats to it were never discussed thoroughly before.”

“The many presentations and group activities that we’ve done really helped in understanding biodiversity clearly”

Participant’s feedback

Outcome 2: Identification of Integration Pathways in Existing School Curriculum

Increased awareness and comprehensive understanding of biodiversity and its connection to lifestyle facilitated the identification of linkages between the various subjects taught in primary and secondary levels. Notably, teachers acknowledged the significance of linking subject units to practicality; sharing how using biodiversity examples in classes to highlight impact of human actions, conservation action's contribution to adaptive capacity of communities and how biodiversity is fundamentally linked to maintaining cultural identity, can increase student's understanding and awareness on biodiversity.

In focused group (primary school and secondary school groups) discussions, teachers noted down all the subject units taken in their respective levels and discussed the estimated percentage of the unit where biodiversity is demonstrated or taught. Group discussions also provided the platform for sharing of experiences and ideas amongst the teachers in strategizing how biodiversity (which is a really broad subject) could be integrated in various ways into current subjects taught in schools to increase awareness.

The outcomes identified:

- The percentage of biodiversity coverage for each subject taught in schools and
- How biodiversity coverage can be increased in each subject currently taught in schools.

The graphs below reflect the teachers perspective on the percentage of Biodiversity taught within various subjects in secondary and primary level.

Figure 1: Percentage of biodiversity coverage in secondary school

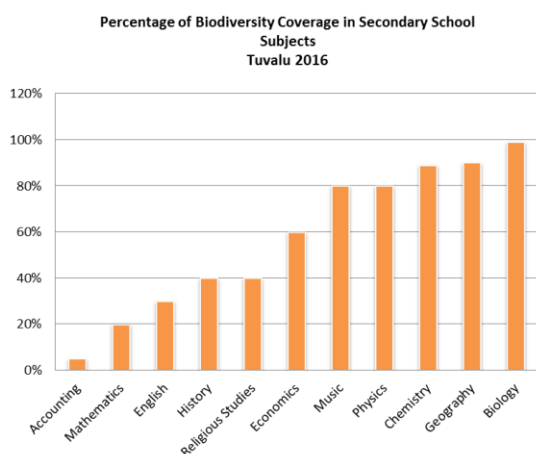
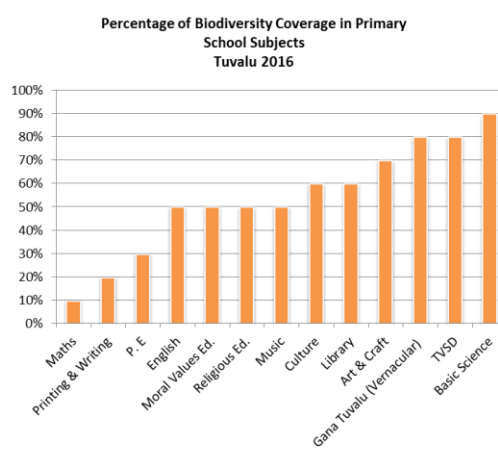


Figure 2: Percentage of biodiversity coverage in primary school



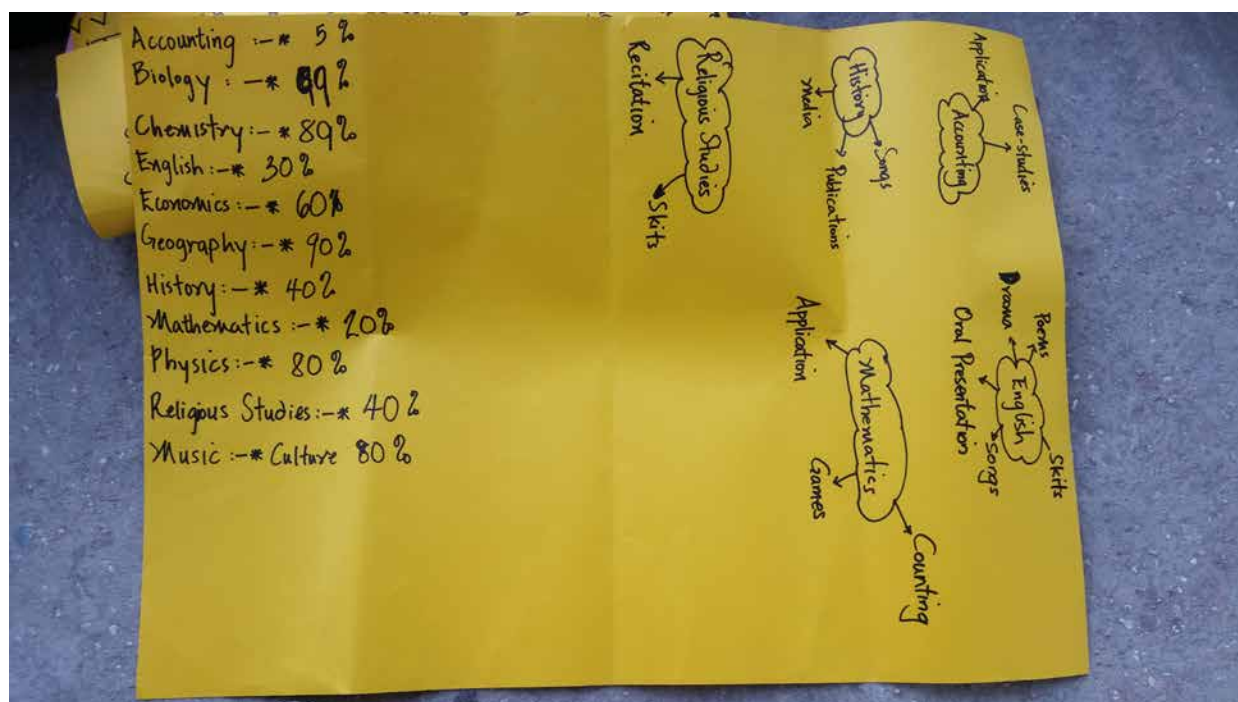
The findings indicate that across all subjects, science already had a high percentage of biodiversity coverage and that numerical subjects were estimated to have less than 20% coverage. 90% of the teachers agreed through a show of hands that biodiversity is also very relevant to numerical subjects. Further discussions identified where and how biodiversity awareness could be integrated or strengthened for all subjects taught in schools.

This is captured in the focus group-work feedback reflected in the table below.

Secondary School

Table 4: Secondary School Curriculum Assessment

Subjects	How can we increase percentage of awareness
Accounting – 5%	<ol style="list-style-type: none"> 1. Accounting – Case studies, application 2. History – Songs, Publications, media 3. Religious Studies – Recitation, skits 4. English – Poems, skits, drama, oral presentation, songs 5. Mathematics – Application, counting, games
Biology – 99 %	
Chemistry – 89%	
English – 30 %	
Economics – 60%	
Geography – 90%	
History – 40%	
Mathematics – 20%	
Physics – 80%	
Religious Studies – 40%	
Music – Culture – 80%	

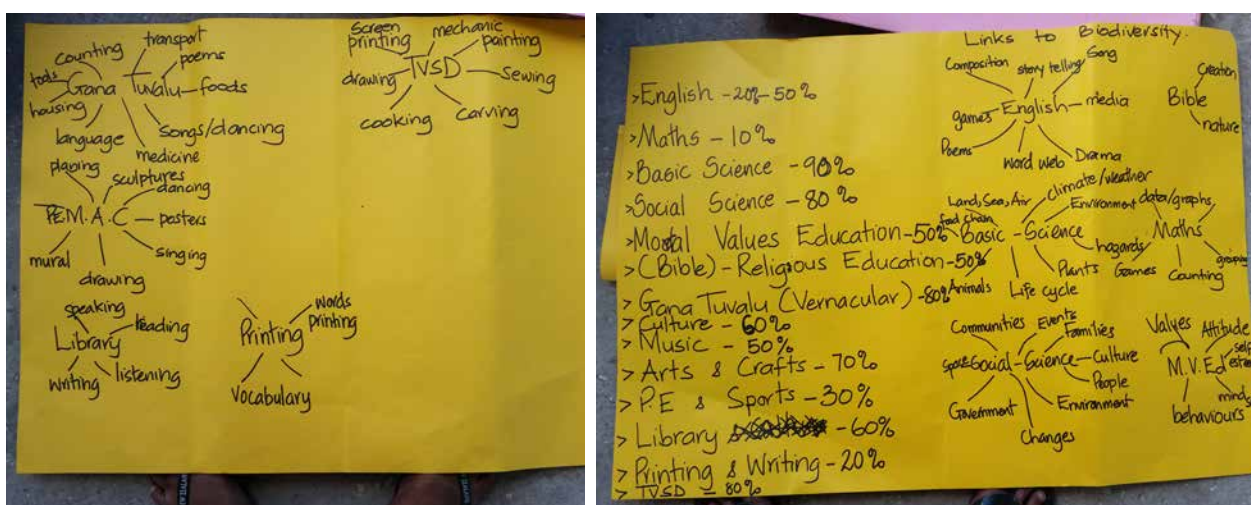


Picture from secondary school assessment process

Primary School

Table 5: Primary School Curriculum Assessment

Subjects	How can we increase percentage on awareness
English – 20 – 50% Maths – 10% Basic Science – 90% Moral Values Education – 50% Bible (Religious Education) – 50% Gana Tuvalu (vernacular) – 80% Culture – 60% Music – 50 % Arts & Craft – 70 % PE and Sports – 30% Library – 60% Printing and writing – 20% TVSD – 80%	<ol style="list-style-type: none"> 1. English – composition, storytelling, song, media, drama, word web, poems, games 2. Bible – nature, creation 3. Basic Science – land, sea Air, food chain, animals, life cycle, plants, hazards, climate, weather 4. Maths – data/graphs, graping, counting, games 5. Social Science - communities, evets, families, culture, people, environment, changes, government, space 6. M.V.E.D – Values, altitude, self-esteem, mindset, behaviors 7. Gana Tuvalu- counting, transport, poems, foods, songs/ dancing, medicine, language, housing, tools 8. PEMAC – playing, sculptures, dancing, posters, singing, mural, drawing 9. Library – speaking, reading, writing, listening 10. Printing – vocabulary, words, printing 11. TVSD – Screen printing, mechanic, painting, sewing, carving, cooking, drawing



Pictures from primary school assessment process

Lengthy group discussions carried out revealed the level of interest in finding linkages between the broad concepts of biodiversity and the various subjects in schools. This outcome is indicative of the general understanding and acknowledgement that biodiversity is a cross-cutting, relevant issue.

Outcome 3: School Strategies for Biodiversity Action

The training succeeded in developing positive attitudes towards biodiversity conservation. This is evident in the school action plans developed by the teachers in the interest of initiating activities for their schools for biodiversity conservation and appreciation awareness. Teachers appointed one contact person for each school who also sit in the environment school committee. Teachers noted that the support from Department of Environment and Ministry of Education is key to meet various challenges.

Recommendations made through the group discussions for further support to delivering and implementing school strategies towards biodiversity conservation are summarized in the table below:

Teacher's Recommendations
<p>There is a:</p> <ol style="list-style-type: none">1. Need for more contact time with students (limited as school starts at 8.00am in the morning and finishes at 1.00pm).2. Need for consultative discussions between schools and MOE regarding school action plans especially for international dates regarding biodiversity and environment3. There is lack of interaction between available services in government and linkages to school activity4. Resources are plentiful, but not accessible in schools, role of Ministry of Education and relevant Ministries and NGOs to make these accessible to schools in the mainland and maritime areas5. Need for more NGO's support

The activities identified by the teachers for their various schools are captured below.

Strategies Forward: School Action Plans

School: SDA Primary School

Address: Funafuti Tuvalu

Name of Contact Teacher: Kima Pedro

Phone: 20580

	Issue	Action	Planned Time Frame	Partners and Stakeholders
1	Sorting of Rubbish	To start in classes Color coded buckets for sorting of rubbish small ones big ones from the Kaupule start compost pits	All year round Start in July 2016	Student and teachers in classes Parents Kaupule Council
2	Consumption of Local/ Traditional Food	Existing program to be encouraged for continuity	Every Friday	Students, teachers and parents
3	NCD: Vegetable Diet – currently lacking	Visit nursery for cuttings Start garden plots in school Nuture and monitor growth “Bele project”	All year round: Supply of bele for fish dishes, soup To start in July 2016	Students, teachers, Department of Agriculture School management Parents
4	Waste - Recycling Plastic Bottles Wrappers	To collect all plastic bottles Art classes School competitions using recycled products	All year round To start in July	Students and teachers Parents
5	Biodiversity Awareness to be achieved	To observe internationally and regionally recognized dates: May 22 nd : World Biodiversity day June 5 th : World Environment Day 1 st Monday October: World Habitat Day 16 th October: World Food day	Term one and two	Teachers Students Parents Whole community

School: Nauti Primary School

Address: Funafuti Tuvalu

Name of Contact Teacher: Environment Committee Head, Head Teacher

Phone: 20580

	Issue	Action	Planned Time Frame	
1	Broken and Not enough toilets Health risks	Propose to donors for support to: Build more toilets Fix the toilets Provide water pump and over-head tanks	1 – 3 months	TANGO MEYS Community Department of Environment (Ridge to Reef project) Kaupule
2	Rubbish	Propose for more rubbish bins Awareness program Workshops Cleaning week	Term 3	SWAT TANGO Government Environment Department Kaupule
3	Garden	Propose agriculture to provide gardening tools Awareness program	Term 3	Agriculture Taiwan Technical mission Department of Environment (Ridge to Reef project) TANGO
4	Coastal Erosion	Tree planting (Fetau) Environment Week	Term 1 Term 3	Environment Ridge to Reef Agriculture Kaupule
5	Awareness program	Environment week Food Security, week to celebrate and enjoy our local Tuvaluan food	Term 3 October (World Food Day)	Agriculture Kaupule

School: Fetuvalu Secondary School
Name of Contact Teacher: Redina Auina

Address: Funafuti Tuvalu
Phone: 20905

	Issue	Action	Planned Time Frame	Partners and Stakeholders
1	Soil Erosion	Plant trees Add more land (reclamation) Enforce Biodiversity Day	June 5 th Term 2 Term 2	-Community -To plant more trees and plan a seawall -Student and Staff -Planting trees and help with sea-wall -Government (PWD) To fund the proposal
2	Toilets (rundown)	- Build suitable compost toilets	Term 3	-Government (PWD, - Environment, Education), -Kaupule To fund and run the proposal for compost toilets -Falevatie Project (PWD)
3	Rubbish Pollution	Provide bins Enforce biodiversity Day and Environmental Week Cleanathons	June 5 th (World Environmental Day)	-SWAT -Towncouncil -Youths and school -Community

Outcome 4: Biodiversity Champions and Communication Plan

The workshop led to the identification of champions for biodiversity and the creation of a network for support in biodiversity advocacy actions. This outcome follows the development of the action plans developed by the teachers. Notably, this outcome is an output of the passion and interest shown by the teachers to strengthen support for delivery of the activities identified.

Biodiversity champions were identified for the three schools in Funafuti, where all participants agreed to be biodiversity champions in their schools and in their community. This is reflected in the self-assessment evaluation that was carried out by the teachers.

Pre and Post Evaluation Self-Assessment

The self-assessment forms allowed participants to reflect on themselves as biodiversity champions. The forms provided options for the participants to select either of the following to key statements:

- i - Strongly disagree
- ii - Remain Neutral/Or not Sure
- iii - Strongly Agree

This reflection exercise was provided in the initial stage of the training and at the end to measure change in confidence and commitment following the training. However, there was very little change in the self-assessment evaluation that was carried out in the initial phase of the program and at the end of the

program, with each participant making strong key statements attesting to their beliefs, confidence and their commitment to biodiversity conservation through the self- assessment activity from the onset of the training.

Below are the key statements to which each participant had selected 'strongly agree' for each statement.

"I believe....."

1. That Biodiversity is important
2. That teachers have an important role in ensuring that the message of biodiversity and its conservation is passed on to the younger generation
3. That children as future leaders are change agents to ensuring the sustainability of biodiversity

"I could....."

1. Openly discuss the importance biodiversity to peers and the community
2. Demonstrate the link between biodiversity and our way of life
3. Enable Child-led initiatives for the conservation of biodiversity
4. Openly discuss the threat of invasive species to our island biodiversity
5. Openly discuss the threat of climate change and natural hazards to biodiversity and our way of life
6. Develop lesson plans within the current school curriculum to better enhance students understanding and appreciation for biodiversity conservation
7. Identify, develop and propose strategies for school adoption for biodiversity action within the school
8. Engage partnerships from the community, other government ministries and other schools for action towards biodiversity awareness and conservation
9. Be a champion for Biodiversity action in my school and community

With the identified champions, points of contact for engagement in biodiversity actions were identified. Email contacts of all participants were collected and shared to create an email listing for future biodiversity initiatives (annexed). With the island size, proximity of schools, communities and government stakeholders is not an issue and interaction will continue to strengthen as platforms for a partnered movement towards biodiversity conservation continue to grow.

Section 4: Training Reflections and Recommendations

The overall training objectives were met. The following are important constructive reflections that are recommended to be considered based on the training outcomes and for future similar training:

Firm partnership with the Ministry of Education is critical to address some of the challenges highlighted by the teachers. This is an important course of action to ensure that reflections and action plans designed by the teachers is acknowledged and further developments from the training can be absorbed into the Ministry's curriculum planning and designing of school terms and activities.

There is a need for more school oriented environmental programs. There is a lot of awareness on the vulnerabilities of Tuvalu and little knowledge or awareness on actions that can be taken to encourage proactivity with the students. Feedback reflected very little knowledge on environmental programs currently or that have recently being carried out around Tuvalu, despite the proximity of some of the programs. These can be encouraged and facilitated by relevant ministries in partnership with MOE, and with other environmental agencies present in Tuvalu and the region.

Relevant resources developed by Ministry of Environment, Ministry of Agriculture, Education and environmental NGO currently on the island can be made accessible to the schools and students to engage their interest and action on Environmental activities carried out in the island.

Department of Environment, in partnership with MOE can support existing environment committees established in schools to encourage environmental programs in schools, as well monitor and provide assistance to schools to carry out their Biodiversity action plans for 2016.

Student representatives can be encouraged to participate together with teachers in similar trainings to provide platforms for discussions and learnings of which they are also equal stakeholders; which can also be empowering for both the student and teacher and provide insight to how various approaches can be designed for effective and meaningful participation of children in biodiversity conservation.

It can be enlightening and empowering for further Teachers Professional Development courses on child-centered learning and children rights and responsibilities.

Arrangements for workshop timing and venue should be well communicated amongst stakeholders prior to the workshop event to ensure that all stakeholders are on the same page with regards to logistics of the event.

Concluding Remarks

Due to the remarkably vulnerable nature of the existing biodiversity on Tuvalu, linked with its island type, and the predicament the nation faces because of climate change impacts, there is indeed more reason for involvement of schools and engagement of the future leaders in the movement towards biodiversity conservation. This workshop provided the opportunity to create networks amongst the department of Environment, Agriculture, Education and the teachers in generating the possibility for further partnered activities towards biodiversity conservation advocacy activities.

This training workshop coordinated by Department of Environment provided an excellent opportunity for awareness on existing resource materials, that can be incorporated into the existing curriculum or used to develop creative approaches to engaging student interest, in understanding the importance and relevance of biodiversity conservation. The organization of facilities and catering was commendable and helpful support was provided during the four days training to ensure that all objectives are met.

Section 5: Appendix

Appendix 1: Evaluation by Teachers

Education for Biodiversity Conservation – Training of the trainers

Activity: Evaluation of Training

Venue: Nauti Primary School

Date: 1st July, 2016

Area: Funafuti, Tuvalu

Synopsis: The following is a collection of thoughts by the teachers (trainers) evaluating the four day course on Discovering Biodiversity – Integration into Education. This activity identifies strengths and weaknesses of the training that will allow for improvement if the trained trainers are to take the program to the outer islands in Tuvalu. The Evaluation also captures the lessons learnt throughout the four day course.

Evaluations
<p>First time to attend a training on Biodiversity</p> <ul style="list-style-type: none">• Interesting workshop because I have found out the importance of Biodiversity to be taught in schools or to be included in the curriculum• Gained knowledge on the inter-connectivity of living things in the sea and living things on land. There is a connection between living things so if one living thing is affected, then it might also affect other living things.• Learn strategies on teaching Biodiversity in schools• Great support from Environment Department• Nice Refreshments
<ul style="list-style-type: none">• New Games introduced• Interesting presentations from facilitator Miss Emma• Learn new and interesting facts about Biodiversity• The participants are involved in all the group work and presentations• More awareness program to all the teachers and community needed• Live & Learn should provide more concrete materials for all the lessons which are to be taught in class• Lastly, I really appreciate my participation and also the knowledge that I have gained from this workshop. In my opinion, it is really important to share our knowledge with our colleagues. As a Tuvaluan citizen, I must educate the student to be aware of how to conserve our biodiversity for our future generations.

We have learnt, or at least I have learnt a lot in this workshop. Most off what we discussed is focusing on what we have to know about Biodiversity. The help and the reminder that humans have to consider their environment and reflect the food and bad actions that we have done to our environment, nowadays as compared to the past; and the good deeds we 'will' or 'can' be able to do today and tomorrow to correct what we have done yesterday.

It is really hard for me to think on encouraging the community to listen and 'to do' what we have planned to be done because the mentality 'we' Tuvaluans have is **"why waste our time doing planting or building a sea-wall, when we have a lot of work and chores to finish at home?"** → this is what I think before.

These are the disadvantages of thinking to run this projects or plans that we have set to do in schools.

Thanks to this workshop, it is encouraging and full of knowledge and ways, and this gives me a plan to look forward to do and to face challenges in getting our biodiversity a better ecology for all of us.

Thank you Emma and hope you have a safe trip home to Fiji.

Fafetai lasi.

I learnt a lot of things in this workshop

1. Introduction activity on the first day
2. Game activity
3. Discussing about linkages of biodiversity to all living things and to our way of life
4. How biodiversity covered many different subjects
5. Interesting field trip
6. Action plan
7. Planning lesson (integrate biodiversity into curriculum)
8. Thank you for everything
9. Big fakafetai lasi

- Very informative
- Team building
- Trainer Emma was perfect presenting ideas and increasing our knowledge
- Great excellent job, Emma

Biodiversity Workshop: 28th June – 1st July

This workshop was really interesting where we have time to meet and share knowledge from other participants, especially for this specific topic "biodiversity". It is quite a broader topic for me and I really enjoy and learn lots of things from this workshop. **One main point I did gain from this workshop is where creating plans in our specific schools and also how it can be fitted into our subjects are relevant to biodiversity.** Hope that whatever I learned from this training workshop will try to implement and share to others in our school, community and nation as a whole.

Evaluation:

1. Participative approach with a lot of constructive input from participants
2. A lot of initiative shown by participants
3. **Concepts of Biodiversity seem to be well understood – and its integration in various school subjects**
4. Facilitator well versed with many innovative ways to foster learning
5. Timing of workshop: - afternoons (after school) – a cause for tiredness and lack of concentration

Evaluation: 1.07.2016

Biodiversity Workshop 28/06 – 01/07

1. Content – extensive
2. Presentation – excellent
3. Venue – can be improved
4. Catering – excellent
5. Aids – very good/a lot of good groupwork
6. Resources – excellent (flashdrive)
7. Time – okay, except for last day
8. Networking – very, very good (Dept. of Environment, Live & Learn, Schools, Education)
9. Groupings – interesting
10. Grading – A+ : more ongoing networking / monitoring on Tuvalu

This workshop enable the mind to refresh back of how to care for the natural resources. It is important to take action of what I learnt so far, for we have scarcity of land; but we should integrate teaching biodiversity to younger generation for they will be our future leaders. At last I have learnt a lot and thanks for the tea and flashdrives and certificate.

Evaluation:

1st day: Honestly, biodiversity and its concept became clear into mind at this very first day.

- I just found out the importance of biodiversity and also the significance to our daily lives. Though, I know that biodiversity is all living organisms around, but its importance, how it is linked and the threats to it was never discussed thoroughly before.

2nd day: The activities carried out during the workshop actually enlighten the true meaning of biodiversity.

- The many presentations and group activities that we've done really helped in understanding biodiversity clearly
- The linkage game was the best. We found out that all of us, all living organisms are all connected in terms of depending on each other in order to live successfully on land.

3rd day: I missed the fieldtrip to the nursery but I wish I was able to attend to see the wonders of biodiversity.

- Apart from the fieldtrip, another important activity that was discussed was the many issues that are facing and the actions towards it. Though our school have action plans, this was interesting because we got to link and collaborate on biodiversity

4th day: The certificate presentation was encouraging as well.

- It gives encouragement and determination to me as a teacher. Biodiversity is almost integrated into all subjects but to reinforce it, I have to find strategies in order to execute it
- - with the action plans that are put down in writing, I hope these plans and evaluation will make a positive way forward
- Last but not the least, a vinaka vakalevu to Miss Emma for the hardwork she put on this workshop and mainly for the words of encouragement and the exciting activities she gave us.
- What they say “biodiversity shapes us the way we are”.

Strengths of the Workshop

Enjoyable workshop and also a very useful capacity building for us. Though it was a short one, I can say that I learnt a lot in this workshop, especially on the real connections with what I teach in schools this term and biodiversity, ecosystems linkages and life etc.

Evaluation

This workshop is very important. First of all, the workshop is all about biodiversity. Therefore I found it very interesting, what I have learnt about biodiversity and the connection between all the living things.

In experience, this way of life, include knowledge and beliefs that biodiversity should be implemented in all schools for the benefit of the people of Tuvalu.

Appendix 2: Lesson Plans Developed by Teachers

Education for Biodiversity Conservation – Training of the trainers

Activity: Developing Lesson Plans

Venue: Nauti Primary School

Date: 28th June – 1st July, 2016

Area: Funafuti, Tuvalu

This is a collection of lesson plans developed and submitted by the teachers for incorporation into the curriculum links identified in the curriculum inventory activity.

Synopsis: This activity allowed teachers to critically think of strategies to engage the students interest and meaningful participation in Biodiversity and the importance of biodiversity conservation. In developing lesson plans, the teachers are able to think through each step of the lessons developed to identify best approach to create an enabling environment for child advocates for biodiversity conservation. With biodiversity conservation being a cross-cutting concern, the teachers are also given the opportunity to explore and identify the curriculum links where the lesson plans can be used.

Teachers are also provided a number of resources from Live & Learn Environmental Education to draw inspiration and examples from.

LLEE Resource reference:

- Discovering Biodiversity: An Educator's Guide to Exploring Nature's Variety
- Be the Future! Your guide to change(Children in Development Resource Guide)
- Climate Change and Community –Based REDD+ Education Manuel (Climate Change Adaptation Resource Guide)
- Adapting to a changing climate:Training Guide (Climate Change Adaptation Resource Guide)

Soft copies of these Education and Trainers guides are also saved on a flasdisk provided by the Department of Environment, Tuvalu and are also available for free download on the Live & Learn website for future support references.

Activity Outcome: Lesson Plans Developed

Target Group: Year 1

Lesson Title: Climate Change (sea level rise)

Duration: 30 minutes

Objectives: Students should be able to investigate the impact of sea level rise

Outcomes:

- Students should be able to investigate the impact sea level rise

Resources:

- Slideshow (sea level rise)
 - Picture talk
 - Fieldtrip (to places which are change by the sea level rise)

Lesson Development:

- Brainstorm using picture of impact of sea level rise
- Play slideshow (sea level rise)
- Fieldtrip (collect any objects they found at this place)

Activity:

- Place on the floor and talk about where they come from (thinking biodiversity)

Game: All the words begin with given action like clap hands, stand up, sit down, run to the window etc until they covered all the words

Conclusion:

- Ask questions about what they think about biodiversity in places they see the impact of sea level rising

Topic: Threats to Biodiversity

Objectives:

- To identify biodiversity, how every organism interacts with its environment
- Pinpoints the action taken to minimize such threats

Materials:

- Laptop, charts, photocopy notes

Methods:

- Distribute notes to all students on the first two issues discussed in the objectives mentioned
- 5 – 10mins explaining the threats and show students that all these threats are all linked to human activity
- Show a slideshow of how 'we' human can help 'give' back what we have taken from nature

- 10 minutes group discussion on what other ways we can take looking at the problems caused by us to minimize these.

Curriculum links:

Biodiversity is of course a big issue that is how encourage to humans due to their threats. Now we have to take action and put a pause to these threats.

Target: Year 9

School: Fetuvalu Secondary School

Title: Biodiversity and Culture

Objective:

- Define biodiversity and culture
- Link the two terms and give examples to support their linkages

Materials:

- Pen
- Papers
- Pandanus leaves
- Stones

Introduction:

Biodiversity is the variety of living organisms on Earth. IT is around us from the tiny, micro-organism to the biggest tree. You don't hhave to travel to New Zealand, US or Eroupe to see it, its just around us.

Culture on the other hand is our identity. Culture is what we are born with. We inherit them from our ancestors. The language we talk, the entertainments we have or even the food are developed through our culture. E.g fatele, fekei food etc.

- ➔ Culture depends on biodiversity. For example 'te ano' – this ball is made of pandanus leaves and stones. 'Te ano' wouldn't be called 'te ano' today if we did not appreciate biodiversity and it is dependent on biodiversity, therefore, the diversity of human culture and biodiversity is interlinked.

Method:

Prepare three long strips of pandanus leaves. Get a medium stone and weave the pandanus leaves around the stone. Complete it until it is round and smooth. Aloon the students to at least try it. Let the students feel the 'te ano' ball.

Activitiy:

- Divide the students into groups. Give out thhe following questions for their discussions:
 - 1) Why do people us 'te ano' in the olden days?
 - Resources are available and easy to find
 - To maintain fitness

2) Does 'te ano' link culture to biodiversity? If yes, explain why and how.

- Yes, pandanus leaves and stones are part of biodiversity and they weave around stones to form a 'te ano' ball.

Conclusion:

When looking closely at our culture and its relationship with biodiversity, we can easily get a clear message that biodiversity plays an important role in our culture and it shapes us the way we are now.

Evaluation:

Students are actively engaged and understand the topic well.

Lesson Plan for CLASS 4

Activity Title: Biodiversity Conservation

Objectives:

- Students are enabled to identify types of plants and know how to plant and nurture seeds
- Students are able to identify the different parts of the plant

Materials:

- Empty bowl, soil, seeds, water

Method:

- Divide children in groups
- Each group to prepare their own bowl to plant their seeds
- Plant the seeds in the bowl of soil
- Water the bowl and leave it for 5 – 6 days
- Each group need to water their plants every morning
- If their plants grow, they can transplant it to the class garden

Deconstructive Questions:

1. Where can you find seed?
2. What can be grown out from the seed?
3. Why is it important to grow more plants?
4. What are the things that help to make the plants grow?
5. Name the parts of the plant?

Activity:

1. Children to draw the plant and label it. Each group to create a song/poem about the plants.
2. Field trip to Agriculture nursery
3. Game: - "Puppet Say..."

Curriculum Links:

- Basic science syllabus (Class 4) Curriculum Links:
- Class 1 – English Syllabus Lesson

Plan: Target - Class 1

Topic: Harmful Things to the Environment

Subject: English

Objective: Students to be able to:

- Identify harmful objects around their surrounding
- Write short simple sentence of keeping the environment clean

Lesson Development:

- Singing (song and action on the environment – use used pieces of paper)
- Explore what is around them in the classroom
- Discussion

Open Question:

- - Why are rubbish harmful?
- - What should be done with rubbish.

Game:

- Think of any Rubbish beginning with letter: R.U.B.B.I.S.H

Activity:

- Read, draw and write (Sceneries: housing, environment, homegardens, school compound, trees and rubbish bins)
- Complete the Sentence:
 - 1) Keep (insert drawing) _____ clean.
 - 2) Put rubbish in the (insert drawing)_____.
- Evaluation and sum up.

Year 9

Topic: Climate Change

Objective:

To understand what is ocean acidification and what is its impact.

To identify the potential impacts of ocean acidification to calcareous organisms.

Materials needed:

Calcareous shells, concentrated carbonic acid, measuring acid, pipette filler, pipette, stop watch, top pan balance

Methods:

Show a simple equation for the reaction of saltwater with carbon dioxide to give carbonic acid

Pipette out 30 ml of 1M, 2M,3M,4M and 5M of carbonic acid into different measuring cylinder

Weigh the mass of 5 calcareous shell on the top pan balance and record their mass

Put each calcareous shell into one of the measuring cylinder

Leave it for about 10minutes and then take them out

- Weigh again their mass and record it in the lab book.

Question:

1. To put a graph of mass against concentration to see the relationship
2. Discuss the graph and identify what is the key messages from the graph

Curriculum links:

The student will be able to know the potential impacts of Ocean acidification to our calcareous organisms and also to understand that the increase of carbon dioxide in the atmosphere directly impacts and dissolves the outer shells for the calcareous shelled organisms.

Form 3 and 4

Fetuvalu Secondary

Subject: Biodiversity

Timeframe: 45 minutes

Tree Biodiversity of Tuvalu: - is it worth sustaining?

Topic 1: Protecting the Tuvalu Native coconut trees

Activity: Field trip to 2 nearby sites

Materials:

- Notebook, map of local areas to cover by the two groups

Introduction: Explain to students about the fieldtrip

Objectives:

1. Need to nurture and protect native trees
2. Trees not natives care if they are to survive

Method:

- Students to the sites (5 mins)
- Students to mark and numbers/record mature native (coconut trees) on site into their notebooks
- Student to note and record number of mature non-native exotic coconuts
-

Reporting:

In 2 groups to report on:

1. How many native coconuts
2. How many exotic coconuts

Conclusion:

Is the native coconut safe? And how can we make it safer for future generations

Target Group: Year 9

Lesson Title: Biodiversity and Culture

Objective:

- Define biodiversity
- Define culture
- Able to link biodiversity to culture

Lesson time: 40 minutes

Materials: Paper, scissors, blu-tack and pens

Method:

- Make a cut out picture of a coconut tree
- Each group to create song or poem on each part of the coconut tree
- Actions or lyrics of song should co-exist with each function of the different parts of the coconut tree

Deconstructive questions:

- 1) What is biodiversity?
- 2) What is culture?
- 3) Links between biodiversity and culture

Curriculum Links:

Knowledge of culture extinct if coconut tree all cut down or biodiversity is changed.

Target Group: year 3 or any level (any age)

Lesson Title: Invasive Species

Time: 30 mins

Objective: Raise awareness on destruction effects of Invasive species

Materials Needed: Duster Wipes

Method:

- Everyone in a circle of 4 groups
- One person is holding duster without anyone else knowing (invasive species)
- Goes around each group dusting on students back
- Other person is wiping

Rules:

- Anyone can go to another group as long as there's 4 members
- Only person holding duster knows he is holding it and dusting on others
- Only person holding wipes knows and wiping it
- If person has dusted everyone's back with dust from duster without setting wiped out, then everyone dies

Year 8

Time: 35 mins

Topic: Parts of a Flower and their functions. Importance of flowers in maintaining population of flowering plants.

Lesson Outcomes:

At the end of this lesson, students should be able to:

- Name the parts of a flower
- Describe the functions of each part of the flower
- Draw a labelled diagram of the flower
- Discuss importance of biodiversity to maintain population

Materials:

- Flower brought by students, worksheets

A. Lesson Introduction (5 mins)

Recap of the previous lesson on parts of a flowering plant and their functions

B. Body of Lessons (20mins)

- Students work in groups of 3 or 4

Each group should:

- Study flowers brought
- Discuss/identifies parts of flower
- Refer to worksheet for function of each part
- Discuss importance of flowers in maintaining population of flowering plants

Each student:

- Draws the flower
- Labels parts of the flower
- Lists function of each part of the flower
- Writes a statement about the importance of flowers to maintaining the population of flowering plants

C. Conclusion (10minutes)

- Linking student activity to lesson outcomes

Year 5

Curriculum Links: Social Science

Topic: Sea Level Rise (Climate Change)

Objectives: By the end of the lesson, students should be able to:-

- Explain what is sea-level rising
- Discuss (in groups) the causes of sea-level rising
- State problems that cause by sea-level rising
- Identify possible solutions to overcome problems above

Materials: (Photo-sets)

- Pictures from the internet, students, blackboard, chalk

Introduction:

Introduce the topic by asking a question: - What is always happening during February to March?

If they know the answer, discuss with the class, if they don't, then give a hint (look around, what do you see around the island, that can destroy our environment)

Development:

Q: Who live near the air-field? (Pick some student to talk)

Q: Explain what do you see when it is high tide?

Q: Show photosets/picture from the internet and discuss it

Q: What do you think causes the sea to rise?

Q: Explain in details why sea is rising

WordWeb:

Write the word "effects of sea-level rising". Ask students to give any ideas, then the teacher should write them on the board (word-web)

After the discussion:

Divide the class in groups.

Activity: Discuss and list down ways that minimize the problems caused by sea level rising

Conclusion: Present their work and then have a time for questions and answers.

Year: 9 or 8

Time: 30 minutes

Activity Title: Threats to Biodiversity

Objective: To visually demonstrate the impacts of human activity on the ecosystem – POLLUTION

Materials needed:

- Large plastic bottle with top cut off or large plastic, clear container
- Sand/gravel/cement/iron
- Soap powder/laundry detergent
- Plastic bags
- Trash – lolly wraps, ice-block sticks, bongo papers
- Table
- Containers for sand, dirt, soap powder, trash
- Pieces of paper for labeling containers

Method:

1. Fill the bottle/container with sea water – halfway

2. The 5 volunteers – builders, gardener, the washer, shopper, and the litterer put their materials into the container one at a time at the teacher’s cue
3. Teacher asks the questions after the sand, soil, the detergent, plastic bags and trash have been put in.
4. Teacher poses question to students: -“Would you like to swim in this water/sea?”

Questions and Discussion:

1. Define/ introduce – Ecosystems and ecosystem services
2. Note the answers – “would you like to swim in this water?” ask “Why?”
3. Note – fish, living organisms, weeds = living in the sea would be affected, food chain disturbed
4. Ask the class what could the characters do differently to keep the sea clean?

Activities:

1. Draw the sea/coral reef/ecosystem= show poster and discuss
2. Put up notices about pollution e.g bring own bags for shopping
3. Play “Recycle Run” – ref. Games Imaging Tomorrow – pp 30 – 31
4. Group discussion – pp1 1-3
5. Take notes

Curriculum links:

Years 7 & 8 Science

Year 6

Subject: Basic Science

Topic: Biodiversity Conservation

Objectives: Students should be able to identify ways of conserving biodiversity: investigate the importance of conserving biodiversity

Materials:

- Posters of conservation area, paper, pencils, markers, crayons

Method:

- Brainstorm “biodiversity conservation” (word web)
- Write down students responses
- Show students the poster of the conservation area
- Ask students to talk about the poster
- Invite Guest Speaker to talk on biodiversity conservation
- Ask questions on biodiversity conservation
- List the different conservation areas
- Draw and name living things in the conservation area
- Give reasons why is it important to conserve biodiversity
- Draw posters on the importance of conserving biodiversity

Conclusion:

Display students work

Game: All the Fish in the Sea

Preparation for activity:

Choose a marked place on the ground where the fisherman will stand

Main Activity:

1. Ask the participants to name five favorite fish they like to eat
2. Divide the participants into 5 groups and then name them by the 5 name of fish they had given, take them to the ground and ask a volunteer to be a fisherman
3. The rule is that the marked area, the boundary that they will use and the line where the fisherman will stand. When “all the fisherman in the sea” is called out, allow one team to run across the field where the fisherman stand trying their best not to be tagged, or caught
4. Continue the game until all the fish has been called.

Class 3**Topic:** Invasive Species (Plants)**Duration:** 45 minutes**Objectives:**

Students should be able to identify the different types of plants

Outcomes: Enable students to:

- Name the invasive plants
- Note their impacts
- Draw the pictures

Materials:

- Plain paper, pencil, posters of plants

Lesson Development:

- Explain the topic
- Define ‘invasive species’
- Brainstorming
- Flash cards
- Explore the surrounding area

Conclusion:

Every student do their work and display

Curriculum links:

- Basic science syllabus class 3

Year 7 Nauti Primary School**Duration:** 1 ½ hours**Topic:** Biodiversity and Culture**Objectives:** Students to identify the significance of biodiversity and how it correlates to culture

Outcomes:

- Define terms – biodiversity and culture
- Describe how biodiversity correlates to our culture

Lesson Development: Brainstorming

- Show class picture Card i.e. Tuvalu, home, model of canoe, real object, traditional grass skirts, local broom
- Ask questions,
- name the plants that is needed to build a local home
- what tree do we use to make canoe
- name a plant that we use to make grass skirt and local broom
- Class discussion and show how our culture depend on our surrounding

Activity:

- 1) Groupwork – Slow ones
 - Picture cards of common plants
 - Draw pictures of the things that they can make from those plants e.g. monutree, medicine, coconut tree – oil, broom
- 2) Poster – Fast ones
 - Given a poster, they are going to write a paragraph on how our culture rely on biodiversity e.g. poster garden, chicken farm, local houses, plants, coconut, mini market, selling food crops, a girl making a garland, crowd playing 'te ano', sea, fish, turtles and men fishing

Conclusion:

- Presentation of their work and display marking of their work

Curriculum Links:

- Social science
- Basic science
- English

Class 3

Topic: Invasive Species

Duration: 45 minutes

Materials:

- Paper, pencil, color, cellotape, flash card

Objectives:

Students should be able to:

- Define invasive species
- Identify the different types of plants

Outcomes:

Students are able to:

- Name the different types of plants
- Draw picture of plants

Level of Achievement:

L0: Unable to name and draw pictures of plants

L1: Able to draw and unable to write down name of plants

L2: Able to draw and name the plants

Lesson Development:

1. Discuss the topic together with them
2. Ask them questions like what plants they know? (Brainstorming)
3. Take them outside the classroom to explore our surroundings
4. Work in their groups
5. Supervise them and ask them to pick a leaf from different plants and explore it.

Activities: Draw the leaf and use the flash card to name the different plants
e.g. gasu leaf, fetau leaf, nonu leaf

Conclusion: Display all their work

Evaluation: Link knowledge to current practices that threaten the biodiversity of plants on the island

Appendix 3: Fieldtrip Teachers Evaluation

Education for Biodiversity Conservation – Training of the trainers Activity:

Venue: Nauti Primary School

Date: 28th June – 1st July, 2016

Area: Funafuti, Tuvalu

This is a collection of feedback from the teachers regarding the fieldtrip on Day III of the training program, to the nursery managed by the Ministry of Agriculture.

Synopsis:

This activity allowed teachers to critically think of strategies to engage the students interest and meaningful participation in Biodiversity and the importance of biodiversity conservation. In developing lesson plans, the teachers are able to think through each step of the lessons developed to identify best approach to create an enabling environment for child advocates for biodiversity conservation. With biodiversity conservation being a cross-cutting concern, the teachers are also given the opportunity to explore and identify the curriculum links where the lesson plans can be used.

Teachers are also provided a number of resources from Live & Learn Environmental Education to draw inspiration and examples from.

<p>Field Trip to the Nursery</p> <ul style="list-style-type: none"> • It is a lame excuse to say that we cannot plant here in Tuvalu • We can still plant without any fertilizers • I'm motivated and encouraged to at least start with a small garden at home
<p>I learnt the importance of the nursery in housing varieties of crops and trees before transplanting to actual site</p> <ul style="list-style-type: none"> - The importance of composting - Good to trial climate resilient crops
<ol style="list-style-type: none"> 1) There is a lot of varieties in the nursery 2) First time to go to the agriculture nursery 3) Encourages to have home gardens 4) They should show us how to make a compost 5) More Awareness program to the Public to encourage self and school gardens
<p>An EU: Global Climate Change Alliance Funded project</p> <ul style="list-style-type: none"> - The nursery is a worthwhile initiative. It encourages planting and composting
<ul style="list-style-type: none"> - A number of root crops present: cassava, taro, kumala, sweet potato, pualaka, breadfruit and banana - Lacking in vegetables: only bele present (could grow cabbages, cucumber, lettuce etc -> much needed in the diet of Tuvaluans)
<p>Good and important trip!</p> <ul style="list-style-type: none"> • First time to learn that we have our own nursery • Many food crops seen, good to learn that they distribute to those who ask for these food crops • Also grow big trees that will help us to protect our island, i.e plants that can be planted at coastal areas • Motivation for every one of us to plant our food crops and have a garden • Most of the food crops from the outer island • Make their own compost – no chemicals

Found that the objective of the Agro-forestry nursery is to provide outer islands and all the islands to have varieties of plants/crops. Noted that the plants are collected from all the islands (outer islands) and some from SPC. It was a good chance for me to go in the fieldtrip, so that I can learn and know the different types of plants or varieties of plants that can grow here. The plants are growing using compost/ no fertilizers. Farmers are encouraged to take the plants from the nursery to plant in their garden. In Tuvalu, we do not have home nurseries. One challenge is using compost because the soil is so poor. Some of the plants are taken from Fiji.

An interesting place with different types of plants. Learnt the objectives need to be promoted to all islands and that there is a need for more variety from other Pacific islands. Some of the challenges noted is the composting/ energy collected from the manure, soil not rich.

Types of plants they grow:

- Pandanus, cassava, dalo, bele, pulaka, banana (different types)

Will conclude that there is a need to encourage everyone to sustain this project to promote awareness on approaches to soil preparation and variety cultivation.

Thoughts on the trip (Nursery)

- Proud to be a Tuvaluan
- Organic farming approached (new)
- Initiative for resilience to climate impacts
- Well informed
- Coordinator very smart (sponsors, uses, suppliers, vision, challenges, process of obtaining plants, advice, supply, follow ups)
- Variety of plants can be planted
- Use and preparation of manure (birds), more nutrients – pigs manure

What I saw varieties of vegetables e.g. pawpaw, breadfruit, bele, banana, potatoes etc What I learnt- the department is only nursing plants for farmers who are ready to plant Feelings - encouraged to plant more vegetables (not enough in garden), thanks to European Union for funding the water tanks (at the Agriculture nursery).

Learnt the following:

The Tuvalu Department of Agriculture Nursery objective

- To gear up and get more crops for the people's needs

Nursery:

- Is the collection of variety of plants from inside and outside of the country to conserve and preserve for tomorrow and future life e.g. banana varieties (from Fiji, Australia, South America).
- Some varieties are growing very well, the ones from South America is not growing well, because of the climate and soil may be.

Pulaka obtained from Kiribati, Tokelau, Fiji and Samoa.
Different countries with their own pulaka but the growing.

Appendix 4: Participants List and Contact Details

Note: Names are arranged alphabetically

Ref	Name	Organisation/School	Email
1	Emma Christopher	Live & Learn	emma.christopher@livelearn.org
2	Faiupu Tehoa	Nauti PS	ftehoa@gmail.com
3	Faoliu Teakau	MFATTEL	fteakau@gmail.com
4	Iosefa Paosa	MOE	j.boozergmail.com
5	Kima Pedro	SDA School	fanameana@gmail.com
6	Lakora Katepa	Nauti PS	anikaisle@gmail.com
7	Matapua Falani	FSS	ptfalani@gmail.com
8	Penehuro Hauma	FSS	pnhauma@gmail.com
9	Redina Aiuna	FSS	redcez@mail.com
10	Sid Yea	Nauti	kay1941393@gmail.com
11	Simulua Eneba	MFATTEL	staukiei@gmail.com
12	Sosemea Satupa	SDA School	kaiukep.satupa@gmail.com
13	Tagimai Solomua	Nauti PS	solomaimua@gmail.com
14	Takoi Lopati	MFATTEL	takoi.lopati@gmail.com
15	Tibera Lonu	Nauti PS	Tibera.melean.lono3@gmail.com
16	Vaopua Pinoka	Nauti PS	vpuoka@gmail.com
17	Viniana Bolatakeu	SDA School	vbolatakeu@gmail.com
18	Viniana Kunabuli	Education Department	vinikunabuli@gmail.com
19	Wendy Nemaia	Nauti PS	milanjnrvae@gmail.com

Appendix 5: Lesson Plans for Tuvalu 2016

Lesson Plans of activities prepared for Tuvalu training. Due to the changes in the program time, not all activities were used in training and those used were altered to ensure objectives were met for the training program. The planned lessons plans are annexed are those that were distributed to the teachers for reference in developing games and activities for the school students.

1. Activity: Diversity

Objective: To explore the perceptions on the term 'diversity'

Time: 15 minutes **Materials:** none

What to do:

1. Ask participants to pick an object from inside or outside the classroom and think about its significance to them, either through a memory or its usefulness
2. Allow only 2 minutes for participants to get their object
3. Ask the participants to write down the name of the object and the significance of the object to them on a piece of paper (ensure that this is distributed beforehand)
4. Ask each participant to introduce themselves and share with each other their stories on their objects

Deconstruction Discussion:

Link the stories to the term diversity by highlighting the diversity of objects shared. Where objects are the same, highlight on the different perceptions or stories shared; link the term diversity to how every has different perceptions of the term diversity and how perceptions can influence how we, as trainers convey knowledge to our students.

Collect papers at the end of the session

2. Activity: Expectations Interview

Part 1 Objective: To explore the perceptions on biodiversity and have participants interact

Time: 30 minutes

Materials: pen and paper

What to do:

1. Ensure that each participant has a pen and paper
2. Divide the participants into pairs and share that this is an introductory activity
3. Ask the participants to prepare interview questions on the person their interviewing, their expectations for the three-day workshop and their views on biodiversity
4. In this activity, participants are to draw their answers to the interview questions
5. Allow 10 minutes for the interview
6. Ask each participant to share their interview findings and introduce their partner

Part II:

Recap of Expectations:

- 1) Have an open discussion on the expectations that were shared
- 2) Note down all the expectations and paste them in front of the class

Deconstruction Discussion:

Share with the participants that at the end of session; the class will go over the expectations

Collect papers at the end of the session

3. Activity Title: Relevance of Biodiversity Objective:

To explore methods and tools for integration of biodiversity in delivering the school syllabus

Materials: Newsprint Marker pens

Method: Divide the participants into 5 groups

Paste the following on the wall and ask the groups to think about the terms pasted and how they are linked to biodiversity:

- 1) Culture
- 2) Medicine
- 3) Economy
- 4) Physical Health & Nutrition
- 5) Livelihood

Ask each group to choose their terms and to note down how biodiversity is relevant to each of the term.

Give half an hour for this exercise

Groups are welcome to present work in any form that they wish. Artwork is encouraged. Other forms of presentation could be through poetry, skits, rap or song etc. They are welcome to use any materials inside and outside the classroom.

All groups must return to classroom for presentation within the half hour and late groups will be disciplined through an activity chosen by the majority.

Deconstruction Questions:

- 1) Did you enjoy the exercise?
- 2) What is something new learnt in this exercise?
- 3) Did presenting in various ways make a difference? And how?

Link how highlighting the relevance of biodiversity can be taught using materials inside and outside the classroom; and how fun it can be to use creative tools and methods to enable students to link concepts to their everyday living.

4. Activity Title: Biodiversity in Schools Objective:

To explore methods and tools for integration of biodiversity in delivering the school syllabus

Materials: Newsprint Marker pens **Method:**

Part 1: Identifying Areas for integration Subjects

1. Divide the participants into groups
2. Ensure each group has newsprints and marker pens
3. Ask each group to divide their newsprints into two columns
4. In the first column, ask groups to list down the subjects taught in school (primary, middle-school and secondary level)
5. Ask each group to place a mark besides subjects where biodiversity awareness, importance, threats and conservation can be emphasized

6. In the second column, ask groups to note examples of how these concepts is part or can be an emphasized part of the lesson plan
7. In a new sheet of newsprint, ask participants to brainstorm on how these concepts can integrated into subjects that were not marked
8. Ask each group to present on their discussions

Deconstructive discussion:

Discuss on how Biodiversity; being linked to the environment is a cross-cutting subject through social science and science subjects and through various subjects; there is an opportunity to engage and enlighten students on the importance of biodiversity; and how we can conserve it.

Part 2: Strategies for Integration: Schools

In the same groups, ask participants to formulate strategies to ensure that knowledge of biodiversity and its uses is adequately available to students and the general public as an ongoing, sustainable practice within schools; and to note the challenges and the type of support needed at the Ministry of Education and National Environmental Services for the activities outlined.

Note with the participants that this will be collated for review for the third day and produced as an outcomes strategy statement upon endorsement.

5. Activity Title: Shaping our Environment Objectives:

- To allow participants to see the value in working as a team
- To allow participants to understand the importance of communication

Materials:

- None

Time: 20 minutes

Target Group: Teachers [Primary & Secondary]

Methodology

1. Divide participants in 4 or 5 groups [depending on the number of participants]
2. Instruct the participants that in their groups they would have to form the objects that are called out
3. The person whom is calling out the objects will only allocate 10 seconds for them to work with
4. Once the 10 seconds are up they are to stop their deliberations and have form the object
5. Note: Once the object has been called out the team must quickly discuss and arrange themselves into how that object is shaped.

Deconstruction [Optional]

- What is something's [strategies] which you all incorporated during the activity?
- Do you see such an activity being used in your classrooms for different subjects?

6. Activity Title: Biodiversity Connection Purpose:

To examine the connection between living and non living things in nature

Time: 40 minutes

Materials: 2 balls of String

What to do:

1. A newspaper headed "All living things depending on soil" and a newspaper headed as "All living things depending on plants"
2. Let the participant's brain storm on the different living things in accordance to the headings on the newspaper.
3. Let each participants choose one from the two lists.
4. Let everyone stand in a big circle. (if the circle is too big, let them stand in two circles)
5. Give one ball of string to one group and another ball to another. Let them think of how each one connects to the other before passing the ball of string.
6. After one minute, let them start by passing the ball to one they feel is connected to them, verbally mentioning this so everyone to hear.
7. Continue with this until all people around the circle has received the ball of string. Once they have finished, ask:

Question:

- What is one lesson that you learnt from this activity?
- Anybody else that has a different answer?
- So what is our role here as educators?

7. Activity Title: Food Chain Game Purpose:

To explore the link in nature in a fun way

Time: 30 minutes

Materials; woodchips or cardboards (some marked with markers and some not), 12 plastic bags, two four meter ropes.

What to do:

1. Ask; what do caterpillars love to eat. Green leaves, grass etc. What loves to eat caterpillars? What loves to eat birds?
2. Ask for volunteers; one to be the eagle, ¼ of the group to be the birds, the rest will be caterpillars.
3. Explain the game and rules of the game.
4. If you are caught, hand over your plastic bag to the one who caught you.
5. You are only allowed to run within the marked area
6. Birds and eagle are only allowed two minutes to look for food with the marked area.
7. The facilitator gives out a plastic bag each to caterpillars and explains that they are given 3 minutes to look for food. The woodchips or cardboards represent food which should be scattered within the boundary. Ask them to pick all the food they see and put them in the plastic bag. After 3 minutes, the birds will leave the marked line to look for caterpillars, whoever is caught, has to handover the plastic bag of food to the birds. After two minutes, the eagle will be released to catch the birds. The birds will also do the same caterpillars, if caught by the eagle. Only give two minutes for the eagle to look for food.
8. Call the participants together. Ask them to show how much food they have.
9. Also ask the birds and the eagle that managed to grab the plastic to check their food. Let them count the clear ones and the marked ones. Tell them that the marked ones are the contaminated food.

Questions:

1. Is this the real picture of what is happening in our natural environment?
2. What happens if this trend continues?
3. How can we help reduce the risk of getting contaminated food from the environment?

8. Activity Title: It's Your Choice Purpose:

To explore and link activities in the Discovery Biodiversity booklet

Time: 30 - 45 minutes

Materials: Discovering Biodiversity Booklet

What to do:

- Divide participants into groups of four or five
- Hand out the Discovering Biodiversity to each group focused on Module 1 & 2
- Ask participants to discuss as a team and select a particular activity which they would like to facilitate with the rest of the group the following day.
- Choose an activity from the list and develop a lesson plan to facilitate using the different tools given to your group.
- Everyone in the group must participate.
- Each group must conduct their activity in 30 to 45 minutes.
- Also show the curriculum links and how relevant the activity to the level you teach in your school.

Discovering & Valuing Biodiversity:

- Biodiversity in your local Area
- Made for the Job
- Types of Biodiversity
- Connections between living things
- Exploring habitats
- Biodiversity provides food, Medicine, shelter.
- Different beliefs and values about Biodiversity
- Food chains, Food webs about biodiversity
- Systems and processes that support life
- The role of biodiversity in Natural Cycle Deconstruction

Thank everyone for their participation acknowledging that in utilizing different strategies and adapting it to classroom settings is just one way of helping others understand where Biodiversity Conservation starts.

9. Activity Title: Story Catching – Biodiversity Objective:

- To understand why it was important to create a positive learning environments.
- How negativity can affect the outcome of a common goal

Material:

- Story Catching Cards
- Box or Container with (+ signs and – signs)
- Note: Prep several cards with a + sign and a – sign to be distributed at random (these should all be folded in half and then put into a box.

Time: 30 - 40 minutes

Target Group: Teachers [Primary & Secondary]

Methodology:

- Ask participants to seat in a circle
- Instruct the participants that this exercise is a story telling exercise.
- Instruct the participants that they are to reach into a box, pick out a piece of paper and pass it to the next person.
- Everyone should have a piece of paper.
- Depending on the sign that they have they are to portray the story according to their sign is.
- Instruct participants if they have a + sign the bit they add in should be positive, if it is a – sign than the bit they portray should not be favorable.
- Note: Facilitator can demonstrate with a short example.
- Spread the Story Catching Cards on the table and invite participants to come forward and pick a card, instruct them that the card they pick (will enable them to tell their story, they could use the word or the picture on the card to help them in the continuing of the story.
- Each sentence used should have a max of 15 words and not more to make the story flow.
- Participants are allowed to say pass – if they get stuck
- Note: The Facilitator may create a scenario to start off the story or invite one of participants to start of the story.

Deconstruction:

1. Did you enjoy the activity? What did you enjoy about it?
2. For those with the Plus sign – how did you feel? Was it easy to continue the story?
3. For those with the Minus Sign – how did you feel? Was it easy to continue the story?
4. For those that passed – how did you feel and why pass?
5. Can you think of a similar situation in life where such a feeling occurred?
6. What do you think can be done to improve person's stance when negative situations arise?
7. What is something that you have learnt by doing this activity by listening to the remarks made?
8. The name of this activity is positive connections, why do you think it is called that?

10. Activity Title: Cabbage Patch – Ethno-biodiversity**Objective:**

- To gather participants perspectives on Ethno biodiversity

Material:

- Pieces of paper
- Pens

Time:10 - 20 minutes

Target Group: Teachers [Primary & Secondary]

Methodology:

- Give out a piece of paper and a pen to each participant
- Instruct the participants that they are writing to a friend who has travelled to another country. Prompt them as to what would be the salutations they would use.
- Ask the participants to write down what their understanding of the term Ethno-biodiversity means to them. Let the participants write down. Allow 3 minutes for this.
- Instruct the participants that they are to begin the letter – saying Dear (friend's name)
Ethno-biodiversity is
- Once they have completed their letter they are to fold it up and place it in the envelope and give it to the Mail Man (Facilitator).
- Instruct the participants that they will play (2) roles :

THE MAILMAN

THE FRIEND THAT RECEIVES THE LETTER IN THE OTHER COUNTRY

- Instruct them that when they open up the envelope, they are to choose one mail and read it to the other participants what is written down.
- When they are done, they are going to act like a mailman delivering a letter, - they may walk to any participant and deliver the letter – they must knock on their door or ring their doorbell (and say – “here’s a mail for you my friend”)
- Note: The co facilitator will have to note down the meaning of what MC is on the newsprint or white board.
- These definitions are then displayed for all to read.

Discussion points (Group Work)

1. What did you learn from all the definitions that we have heard today?
2. What do these definitions have in common?
3. What are the differences in these definitions?
4. Are there any wrong answers from what we have heard?
5. What did you learn about Entho- biodiversity from this activity?
6. If this is a strategy to use in the classroom, how could you develop this activity further to enable students to understand the concept easily?
7. What are some creative strategies you could use to help bring out this message in your classrooms?

11. Activity Title: Fiji & Climate Change impacts on Food Security. [DVD session]

Objectives:

- To allow participants to see the impacts of Climate Change on our natural resources

Materials:

- DVD

Time: 10 minutes

Target Group: Teachers [Primary & Secondary]

Methodology

1. Play the Pacific at Risk DVD
2. Ask participants to watch as it is one of the initiatives in Fiji showcasing students learning from Nature

Deconstruction [Optional]

- What are some important lessons which you have learnt from watching the DVD?
- What are initiatives in which you could incorporate in your schools?

12. Activity Title: It’s Your Choice

Purpose: To explore and link activities in the Discovery Biodiversity booklet

Time: 30 - 45 minutes

Materials: Discovering Biodiversity Booklet

What to do:

- Divide participants into groups of four or five
- Hand out the Discovering Biodiversity to each group focused on Module 3 & 4
- Ask participants to discuss as a team and select a particular activity which they would like to facilitate with the rest of the group the following day.
- Choose an activity from the list and develop a lesson plan to facilitate using the different tools given to your group.
- Everyone in the group must participate.
- Each group will have to develop a role play on the topic that you have randomly picked/ chosen.
- The groups are given 5 – 10 minutes preparation and 2 minutes presentation.

**MODULE 3
Understanding the Threats**

1. Loss and Degradation of Habitats
2. Human Population Growth
3. Endangered Species
4. Trade in Endangered Species
5. Waste & Pollution
6. Invasive and Introduced Species
7. Climate change

**MODULE 4
Taking Actions for Biodiversity**

1. Resource Management
2. Sustainable Practices
3. Laws that Protect Biodiversity
4. Biodiversity Conservation Organization
5. Environmental Issues Facing the Pacific.
6. Personal Action to Protect Biodiversity

Deconstruction:

Thank everyone for their participation acknowledging that in utilizing different strategies and adapting it to classroom settings is just one way of helping others understand where Biodiversity Conservation starts.

13. Activity Title: Valuing Diversity Purpose:

To allow participants to recognize how important diversity in nature is and why we need to take care of it.

Time: 30 minutes

Materials: 4 scenarios written on cards

What to do:

1. Divide the participants into 4 major groups.
2. Let them know the instruction by explaining to them before giving out the scenario cards.
3. "You will have to act out the description in the card, imagining you are the living things mentioned in the story. One person can be the narrator while the rest of you act the story out. As teachers, we can do this in 2 minutes. You can talk, make sound or mime, as long as the message comes out clear to the audience)
4. Give out the scenario randomly.
5. Do not let them go out, if the room is big enough. 2 minutes is enough time. This is an energizer at the beginning of the lesson but can give more light to the teachers of how to use this strategy to build on their understanding of biodiversity.
6. After two minutes, let them present one after the other. Let the audience acknowledge all presentations

Question:

How can we adapt this activity in our classes and which subject can this be incorporated into?

SCENARIO 1

Deep in the middle of the forest fly a tiny butterfly, from one branch to another. Suddenly appear a giant lizard that is aiming to catch it. It flew right away from where the lizard is and rested delightfully on a beautiful smelling flower. The lizard then turns back and sees some sweet fruits on one branch and heads towards it. It enjoys the fruits for about 20 minutes. The sun is shining so bright that it makes all the leaves in the forest shine with different colors. Up in the sky shoots a beautiful rainbow that everyone can see.

SCENARIO 2

The beach is beautiful and long. I can see lots of things shinning and attracting my attention. I begin to walk along enjoying the sound of the waves as it hits my feet and coconut leaves rustling nearby. As I pass by, I see a little white crab crawling from one to another.

SCENARIO 3

In the mangrove swamp are many leaving creatures. The mangrove trees, tall ones and short ones with so many little crabs crawling here and there in between the roots. A sea snake is crawling amongst the roots of the mangroves, seeking for a place to rest. Two big brown crabs appear from one corner enjoying the cool mud and the bright sunlight. On the wet side of the mangrove swamp, a school of little fish swims very slowly, enjoying the beauty of the environment, sensing the safety of its members. Along comes a woman looking for crabs. She spots the two crabs enjoying the sunlight near the sea, far away from their holes. She crawls very slowly, and alas, the two crabs are in her hands. She smiles as she goes back home.

SCENARIO 4

Amongst the tall trees, grown some shrubs and ferns and some plants, big enough to nest birds and some other living creatures; with mongooses dash from one shrub to another and other tiny creatures creeping and jumping with joy. On the same day, a group of students pay a visit to the forest, making noises as they admire the different plants, different creatures some of which they have seen for the first time. "Awesome one" referring to a little monkey hanging on a branch. "What about that one, I love it"..looking at a fox resting under a tree, eyes closed, snoring and looks very relaxing. "Guys concentrate!!!, list down everything you see.

1. Divide the participants, into five groups.
2. Give out the sets of dice and a list of words to each group. They can use their writing materials for this activity.
3. Explain that 3 people will have to toss the dice at the same time. Whatever numbers appear on the top side will be the numbers to work on.
4. E.g., Green – for environment (3) which is trees on the list,
Pink – for Economic (4) low income
Blue dice – for Culture (1) tradition
5. The team will then develop a sentence to combine all the three words creating a sensible sentence.
6. Note: We can do this as a game, or an activity to build creativity, writing skills and thinking skills for students.
7. Allow time for teachers to take two or three rounds until they are familiar with the activity.

Questions:

- What is one main lesson learnt from this activity?
- What subject in the curriculum best suit this activity?
- How can we adapt this activity to various subjects that we teach in school and also suit the students we teach in school?

14. Activity Title: Diverse Ecosystems

Objectives:

- To allow participants to see the value in working as a team
- To allow participants to understand the importance of communication

Materials:

- None

Time: 20 minutes

Target Group: Teachers [Primary & Secondary]

Methodology

1. Divide participants in 4 or 5 groups [depending on the number of participants]
2. Instruct the participants that in their groups they would have to form the ecosystems that are called out
3. The person whom is calling out the objects will only allocate 10 seconds for them to work with
4. Once the 10 seconds are up they are to stop their deliberations and have form these ecosystems
5. Note: Once the object has been called out the team must quickly discuss and arrange themselves into how that object is shaped.
6. Ecosystems: Forest, River, Mangrove, Reef, Desserts.

Deconstruction (Optional)

- What is something's [strategies] which you all incorporated during the activity?
- Do you see such an activity being used in your classrooms for different subjects?

Appendix 6: Traffic Lights Self Evaluation Form

School Name:

..... Locality of School:

..... Male or Female:

Date:

Ref	Key Learning Statements "I believe....."	Self Assessment Rating Green: Strongly agree Amber: Neutral or Not Sure Red: Strongly Disagree					
		Green		Amber		Red	
		M	F	M	F	M	F
1	That Biodiversity is important						
2	That teachers have an important role in ensuring that the message of biodiversity and its conservation is passed on to the younger generation						
3	That children as future leaders are change agents to ensuring the sustainability of biodiversity						
Ref	Key Learning Statements "I could....."	Self Assessment Rating Green: Strongly agree Amber: Neutral or Not Sure Red: Strongly Disagree					
		Green		Amber		Red	
		M	F	M	F	M	F
1	Openly discuss the importance biodiversity to peers and the community						
2	Demonstrate the link between biodiversity and our way of life						
3	Enable Child-led initiatives for the conservation of biodiversity						
4	Openly discuss the threat of invasive species to our island biodiversity						
5	Openly discuss the threat of climate change and natural hazards to biodiversity and our way of life						
6	Develop lesson plans within the current school curriculum to better enhance students understanding and appreciation for biodiversity conservation						
7	Identify, develop and propose strategies for school adoption for biodiversity action within the school						
8	Engage partnerships from the community, other government ministries and other schools for action towards biodiversity awareness and conservation						
9	Beach champion for Biodiversity action in my school and community						

