

CORAL CHAMPION AMU MALOSI

THEME: Protect and sustain good coral health for Samoa's livelihood, coastal protection and healthy marine environment

MANULAUTI: Pui-pui ma faatumauina le ola maloloina o amu mo le manuia lautele o tagata Samoa aemaise o le ola maloloina o le siosiomaga o le gataifale.

MESSAGE: Healthy reef, healthy fish, healthy ocean, healthy people

FEAU: Aau maloloina, l'a maloloina, Ogasami maloloina, Tagata maloloina

Target Group: 10-12 yrs old

(group of about 10 learners)

Time: 6 hrs (split into two 3 hour modules)

Location: Village fale /MPA of village

Learning Objectives

- To share our ideas about the coral reef environment (Activity 1 Coral Polyp)
- To understand the structure of a coral reef (Activity 2 Coral Polyp)
- To understand the importance of coral reefs (in protecting coastlines from damaging waves as well as providing habitats and shelter for many marine organisms) (Activity 2 Coral Polyp)
- To understand some of the human impacts on the health of coral reefs (Activity 2 Coral Polyp)
- To make first hand observations of the coral reef (Activity 1 Coral Snorkelling)
- To record our observations of the coral reef (Activity 2 Coral Snorkelling)
- To reflect on what we can do to help protect the coral reef (Activity 3 Coral Snorkelling)

CORAL POLYP

ACTIVITY 1: To share our ideas about the coral reef environment

(Time 1 Hour)

Resources/Materials needed:

- Shark Stanley book (SPREP)
- Song sheet
- Traditional Turtle & Shark Story
- A4 paper
- Pens or paints

Key vocabulary (ensure the learners understand these meanings)

Ecosystem: A biological community of interacting plants and animals (including humans) and the non-living components of the environment.

1a. Ask the learners to sit facing the ocean.

- Sing together, traditional songs of the sea: Tele ia ole sami/ Feololo ia o le/ Laumei Faiaga

- Alternatively, read the learners the story of 'Shark Stanley'
- Or traditional story telling of the story of the Turtle and the Shark. Traditional stories emphasise how our ancestors lived in harmony with the environment; that we are ocean people and it is our tradition and our way of life.

1b. Key question: What do you think lies beneath the surface of the water?

- Share ideas of plants, fish and animals and explain that this is called the coral reef ecosystem.

1c. Ask the learners to draw or paint what they think this reef ecosystem looks like on A4 paper.

1d. Ask the learners to share their pictures with the rest of the group and talk about their ideas.

ACTIVITY 2:

(Time 2 Hours)

To understand the structure of a coral reef

To understand the importance of coral reefs (in protecting coastlines from damaging waves as well as providing habitats and shelter for many marine organisms)

To understand some of the human impacts on the health of coral reefs

Resources/Materials Needed:

- Piece of hard coral rock (from MNRE team)
- Piece of (non-coral) rock
- Piece of bleached coral rock
- A cloth pre-cut with slits (one for each learner)
- Plastic gloves (one for each learner)
- Diagram of a polyp and separate labels to attach for tentacles/ mouth/ zooxanthellae/ stomach/stony skeleton
- Cut out shapes of fish
- Some coloured gloves
- Peanuts (in shells)
- Water sprayer
- Cup of soil
- Woollen glove
- Foot shape

Key vocabulary (ensure the learners understand these meanings)

Planula: a young polyp

Palanula – o se polipe laititi

Polyps: tiny coral animals

Polipe: manu ninii e fausia amu

Parts of a polyp: tentacles/ mouth/ zooxanthellae/ stomach/stony skeleton

Vaeaga o le polipe: ave, guku, susana, manava, auivi

Colony: a group of polyps

Aiga: o se kulupu o polipe

Coral reef: a group of polyp colonies

Aau: o aiga o kulupu o polipe eseese

Habitat: where a particular species lives

Apitaga: nofoaga o loo nonofo ai meaola eseese

2a. Show a piece of hard coral rock skeleton and pass it around the group of learners for them to touch.

Key question: Do you know what this is? Take learner's ideas and explain that it is hard coral rock skeleton.

- Show a piece of (non-coral) rock and compare it to the coral rock. Point out the holes in the coral rock as one difference and explain this is where the coral polyps would live. Pass it around the learners for them to touch and compare to the coral rock.

2b. Show a diagram of a coral polyp.

Key question: Do you think that this is a plant or an animal?

- Explain that coral polyps are the animals that build reefs.
- Give each learner a label saying the name of one of the parts of a polyp. Ask each learner in turn to read their label and then the educator should give an explanation of that part of the polyp.
- Then ask the learner to come and attach the label to the diagram to show the part of the coral polyp they think it refers to (based on the explanation they have just heard).

Parts of a coral polyp:

- **Mouth:** polyps have soft bodies like rubber tubes with an opening at the centre, this is the mouth.
- **Tentacles:** The mouth is surrounded by tentacles. Each tentacle has stingers called cnidocytes (say nido-sites) which spring out when a tentacle touches something edible. The tentacles then draw the prey into the polyp's mouth.
- **Zooxanthellae (say zoo-zan-thell-ee):** these plant-like algae live inside a polyp's tentacles and provide it with some of the food it needs to grow. In return, the polyps provide the algae with a safe place to live. The zooxanthellae need sunlight to survive so they live in the tentacles where light can reach them. If the zooxanthellae leave the coral, the polyps die. Corals get their colour from their zooxanthellae.
- **Stomach:** coral polyps have simple bodies, inside there is a large stomach.
- **Stony skeleton:** a tough, rock like skeleton grows outside the polyp like a stony cup. It is made from calcium carbonate, a tough substance which turns into stone over time.

- Explain that when polyps reproduce, a group of polyps is called a **colony**.
- Explain that a group of coral colonies is called a **coral reef**.

- Explain that polyps provide the framework for the reef but other living things add to the structure. Some marine organisms such as sponges and sea cucumbers have a hard substance called silicon in their skeletons. When they die, their skeletons add to the coral reef.

Key questions: How do corals feed?

E faapeafea ona ai le amu?

Explain that coral polyps have TWO ways of getting the food they need to live: 1 - via the symbiotic algae that live in the tissue; 2 - by hunting/gathering prey.

Discuss each:

- **Symbiosis:** partnership where both partners get something by working together. Zooxanthellae are algae; like plants they can convert energy from the sun into food for the coral in a process called **photosynthesis**. In exchange, the zooxanthellae get a safe place to live in the coral's tissue.
- **Hunting:** Corals also eat **plankton** using their tentacles. Plankton are microscopic plants and animals that float around in the water and move with the currents and tides.

2c. Explain that the learners are going to pretend to be polyps and work together to build a coral reef:

- Give each learner a plastic glove (you could ask them to decorate their glove with colourful spots to represent zooxanthellae). Then ask the learners to stand and hold the edge of a piece of cloth (with pre-cut slits, one for each learner).
- Explain that the cloth represents the hard sea bed.
- Ask one learner to push their gloved hand through the slit and wave it about. Tell the story that this is a young polyp (called a **planula**) and it is floating around in the water until it finds a hard surface to attach itself to.
- Ask the learner to keep their hand in place but continue to wiggle their fingers. Explain that when it finds a hard place, the polyp begins to grow a stony cup and starts to hunt for prey.

Key questions (refer the learners back to what they learnt in 2b)

- **Which part of the polyp grabs the prey?** (the tentacles)
- **How do the tentacles attack the prey?** (by stinging them with their cnidocytes)
- **What do you think brings the prey towards the polyps?** (sea currents and tides)

- Ask a few more learners to push their hands through the slits in the cloth. Explain that the polyp has reproduced so now there is a group of polyps.

Key question: What is a group of polyps called? (a colony)

- Ask the rest of the learners to push their hands through the cloth. Explain that there is now a group of coral colonies.

Key question: What is a group of coral colonies called? (a coral reef)

- Add some cut outs of fish, under some of the learner's hands. Explain that some fish use the coral rock to hide under.

- Pull some coloured gloves over the top of some of the learners hands. Explain that other plants such as anenomes attach themselves to the coral rock.
- Explain that the coral reef is an important **habitat** for fish, plants and other marine organisms.
- Ask the learners to all wiggle their fingers and explain the **polyps** are waving their **tentacles**, waiting to grab prey as it passes....
- ... pass handfuls of peanuts (in their shells) for learners to grab with their tentacles. Lift the cloth so that learners can eat their peanuts.

2d. Whilst learners are eating, explain that coral reefs are **fragile ecosystems** that are under threat from humans. When they are stressed, coral polyps lose their **zooxanthellae** and die. Once the polyps have died, the coral structure that is left appears white and is described as '**bleached**'. Show a piece of bleached coral rock.

- Ask learners if they know what things damage or kill corals
- Ask the learners to put their glove back on and hold the cloth again. Explain that they are going to find out more about how corals can become damaged and die.
- Explain that on land, **chemicals are used on crops** to help them grow or to kill pests but they get carried out to sea by rainwater and rivers where they damage the reef. **Some fishermen use chemicals to catch fish** which also bleaches the coral. Use a water sprayer to represent the chemicals and lightly spray some of the polyps with water. Ask these learners to remove their hands from the cloth as the polyp 'dies'.
- Explain that **building or digging on the land**, loosens the soil which also gets washed into the sea. Soil and dirt in seawater make it cloudy and stop sunlight reaching the zooxanthellae. The result is more coral bleaching. Throw a small handful of soil over some of the polyps. Ask these learners to remove their hands from the cloth as the polyp 'dies'.
- Explain that **climate change is causing a rise in sea temperatures** which also leads to coral bleaching. Put a woollen glove over one of the 'polyps' to represent warming. This polyp then 'dies'.
- Explain that **some fishing techniques** which drop gear onto the reef or use bombs in the water, also turn the coral to crumbs. Explain that humans can do the same by **standing on or touching the corals**. Use a foot shape to represent standing on the remaining polyps and damaging them. Ask these learners to remove their hands from the cloth as the polyp 'dies'.
- Explain that learners will need to take care not to touch or stand on the coral during the next snorkelling activity.
- Explain that the reef also provides protection for the coastline from damaging waves. If the coral crumbles and dies, there is no longer a protective barrier for the land which could lead to flooding.

CORAL SNORKEL

ACTIVITY 1: To make first hand observations of the coral reef

(Time 1 ¼ Hours)

Resources/Materials needed:

- A4 paper and a pen (to record the items for learners to observe)
- Snorkel and mask for each learner
- Snorkel Briefing

3a. Tell the learners that they are going to take part in a survey of their reef. Explain that this is called **profiling** and is something that professional scientists often need to do.

- Explain that learners will be snorkelling over the reef and they will then return to the land to record what they see.
- Provide the learners with the following things to look out and listen for on the coral reef. They may be able to add to this list. You could split the list up and assign each learner with a different item to look out for.

Things to look out and listen for on the coral reef:

1. *Healthy coral with some colour (shows presence of zooxanthellae)*
2. *White bleached coral (damaged coral)*
3. *Listen for fish (such as parrot fish) nibbling the algae growing on the coral*
4. *Blue and yellow fish: they look bright to us but they are hidden on the reef because of the way that sunlight reflects off the coral reefs*
5. *Sea cucumbers: when they die the silicon in their skeletons will add to the reef*
6. *Fish hiding under coral rocks for protection*
7. *Anemones growing from the coral rock*
8. *Coral rock with green algae growing on it (damaged coral)*
9. *Coral pests such as Crown of thorns starfish*
10. *Any trash on the coral reef*

- Write each of these items on a separate piece of A4 paper to refer to in Activity 4

3b. Give the learners a safety briefing before taking them to snorkel over the reef. This should include: splitting the group up, catering for non-swimmers (e.g. can they walk along the shore and look for signs of fish or coral?) and reminding learners not to touch or stand on the coral.

ACTIVITY 2: To record our observations of the coral reef

(Time 1 Hour)

Resources

- A4 paper
- Pens or paints

4a. Ask the learners to look again at the list of items they were told to look for (written on A4 paper in Activity 3). Ask them to think about which items they saw and then sketch on that piece of paper, what the item looked like.

4b. Show each of the pieces of paper in turn and discuss what learners saw or didn't see. Ask the learners to use their sketches to help them describe what the items looked like.

4c. Give each learner a piece of A4 paper and ask them to draw or paint what the reef they just snorkelled over looked like.

ACTIVITY 3: To reflect on what we can do to help protect the coral reef

(Time 15 Minutes)

Resources/Materials needed:

- Two rolls of paper to display the learner's pictures on
- Pins or Tape to attach pictures

5a. Ask the learners to compare their pictures of the reef from Activity 1 to the ones completed after the snorkelling exercise in Activity 4.

Key questions:

- **What are your ideas/ thoughts before and after the exercises? Which picture seems to represent the healthiest reef? Why?**
- **Has anything surprised you about the activities?**

5b. Ask the learners to reflect on what they have learnt from the activities.

Key questions: What can you do to help protect the reef?

Share learner's ideas drawn from activities including:

What can I do to help protect the reef?

- 1. Take care not to touch or stand on the corals when I'm swimming in the sea*
- 2. Avoid using chemicals when fishing*
- 3. Speak up if I see places where sewage or soil is getting onto the reef*
- 4. Be a reef guardian: be observant and speak up if I see changes happening to the reef such as coral bleaching*

5c. Display the learner's pictures of the reef in the fale. You could have a roll of paper along one side of the fale to stick all the pictures on from Activity 1 and then a roll of paper on the opposite side of the fale for pictures from Activity 4. This could provide an interesting visual comparison and talking point as it is added to over the course of the week.

Assessment/ Evaluation:

Enrichment:

Show the film 'Chasing Corals' at night (possibly a shorter version)

Cultural Context References:

Implications for Future Learning:

Related MESC Formal Curriculum Learning Objectives:
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Faatinoga 1: (3 Itula)

- **Pese** (A savali le pa'a)
- **Fesili autu**: O ai na te ta'u maia oa ni mea o loo i lalo o le taele o le sami?
- Faamatala le siosiomaga o le gataifale
- **O outou iloa mea nei?** (Faaali le maa ma le amu ma faamatala lo la eseese ma faaali i tamaiti le ata o le polipe)
- **Se meaola le amu po o se laau?** (Faamatala o polipe o loo fausia amu ma aau)
- **Planula** poo le Palanula o se polipe laititi
- **Polyps** poo le Polipe o meaola ninii ia o loo fausia le amu
- **Faamatala vaega o le polipe**
- **Mouth** (Gutu), **Tentacles** (Ave), **Zooxanthellae** (Susana) **Stomach**(Manava) **Stony skeleton**(Auivi o le amu)
- **Colony** poo se aiga o le kulupu lea o polipe
- **Coral Reef** poo le Aau o le aiga o kulupu o polipe eseese.
- **Fesili pe faafefea ona ai le amu?** (E lua vaega o le amu e mafai ona maua mai ai ana meaai e faaoga ona ave e pu'e mai ai ana meaai ma susana na te fausia ina isi meaai mo le polipe e faamoemoe i le la.)
- **Faagasolo le taaloga e faaoga ai le ie.** Faamatala le amataga o le ola a le polipe.
- **Fesili**: O fea le polipe na te pu'eina meaai? (Tentacles poo ave).
O lea so outou iloa e faafefea ona oo mai meaai nei i le polipe? (E fetafeaai e le au)
- **O lea le tauga o le kulupu o polipe?** (Colony poo le aiga)
- **O lea le ta'u e ta'u ai le aiga o kulupu o polipe?** (Coral reef poo le Aau)
- **Faamatala le aoga o le aau ma aafiaga o amu pea leai ni polipe.**
- **Aoga**: Lafitaga o i'a mai o latou fili
Tautuufa ai i'a
Puipui mai ai i tatou ma le malolosi o galu
- **Faafitauli ua faaleagaina ai amu**:
Faaogaina o vailaau oona
O palapala tafia mai tafega
O tagata fagogota e soli amu
Fesuaiga o le tau
Faigafaiva le talafeagai.

Faatinoga 2: Snorkeling. (3hours)

- Faamalamalama le faatinoga
- Faamatala i tamaiti le suesuega o lea faatinoina
- O vaega e tataua ona faailoa i tamaiti e o e saili mai le suesuega.
 1. Amu maoloina o loo atagia mai i le lanu o polipe
 2. Amu ua pepe lanu papae (**Bleached coral**)

3. Faalogo i i'a pei o le fuga o loo ai i limulimu o loo i ola i luga o le amu
 4. O i'a lanu moana ma lanu samasama
 5. O fugafuga o le sami (**Sea cucumbers**)
- Faalauiloa le saogalemu i tamaiti ae lei avea i le latou suesuega.
 - Fesili i tamaiti e toe vaavaai i latou pepa na tufa atu ma taumafai e tusi le ata o mea sa latou vaavaai ai i le taimi o le suesuega
 - Faaali le ata i tamaiti ma fesilisili i ai e faamatala mai ata na latou tusia.
 - Tufa pepa i tamaiti ma faailoa i ai e tusi mai le ata e faaoga ai peni vali e tusi ai ata o foliga o le aau sa latou suesueina.
 - Faaali ata ma fesili ai i tamaiti poo le fea o nei ata o loo faailoa mai ai se aau maloloina.
 - Aisea ua filifilina ai lena ata?
 - **Fesili autu:** O lea se auala e te faia e puipuia ai aau?
 - **Puipui lelei amu aua le tago i ai pea taele i le sami**
 - **Faasa ona faaogaina vailaau**
 - **Logo nisi pea vaaia ni lapisi poo ni suauu i le sami**
 - **Ia avea oe ma tamaititi e muamua i le puipuiina o le gataifale ma lipoti ni fesuga o le gataifale e pei o le amu pepe papa'e.**
 - Faamata vaega uma sa faapea ona faailoa i tamaiti mai le amataga.

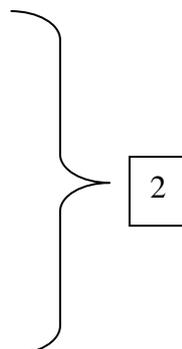
Fesili mo le suega.

1. What is a coral polyp?
2. How does a coral feed?
3. Why are corals colourful?
4. Name 2 impacts on coral.
5. List 2 importance of coral.
6. What name do you give a group of colonies?
7. Is coral a tree or animal?
8. True or False. Corals grow better in murky water.

1. **O lea le polipe?**
2. **E faafefea na ai le amu?**
3. **Aisea e felanulanuai ai amu?**
4. **Faaliloa mai ni vaega se lua e aafia ai amu**
5. **Lisi mai ni vaega taua se lua o le amu.**
6. **Lea le igoa e te avea i se kulupu o polipe?**
7. **O le amu o se laau poo se meaola?**
8. **Sao/Sese. O le amu e ola lelei i ogasami pefu.**

Jingo

O au le amu e nofo le sami
loe ioe ioe
Te fefe tele tagata feoai
loe ioe ioe
O a'u e faamoemoe ai i'a



Aai, momoe ma fiafia
Faaitiitia o le faaleaga
Tele o lo'u aoga X2
AMU MALOSI!!!