

Future Leaders: Eco project

Teaching & Resource Guide

Eco Project Overview

Recent research has identified [100 Jobs of the Future](#) that are likely to be created in the next few years.

This year's Eco Project has been designed for students to explore the current and future issues facing the Great Barrier Reef through the lens of a future STEAM-focused role.

The aim of the project is for students to select a **future job profile** and showcase how they could apply their future skillset towards managing and protecting the health and longevity of the Reef.

The [Reef 2050 Plan](#) has outlined the '5 Priorities for Action' that need to be taken to help the Reef survive and thrive. Students will research **one key threat** facing the Reef and use their "future expertise" to come up with a plan to educate the public to take action.

The project is suited to students in grades 4 –11 but can be modified to suit your students' age range. Students can choose to undertake this project by themselves or work together in teams as part of the school leadership program or club.

If working in a team, each student could select a different job profile and combine their "future skillsets" to address one of the 5 Priorities for Action.

The Project

1. Pick one of the key threats identified in the Reef 2050 Plan to research.
2. Choose one of the '100 Jobs of the Future' listed in the 'Resources' section (or visit <https://100jobsofthefuture.com/>). In your chosen role, how will you use your future skillset to address the threat facing the Reef?
3. Decide on a plan of action! Prepare your idea/proposal to using a poster, a power point, a computer-aided design, or prototype/physical model.
4. Feel free to post your call for action on the Reef Guardian School Portal, Facebook page or email reefguardians@gbmpa.gov.au and we will send you a token of recognition for participating in our 5 pillar C.L.A.S. = S (Care, Learn, Act, Share = Stewards of the Reef).

The PLAN OF ACTION must do **two things**:

- Address **one** or more of the '5 Priorities for Action' from the **Reef 2050 Plan**
- Raise community awareness of the issue and use a **Call to Action**

The PLAN OF ACTION can take whatever form students' desire! A poster, a prototype, an advertising campaign, a proposed invention – whatever medium students feel will best match their chosen job/action.

The Eco Project can take place in the classroom, or as an extracurricular activity for interested students.

Possible Assessment Criteria:

- Clearly addresses **one** or more of the ‘5 Priorities for Action’ from the **Reef 2050 Plan***, demonstrating a thorough understanding of the nature of the threat to the Reef that the action addresses, and its role in contributing to the long-term protection and sustainability of the Reef.
- Appropriate selection of a “Job of the Future”, as demonstrated by clear and reasonable connections made between their chosen job and their proposed plan.
- Effectively communicates to their community the nature/purpose/importance of their chosen priority in a way that encourages a response or action from the audience i.e., does their proposal help to raise community awareness and/or engagement with the issues raised in the **Reef 2050 Plan**.

Document Summaries

100 Jobs of the Future: Overview

100 Jobs of the Future is a joint research project by Deakin University, Ford Motor Company, and Griffith University which aims to look at the future of work in an increasingly technology-driven society. The key findings of the project were that “the world of work will change dramatically in the next few decades. Even now, jobs are changing at a fast rate as machines and big data change the way we work and interact with each other... Climate change, population pressures and “technology” lifestyles will throw up major Projects for sustainability. New technologies and new materials will change agricultural practice, transport, engineering, and industry and business practices. Many, but not all, of the 100 jobs of the future will require scientific and technological and digital skills. Many also require people skills, creativity and imagination, and the ability to work across domains and to learn and adapt.” Visit the website to try the explorer tool, and for a more detailed description of the above roles, here [100 Jobs of the Future](#)

Linking Future Jobs to the Eco Project

The Eco Project aims to turn those skills and interests outwards, into student’s future work and beyond, to encourage students to consider how their future jobs may work to serve and preserve the long-term sustainability of the GBR as a unique global icon, recognised as a World Heritage Area for its Outstanding Universal Value.

Reef 2050 Plan: Overview

The Reef 2050 report is about protecting the Great Barrier Reef in Australia, which is one of the most beautiful and important ecosystems in the world. The report outlines actions that need to be taken over the next 30 years to help the reef survive and thrive.

The report identifies five key threats to the Great Barrier Reef: climate change, water quality, coastal development, fishing and illegal poaching. To tackle these threats, the report calls for a range of measures including reducing carbon emissions, improving water quality, regulating coastal development and cracking down on illegal fishing.

The report also highlights the importance of working with Indigenous communities, who have lived on the land and sea around the reef for thousands of years, and have valuable knowledge and skills to contribute to its protection.

Protecting the Great Barrier Reef is important not just for the animals and plants that live there, but also for people who rely on it for food, recreation and tourism. The report recognises that the health of the reef is closely linked to the health of our planet and calls for urgent action to be taken to ensure its survival for generations to come.

Five Priority Areas for Action

1. Limit the impacts of climate change by contributing to global efforts to reduce emissions and supporting the Reef and communities to adapt.
2. Improve water quality by working with landholders, industries and communities to accelerate action to reduce the impacts from land-based activities.
3. Reduce impacts from water-based activities by strengthening partnerships with Reef industries and delivering strong marine park management.
4. Influence the reduction of international sources of impact to reduce marine debris entering the Reef from outside Australia and protect migratory species.
5. Protect, rehabilitate and restore Reef habitat, species and heritage sites by minimising impacts from disturbances and assisting with their recovery.

Linking the Reef 2050 Plan to the Call for Action Eco Project

The Eco Project aims to encourage students to consider their efficacy and agency as individuals, community members, and global citizens, to take action to improve the Reef's future – and further, to encourage others to also engage with issues facing the Reef, to support its health and resilience.

Bringing It All Together

Below are a few examples of how a few job profiles could be used to develop sample plans for action, which STEAM skills would be used, how it would match to the Priorities for Action from the 2050 Reef Plan, and ideas for how to present that plan.

Job Profile	Skills	Plan for Action	Priority Match	Production/Presentation
Biometric security solutions engineer	Science, design, technology, mathematics	Using specs inspired by cartilaginous fish/sharks/rays you design more energy efficient/safer modes of transportation	1 & 3	A physical model, or drawing. OR use AI to develop hypothetical schematics.
De-extinction and conservation geneticist	Science/ethics, technology	Design/engineer new hybrid species of Reef animals.	5	Poster, painting, drawing OR use AI to develop the imagery.
Human Habitat Designer	Mathematics, design, engineering	Design multi-use food-producing playground on an existing lot of land next to the local creek or a community garden near a creek (which flows out onto the Reef) which considers rubbish disposal, composting, reef-safe gardening chemicals (fertiliser, pesticides etc), and doesn't impinge on local wildlife (nesting crocs etc)	2,3 & 5	A large poster showing the design, with appropriate sections labelled. For added interaction there could be "lift the flap" sections. OR A 3-D model crafted from cardboard and recycled materials, or modelling clay. Be sure to highlight all the features which make it beneficial to the GBR into the future!
Off-world Habitat Designer	Engineering, design	Design a mobile, under-water corporate office space for the Reef Authority.	1, 4 & 5	Taking inspiration from the Reef Authority's website, use digital design technologies to create an "architectural plan".
New Materials Engineer	Science, technology, design	Create more sustainable "reef wear" i.e., wetsuits and flippers made from recycled products.	1	Create an "advertisement" (could look like a magazine or TV ad, mock billboard etc), for a new sustainable reef wear fashion line – be sure to highlight all the sustainable features and benefits to the Reef!

Glossary

Key Terms	Definitions	Resources
Sustainability	<p>NOUN</p> <p>1. the ability to be maintained at a certain rate or level: <i>"the sustainability of economic growth" · "the long-term sustainability of the project"</i></p> <p>- avoidance of the depletion of natural resources to maintain an ecological balance: <i>"the pursuit of global environmental sustainability" · "the ecological sustainability of the planet"</i></p>	<p>GBRMPA ELibrary: Reef Beat education series: sustainability</p> <p>Sustainability is a social goal about the ability of people to co-exist on Earth over a long time.</p> <p>So, in everyday use, <i>sustainability</i> often focuses on countering major environmental problems. These include climate change and loss of biodiversity. They also include loss of ecosystem services, land degradation, and air and water pollution. The idea of sustainability can guide decisions at the global, national, and individual levels (e.g. sustainable living)</p>
Invention	<p>NOUN</p> <p>1. the action of inventing something, typically a process or device:</p>	<p>An invention is a unique or novel device, method, composition, idea or process.</p> <p>Due to advances in artificial intelligence, the term "inventor" no longer exclusively applies to an occupation (see human computers)</p>
Estuary	<p>NOUN</p> <p>1. the tidal mouth of a large river, where the tide meets the stream.</p>	<p>Vulnerability-Assessment-Estuaries-2016 (qbrmpa.gov.au)</p> <p>Pressures affecting estuarine ecosystems State of the Environment Report 2020 (des.qld.gov.au)</p>
Ecosystem	<p>NOUN</p> <p>1. a biological community of interacting organisms and their physical environment: <i>"the marine ecosystem of the northern Gulf had suffered irreparable damage"</i></p>	<p>An ecosystem (or ecological system) consists of all the organisms and the physical environment with which they interact.</p>
Responsible Innovation	<p>Responsible Research and Innovation (RRI) is a term used by the European Union's Framework Programmes to describe scientific</p>	<p>"ELSA"</p> <p>gender equality</p>

	research and technological development processes that take into account effects and potential impacts on the environment and society	Engineering and Physical Sciences Research Council . " Horizon 2020 "
Catchment	NOUN 1. the action of collecting water, especially the collection of rainfall over a natural drainage area: <i>"water catchment continues the whole year round"</i>	A drainage basin is an area of land where all flowing surface water converges to a single point, such as a river mouth , or flows into another body of water , such as a lake or ocean .
Climate Change	NOUN 1. a change in global or regional climate patterns, in particular a change apparent from the mid to late 20th century onwards and attributed largely to the increased levels of atmospheric carbon dioxide produced using fossil fuels.	GBRMPA ELibrary: Reef facts for tour guides: climate change and the Great Barrier Reef In common usage, climate change describes global warming —the ongoing increase in global average temperature—and its effects on Earth's climate system . Climate change in a broader sense also includes previous long-term changes to Earth's climate. Climate change pressure on the Great Barrier Reef State of the Environment Report 2020 (des.qld.gov.au)
Water quality	Water quality refers to the chemical , physical , and biological characteristics of water based on the standards of its usage	For the Great Barrier Reef, the main water quality issues are: Increasing sediment, nutrients and contaminants entering coastal waters in run-off from agricultural, industrial and urban land uses. Rising seawater temperatures and increasing seawater acidity associated with climate change. Poor Water Quality - Great Barrier Reef Foundation - Great Barrier Reef Foundation
World Heritage Site	A World Heritage Site is a landmark or area with legal protection by an international convention administered by the United Nations Educational, Scientific and Cultural Organization (UNESCO). World Heritage Sites are designated by UNESCO for having cultural, historical, scientific or other forms of significance	Great Barrier Reef - UNESCO World Heritage Centre
Innovation	NOUN 1. the action or process of innovating:	Centre for Marine Science and Innovation School of Biological, Earth & Environmental Sciences - UNSW Sydney

	<i>"innovation is crucial to the continuing success of any organization"</i>	
Run-off	Runoff occurs when there is more water than land can absorb. The excess liquid flows across the surface of the land and into nearby creeks, streams, or ponds. Runoff can come from both natural processes and human activity.	GBRMPA-infograph-portrait.jpg (1169×1654) Land-based run-off gbrmpa Land-based run-off pressure on the Great Barrier Reef State of the Environment Report 2020 (des.qld.gov.au) runoff (nationalgeographic.org)
Coastal Development	Coastal development is a broad category which includes an array of human activities including beachfront construction of homes, hotels, restaurants, and roads, often for tourism. Also included are things like beach renourishment, seawall construction, and nearshore dredging and oil platform construction.	Coastal development pressure on the Great Barrier Reef State of the Environment Report 2020 (des.qld.gov.au) Coastal Development & Sea Turtles — SEE Turtles
Try adding your own terms!	Can you find appropriate definitions...	...and resources?

Resources	Document/Website	Activity	Video
Engage	Reef facts gbrmpa GBRMPA ELibrary: Reef Beat education series: junior outlook	Eye on the Reef gbrmpa <ul style="list-style-type: none"> - Why not try the app? - The Reef Discovery Online training course may be of additional interest. KWL chart (provided below)	Visit the Great Barrier Reef Great Barrier Reef Marine Park Authority - YouTube GBRMPA ELibrary: Climate change and the Great Barrier Reef
Explore	100 Jobs of the Future The Reef 2050 Plan - DCCEEW Reef 2050 Long-Term Sustainability Plan 2021-25 - DCCEEW Cryopreservation - Great Barrier Reef Foundation - Great Barrier Reef Foundation	Browse: 100 jobs of the future Great Barrier Reef case studies - DCCEEW <ul style="list-style-type: none"> - This is a great launching point for students to explore current threats to the Reef, and what can be done about it. Threats gbrmpa <ul style="list-style-type: none"> - As above 	Education and awareness help protect the Reef - YouTube Department of Agriculture Water and the Environment - YouTube <ul style="list-style-type: none"> - Videos in this playlist may prompt students to explore environmental issues of the future more broadly. Cryopreservation of corals on the Great Barrier Reef - YouTube
Explain	About Us - Great Barrier Reef Foundation - Great Barrier Reef Foundation <ul style="list-style-type: none"> - The GBRF has some great ideas for how to get involved and/or imagine how to make practical change regarding innovation 	2011 Reef Beat Activity Book.pdf (gbrmpa.gov.au) <ul style="list-style-type: none"> - Activities in this booklet link well with the Eco Project and may help prompt students in developing their own plans. 	eReefs - Great Barrier Reef Foundation - YouTube
Elaborate		Development/construction of models, posters, designs.	
Evaluate		Peer evaluate and finalise submission	

The Eco Project is designed to work within an Inquiry-Based approach to learning and as such we suggest beginning the Project by spending some time engaging students in the relevant content and concepts. Below are some suggested ideas:

Inquiry Stage: Engage (Week 1 of Project)

This is your opportunity to spark interest in your students, not only for the Eco Project but also for the Reef, and for the future. You may choose to do this by showing a clip, getting stuck into a Reef Beat poster or activity book, or an activity from our Junior Outlook, or by doing some good old-fashioned reading and research.

Key Questions for Inquiry Stage One:

- What is the GBR?
- What do you know about the Reef/what the Reef needs to “survive” (sea levels, temperature, water quality etc)?
- Who/what lives on the Reef?
- Who/what uses the Reef? Why is it important to protect the Reef?
- What are some of the main threats to the Reef and/or it’s connected ecosystems, now and into the future?
- What are some actions that individuals, groups, and governments do to protect the Reef?

Know	Want to know	Learned

Inquiry Stage: Explore (Week 2 of Project)

This is when you’ll start encouraging students to explore the gaps in their knowledge (as established in Inquiry Stage One, especially in the KWL). A great place to start is to investigate the following key areas: Current issues facing the Reef, Future issues facing the Reef, The Reef 2050 Plan, Jobs of the Future.

You may already be familiar with the above areas and might like to deliver that content to your students in your own way, we encourage your professional autonomy and responsiveness to the learners you have. Below are some key concepts to consider when engaging students in deeper exploration of the issues.

Begin your deeper exploration by encouraging students to engage in the relevant documents. Depending on the learner’s age/reading levels, you may like to read the document summaries or peruse the entire documents. See the resource list for a summary of the documents, and some examples of relevant jobs. We have also tabulated the key Jobs of the Future, the 5 priorities for Action, and provided examples of how these match/how students might connect them for the purposes of the Project – see the resources list for this table.

Once you feel your students are comfortable with the overarching ideas, you might like to “test” the Jobs of the Future “Jobs Explorer Tool” by taking the online quiz.

The explorer tool will help students to engage in the issues of the future, whilst also helping them explore their role in it.

This is also the stage where you will introduce the students to the criteria of the Project in more detail, spending time ensuring they understand the task and how to tackle it. So, after spending time reviewing the documents, you should check for understanding with some simple comprehension questions (see below) and consider adding the answers to the KWL chart you started in Week One of the Project and/or creating a poster or signage that will help keep students focussed on the goal or simply display the one provided.

Key Questions

- Which of the 100 Jobs of the Future will you choose for this Project ?
- What are the 5 Priorities for Action?

Inquiry Stage: Explain (Week 3 of Project)

This stage of the inquiry is about students explaining their learning. With the end goal in mind of putting forth a plan for action, this would be the time where students would start to plan not only what they're going to put together but also their 'point' – the WHY. Some activities to encourage their thinking and planning process would be to brainstorm their ideas of how a future job profile could link to a project that would meet the criteria of the Project and call their community to action. Once they have all their ideas down, a follow up activity could be to collate or tabulate their ideas (see the Resource List for examples).

Once they have spent some time brainstorming and collating their ideas, a useful extension activity would be to have students explain their favourite idea/s to their peers for review, discussion, and feedback. Dramatic role play, imagining and Think/Pair/Share activities would be useful here also.

Inquiry Stage: Elaborate (Week 3/4, and through until Week 8/9)

During this stage students will invest time into "taking it further" or elaborating on their learning. This will look like the physical development and/or construction of any models, posters, designs and so forth. This is also a critical stage for ensuring that students are meeting the criteria – have they chosen a profile, considered the necessary skills, put forth a proposal for how to meet one or more of the 5 Priorities for Action, does it communicate this to the public?

Inquiry Stage: Evaluate (Week 9/10)

During this final stage of the inquiry, students will self-evaluate, peer evaluate and finally share their plans with the public.

Week	Inquiry Stage	Details	Suggested Activities	Notes

1	Engage	Spark student interest in the broad issues	A.) Virtual learning B.) Videos C.) Reef Beat D.) Junior Outlook E.) KWL	
2	Explore	Start researching	A.) Jobs of the Future B.) Reef 2050 plan review	Create/ display poster listing jobs/priorities/ types of skills this job might require.
3	Explore/Explain	Brainstorming ideas for how to approach the Project	Virtual Learning Experience with RGS Ed team on threats to reefs or Marine Careers	
4	Explain	Imagining, sharing brainstorming ideas	Role play future jobs Student drafting	
5	Explain	Working on plan	Drafting – sourcing materials if necessary	
6	Elaborate	Creating	Student lead	
7	Elaborate	Creating	Student lead	
8	Evaluate	Peer feedback	Students provide each other feedback on their plans	
9	Evaluate	Self-evaluation	Students make changes and evaluate	
10	Evaluate	Share with the public for review	Submit to Reef Guardians	

Australian Curriculum

The Eco Project has been developed by the Great Barrier Reef Marine Park Authority through the Reef Guardian School program to encourage inquisitive learners to explore topics of interest within the broad context of 'protecting the Great Barrier Reef.' The open nature of the project supports a variety of Australian Curriculum links and the United Nations Sustainable Development Goals that can be incorporated across multiple year levels. The following descriptions are included to guide the learning outcomes of the project.

Science Understanding

- Living things depend on each other and the environment to survive (ACSSU073)
- Living things have structural features and adaptations that help them to survive in their environment (ACSSU043)
- The growth and survival of living things are affected by physical conditions of their environment (ACSSU094)
- Interactions between organisms, including the effects of human activities can be represented by food chains and food webs (ACSSU112)

Mathematics - Statistics and Probability

- Identify and investigate issues involving numerical data collected from primary and secondary sources (ACMSP169)

Geography 'Water in the world' unit

- Classification of environmental resources and the forms that water takes as a resource (ACHGK037)
- The way that flows of water connects places as it moves through the environment and the way this affects places (ACHGK038)

Media Arts

- Plan, structure, and design media artworks that engage audiences (ACAMAM069)

Design and Technologies

- Investigate the ways in which products, services and environments evolve locally, regionally and globally and how competing factors including social, ethical and sustainability considerations are prioritised in the development of technologies and designed solutions for preferred futures (ACTDEK029)

English

- Use interaction skills when discussing and presenting ideas and information, selecting body language, voice qualities and other elements, (for example music and sound) to add interest and meaning (ACELY1804)
- Plan, rehearse and deliver presentations, selecting and sequencing appropriate content and multimodal elements to promote a point of view or enable a new way of seeing (ACELY1720)

Economics and Business

- Apply economics and business knowledge, skills and concepts in familiar and new situations (ACHES025)

Year 6 Student Exemplar of Eco Project

A group of our year 6 students formed a group called the 'Coral Crusaders', selected a future job profile and used their 'future expertise' to take action. Their message to the world is: We are all Reef Guardians. We are all responsible for taking care of the Great Barrier Reef!

Future Jobs: Additive Manufacturing Engineer; Drone Designer, Aerospace Engineer and Machine-learning Developer.

Task & Threat: Neutralise a current threat to the reef – the Crown of Thorns Starfish
PowerPoint Slides:

MOTHER SUBMARINE

The mother submarine transports 'mini subs' to affected areas of the reef. It deploys, refills and recharges the 'mini subs'. The mother sub, and mini subs, inject vinegar into the COTS. The vinegar contains acetic acid which kills the starfish without harming other species.

MINI SUBMARINES

The 'mini subs' are attached to the Mother submarine, which takes them to reef. On arrival, the Mother Submarine sets a home point so the small submarine's AI knows where to return to restock vinegar and needles. If the battery of the submarines gets below 20%, then the subs AI will automatically return it to the Mother submarine to recharge it's battery.

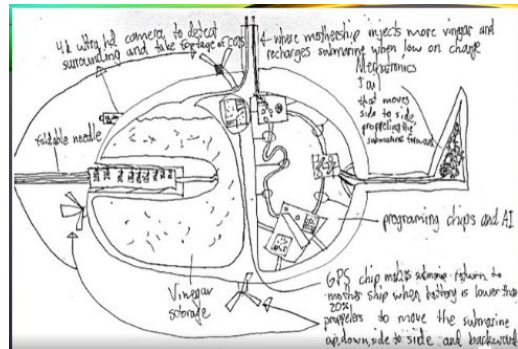
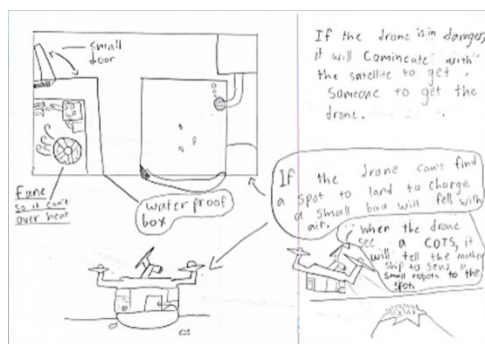
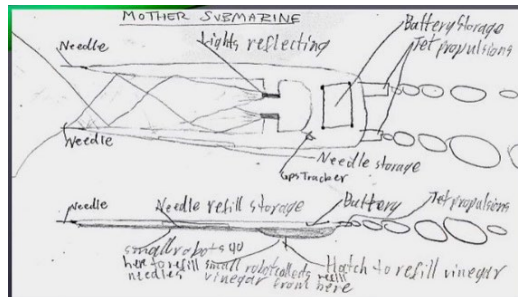
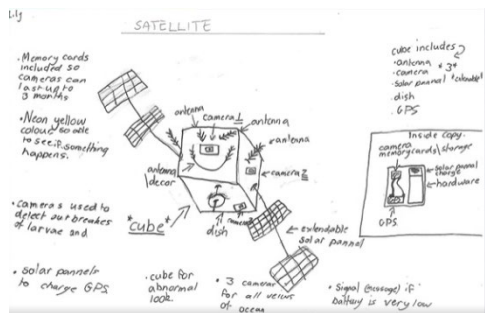
SATELLITE

The Satellite main functions are to deploy drones to areas affected by COTS. It also, shares information with the Mother Submarine. The Satellite sends drones to drop off shrimp to identified breeding areas. The Satellite uses its solar panels to charge drones and the Mother submarine. The Cube is bright yellow for its visibility.

DRONES

The drones use specialised cameras to search areas where larvae and COTS live. When breeding areas are identified, the drones drop off shrimp which eat COTS larvae, ensuring they don't grow to adult size. For full grown COTS, the drones communicate with the Satellite to tell it the COTS location, this information is shared with the Mother Submarine. The drones also monitor green zones.

Accompanied Drawn Diagrams



Year 6 Students, Magnetic Island State School

Senior year 11 Aquatic Practice Investigation Idea

Below is a QCAA assessment example designed by [Gail Riches](#) in 2023.

School Logo	Schol Name	
	Student name: Year 11 AQP Eco Project Example	
	Teacher name:	
	Date handed out:	Date due:

Subject	Aquatic Practices
Technique	Investigation
Unit	Marine Issues
Topic	Reef Guardian School Eco Project

Conditions			
Duration	8 weeks		
Mode	Multimodal	Length	3-5 minutes (max. 280 characters)
Individual/ group	Individual OR group (max. 4)	Other	Draft due: 4 th Sept. & 4 th Oct. Final Due: Friday 13 th Oct.
Resources available	100 Jobs for the future Reef 2050 Plan		
Context			
Eco Project Overview			
Recent research has identified 100 Jobs of the Future that are likely to be created in the next few years.			
The aim of the Project is for you to select a future job profile and showcase how you could apply your future skillset towards managing and protecting the health and longevity of the Reef.			
The Reef 2050 report is about protecting the Great Barrier Reef in Australia, which is one of the most beautiful and important ecosystems in the world. The report outlines actions that need to be taken over the next 30 years to help the reef survive and thrive.			
The report identifies <i>five key threats</i> to the Great Barrier Reef: climate change, water quality, coastal development, fishing and illegal poaching.			
To tackle these threats, the report calls for a range of measures including reducing carbon emissions, improving water quality, regulating coastal development and cracking down on illegal fishing.			

The report also highlights the importance of working with Indigenous communities, who have lived on the land and sea around the reef for thousands of years and have valuable knowledge and skills to contribute to its protection.

Protecting the Great Barrier Reef is important not just for the animals and plants that live there, but also for people who rely on it for food, recreation and tourism. The report recognises that the health of the reef is closely linked to the health of our planet and calls for urgent action to be taken to ensure its survival for generations to come.

The *Reef 2050 Plan* outlines the '[5 Priorities for Action](#)' that need to be taken to help the Reef survive and thrive.

Five Priority Areas for Action (from the Reef 2050 Plan)

1. Limit the impacts of climate change by contributing to global efforts to reduce emissions and supporting the Reef and communities to adapt.
2. Improve water quality by working with landholders, industries and communities to accelerate action to reduce the impacts from land-based activities.
3. Reduce impacts from water-based activities by strengthening partnerships with Reef industries and delivering strong marine park management.
4. Influence the reduction of international sources of impact to reduce marine debris entering the Reef from outside Australia and protect migratory species.
5. Protect, rehabilitate and restore Reef habitat, species and heritage sites by minimising impacts from disturbances and assisting with their recovery.

The Eco Project aims to encourage you to consider your efficacy and agency as an individual, community member, and global citizen, to take action to improve the Reef's future – and further, to encourage others to also engage with issues facing the Reef, to support its health and resilience.

Task

CALL to ACTION

You will research **one** key threat facing the Reef and use your “future expertise” to come up with a plan to educate the public to take action.

You can choose to undertake this Project by yourself or work together in teams (maximum of four students to a team).

Your PLAN OF ACTION must do two things:

- Address one or more of the '5 Priorities for Action' from the Reef 2050 Plan
- Raise community awareness of the issue and use a Call to Action

Your call to action must meet the following criteria:

- Clearly addresses one or more of the '5 Priorities for Action' from the Reef 2050 Plan, demonstrating a thorough understanding of the nature of the threat to the Reef that the action addresses, and its role in contributing to the long-term protection and sustainability of the Reef.

- Appropriate selection of a “Job of the Future”, as demonstrated by clear and reasonable connections made between your chosen job and your proposed plan.
- Effectively communicate to our community the nature/purpose/importance of your chosen priority in a way that encourages a response or action from the audience i.e., does your proposal help to raise community awareness and/or engagement with the issues raised in the Reef 2050 Plan?

To complete this task, you must:

- Select and **describe** ONE key threat to the reef (climate change, water quality, coastal development, fishing, illegal poaching).
- Select and **describe** a future job profile from <https://100jobsofthefuture.com/report/jobs/>
- Showcase how your future job will fulfil one or more of the 5 priority areas for action.
- Make a **Call to ACTION** (encouraging your audience to act or respond).
- Present your call to action using a medium that can be shared on social media (e.g. video, poster) with a brief summary (max. 280 characters).
- Submit drafts and final by the due dates.

Checkpoints

- Term 3 Week 4: Task and task sheet assigned
- Term 3 Week 8: First Draft Due
- Term 4 Week 1: Second Draft Due
- Term 4 Week 2: FINAL Due

Achievement Standard

The student work has the following characteristics:

- **description** of one key threat to the reef and future job profile
- **explanation** of a priority area of action (in the 2050 Reef Plan)
- **analysis** of information to make a call to action
- **use** of language conventions and features to **communicate** the nature/purpose/importance of your chosen priority in a way that encourages a response or action from the audience
- **generation** of plans and procedures
- **recommendations** made

	Standard A	Standard B	Standard C	Standard D	Standard E
Knowing and understanding	<p>The student work has the following characteristics:</p> <p><u>comprehensive</u> description of one key threat to the reef and one future job profile</p> <p><u>concise</u> and <u>coherent</u> explanation of a <i>priority area of action</i> (in the 2050 Reef Plan)</p>	<p>The student work has the following characteristics:</p> <p><u>detailed</u> description of one key threat to the reef and one future job profile</p> <p><u>coherent</u> explanation of a <i>priority area of action</i> (in the 2050 Reef Plan)</p>	<p>The student work has the following characteristics:</p> <p><u>description</u> of one key threat to the reef and one future job profile</p> <p><u>explanation</u> of a <i>priority area of action</i> (in the 2050 Reef Plan)</p>	<p>The student work has the following characteristics:</p> <p><u>superficial</u> description of a marine issue or future job</p> <p><u>disjointed</u> explanation of a <i>priority area of action</i> (in the 2050 Reef Plan)</p>	<p>The student work has the following characteristics:</p> <p><u>partial</u> description of a marine issue or future job</p> <p><u>statements</u> of <u>information</u> <u>about</u> an action</p>
[Dimension 2]	<p>The student work has the following characteristics:</p> <p><u>discerning</u> and <u>logical</u> analysis of information to make a call to action</p> <p><u>concise</u> and <u>coherent</u> use of language conventions and features to communicate the nature/purpose/importance of your chosen priority in a way that encourages a response or action from the audience</p>	<p>The student work has the following characteristics:</p> <p><u>logical</u> analysis of information to make a call to action</p> <p><u>coherent</u> use of language conventions and features to communicate the nature/purpose/importance of your chosen priority in a way that encourages a response or action from the audience</p>	<p>The student work has the following characteristics:</p> <p><u>analysis</u> of information to make a call to action</p> <p><u>use</u> of language conventions and features to communicate the nature/purpose/importance of your chosen priority in a way that encourages a response or action from the audience</p>	<p>The student work has the following characteristics:</p> <p><u>identification</u> of information relating to a call to action</p> <p><u>use</u> of <u>basic</u> language conventions and features to communicate ideas and information</p>	<p>The student work has the following characteristics:</p> <p><u>identification</u> of <u>aspects</u> of information relating to a call to action</p> <p><u>disjointed</u> use of language conventions to communicate information</p>
[Dimension 3]	<p>The student work has the following characteristics:</p> <p><u>generation</u> of <u>insightful</u> plans and procedures</p> <p><u>justified</u> and <u>valid</u> recommendations made with <u>detailed</u> evidence</p>	<p>The student work has the following characteristics:</p> <p><u>generation</u> of <u>considered</u> plans and procedures</p> <p><u>valid</u> recommendations made with <u>evidence</u></p>	<p>The student work has the following characteristics:</p> <p><u>generation</u> of plans and procedures</p> <p><u>recommendations</u> made</p>	<p>The student work has the following characteristics:</p> <p><u>listing</u> of <u>aspects</u> of plans and procedures</p> <p><u>statements</u> of <u>opinion</u> made</p>	<p>The student work has the following characteristics:</p> <p><u>collection</u> of <u>information</u> <u>related</u> to planning i</p> <p><u>statements</u> <u>about</u> <u>aspects</u> of activities made</p>

Aquatic Practices: Oceanography Highlighted Syllabus Standard

Key: Cognition Qualifier

Appendix: <https://100jobsofthefuture.com/report/jobs/>

For more resources: <https://www.reefed.edu.au/education-resources>

Technology jobs	Business and Law jobs	Urban jobs	Data jobs
1 Additive Manufacturing Engineer	38 AI Intellectual Property Negotiator	58 Automated Transit System Troubleshooter	81 Algorithm Interpreter
2 Automation Anomaly Analyst	39 Blockchain Talent Analyst	59 Autonomous Vehicle Profile Designer	82 Behaviour Prediction Analyst
3 Biomimicry Innovator	40 Chief Ethics Officer	60 Biofilm Plumber	83 Data Commodities Broker
4 Bioprinting Engineer	41 Community Farm Finance Broker	61 Biometric Security Solutions Engineer	84 Data Privacy Strategist
5 Child Assistant Bot Programmer	42 Drone Airspace Regulator	62 Human Habitat Designer	85 Data Farmer
6 Digital Augmentation Officer	43 Fusionist	63 Integrated Energy Systems Strategist	86 Data Storage Solutions Designer
7 Digital Implant Designer	44 Innovation Manager	64 Massive 3D Printed Building Designer	87 Data Waste Recycler
8 DigiTech Troubleshooter	45 Personalised Marketer	65 Net Positive Architect	88 Forensic data analyst
9 Energy and Data Systems Installer	46 Real-Virtual Transfer Shop Manager	66 Regional Community Growth Co-ordinator	89 Freelance Virtual Clutter Organiser
10 Ethical Hacker	47 Sharing Auditors	67 Sustainable Energy Solutions Engineer	90 Predictive Regulation Analyst
11 Gamification Designer	48 Trendwatcher	Agriculture jobs	
12 Integrated Home Technology Brokers	Environment jobs	68 Agroecological Farmer	Experience jobs
13 Machine-Learning Developer	49 Aged Persons Climate Solutions Consultant	69 Bio-jacker	91 Analogue Experience Guide
14 Mechatronics Engineer	50 De-extinction and Conservation Geneticist	70 Cricket Farmer	92 Food Knowledge Communicator
15 New Materials Engineer	51 Digital Apiarist	71 Farm Safety Advisor	93 Haptic Technology Designer
16 Quantum Computer Programmer	52 Entomicrobiotech Cleaners	Space jobs	94 Media Remixer
17 Robot Ethicist	53 Flood Control Engineer	72 Offworld Habitat Designer	95 Multisensory Experience Designer
18 Robot Mechanic	54 Integrated Ecology Restoration Worker	73 Terraforming Microbiologist	96 Space Tourism Operator
19 Satellite Network Maintenance Engineer	55 Waste Reclamation and Upcycling Specialist	Health jobs	97 Sportsperson of the Future
20 Shadowtech Manager	56 Water Management Specialist	74 Data-based Medical Diagnostician	98 Swarm Artist



21 Smart Dust Wrangler	57 Weather Control Engineer	75 Genetics Coach	99 Virtual and Augmented Reality Experience Creator
		76 Health Shaper	100 Virtual Assistant Personality Designer
		77 Memory Optimiser	
		78 Nanomedical Engineer	
		79 Nutri-gutome Consultant (‘Gut-bug keeper’)	
		80 Virtual Surgeon	


Year 11 Student Exemplar of Eco Project

Future Jobs: New Materials Engineer & Robot Mechanic.

Task & Threat: Provide food to corals and tend to coral gardens by ridding them of pests to help aid coral against coral bleaching.


PowerPoint Slides

Key Threats to the Reef



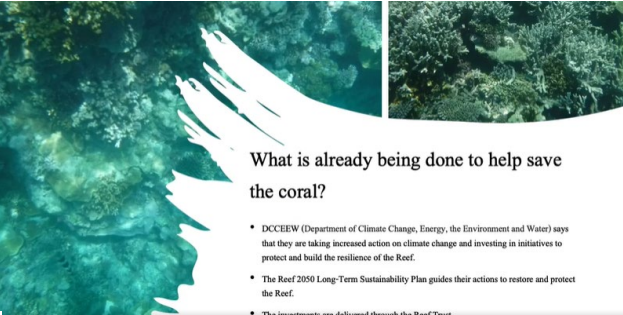
- There are many threats to the reef such as marine debris, ocean acidification, by catching, oil spills, micro plastic and coral bleaching.
- The presentation today is focused on the threat of coral bleaching.

What is coral bleaching?




- Coral bleaching is when corals are stressed by changes in conditions such as temperature, light or nutrients, they expel the symbiotic algae living in their tissues, causing them to turn completely white.
- Warmer water temperatures can result in coral bleaching! Corals prefer water at 28°.
- When coral bleaches, it's not dead! Corals can survive a bleaching event, but they are under more stress and are subject to mortality.

What is already being done to help save the coral?




- DCCBEW (Department of Climate Change, Energy, the Environment and Water) says that they are taking increased action on climate change and investing in initiatives to protect and build the resilience of the Reef.
- The Reef 2050 Long-Term Sustainability Plan guides their actions to restore and protect the Reef.
- The investments are delivered through the Reef Trust.

What is The Reef 2050 plan?




- The Australian and Queensland Government's overarching framework for protecting and managing the Great Barrier Reef to 2050.
- The plan was launched in 2015 and was updated in 2018 and again in late 2021 to ensure it continues to focus on the right priorities and actions to help protect the Reef.

My call to action:



- My idea is to have tour boats that go out to reefs and have the tourist do some gardening on the corals
- It'll give the tourist the opportunity to get up close to the coral and learn how to help and protect the coral.
- The advantage of doing coral restoration is that it'll help reduce the amount of coral bleaching by planting corals identified as being more resistant to bleaching. Coral gardening also works to remove biological pests such as Crown of thorns starfish and Drupella snails.

How are we going to get the plan up and running?




- We can partner with GBRMPA (Great Barrier Reef Marine Park Authority) to help us with funding and resources with this project.
- To help with this project we will need equipment to help us with coral gardening.
- The Equipment that we need are robots that can spread out food to targeted corals and small machines that tourists can use when they help with the gardening.

100 jobs for the future: Job NO.1 New Materials Engineer

New Materials Engineer:

- Can help make the machines and robots to feed the coral the food that it needs.
- This job can also provide us with the resources that we need so that we can make the equipment
- We can program the robots to feed the coral at certain times or when it can sense that the coral is losing its algae or is dying.




Job description:
New materials engineer can create innovative applications for cutting edge materials and tech.


100 jobs for the future: Job NO.2 Robot Mechanic

Robot Mechanic:

- The job of a robot mechanic requires them to build the robot and look after the robot.
- This job also requires for them to help maintain the machines/robot and make sure all the equipment can run as smoothly as possible.



Job description:
Robot Mechanic can help maintain robots and autonomous vehicles to keep them running smoothly.



Equipment:

- **Robots:** these robots will be designed to move around the coral reefs and provide food for the coral so they can still eat when bleached or sick.
- **Hand-held machines for tourists:** these machines will be designed so that when you press a button a little syringe type of thing will shoot out small amounts of food directly over the targeted coral.

Year 11 Student, Trinity College Gladstone

For more resources: <https://www.reefed.edu.au/education-resources>