GREEN
INNOVATION
AWARDS
2022

STEM & PROJECT BASED LEARNING
TEACHER'S NOTES

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FAQs

Why are the Green Innovation Awards (GIA) perfect for my classes?

The GIA provide your class with a purposeful framework to undertake and complete a project to their highest standard. The authentic audiences and the formal and competitive nature of the Awards keep students engaged and focused on excellence. The GIA directly fosters teamwork, creativity, time management, problem solving and communication skills. Digital literacy and resilience are also skills that will be developed during the process.

How much extra work will this involve for me?

Very little. There are numerous resources available on our website, including a booklet to step your class through the first half of the project. The booklet is designed to be Print-and-Go. The Risk Assessment for the trip to Southern Cross University is already done for you, you just need to organise a bus.

What role does the mentor play?

Wherever possible, we will source a mentor from a relevant industry or field of study. They will come to your school (or Zoom call if appropriate) to give feedback and advice during Term 2.

How many students should be involved?

In Primary Schools, usually the whole class works on one project, however, in the High School setting it may also be appropriate to split your class into two or three groups, depending on class size. In this case, groups can work on totally different ideas, or you could utilise a common theme, for example Waste Management and have groups develop different solutions for that theme. Each group needs to register separately.

What do the projects look like?

The best way to understand the Green Innovation Awards is to have a look at some of the previous winners. Go to our website and navigate to the Past Years tab, where the video entries from past finalists and winners can be viewed. It is highly recommended to show you students some of these to inspire them.

How can I assess my student's learning?

Whether you are assessing formally or informally, this process is a wonderful opportunity to assess and report on those capabilities that are often absent from mark-books and report cards. A marking-criteria is provided on the last page of this booklet to assist you in providing your students with meaningful and useful feedback. Students can also be engaged in self-reflection to enrich their meta-cognitive processes. A scaffold is included to assist with this.

What is the timeframe for the whole process?

TERM 1

- REGISTER YOUR INTEREST **BEFORE APRIL 1ST**

TERM 2

- WORK ON YOUR PROJECT USING THE RESOURCES PROVIDED
- SUBMIT A VIDEO ENTRY BY THE END OF TERM **(JUNE 23RD)**

TERM 3

- IF YOUR CLASS GETS INTO THE FINALS, GO TO **SOUTHERN CROSS UNIVERSITY** TO PRESENT YOUR PROJECT TO A PANEL OF JUDGES

As long as you register your idea before the end of Term 1 and submit your video entry before the end of Term 2, you can structure the Scope & Sequence of learning however you like. Depending on your timetable, the most common approach is to discuss the idea and process with your class at the beginning of Term 1 and then register your interest any time before April 1st. When Term 2 begins, you can then begin working full-time on the project until it is complete. You can spend as little time as necessary or fill up the whole Term by embedding such things as meta-cognitive reflection, and explicit teaching of meta-skills like teamwork and critical thinking.

How can I structure the learning?

We encourage you to utilise the STEM Design Process developed by the Rivers Academy of STEM Excellence (RASE) which is shown below and forms the basis of the Student Booklet. We suggest giving one booklet to each group, or one to each student if you are working as a class. The booklet provides clear structure and guidance to get started, and is designed to facilitate creative thinking, teamwork and collaboration.

The STEM Design Process, as developed by the Rivers Academy of STEM Excellence

Step	Activities	Duration
IDENTIFY & DEFINE	As a class brainstorm everything you already know about the five areas of interest: • Agriculture / sustainable land management • Biofuels / renewable energy • Green products & recycling used in building or packaging • Water management • Waste management	One lesson
IDENTIFY & DEFINE	Use computers to research your choice of two of the topics above, identifying existing problems in these areas. Identify the environmental problem you are trying to solve. Who does this problem effect and how? Why is a solution needed?	Two lessons
BRAINSTORM/ IDEATE	Brainstorm possible innovative solutions to your problem. Come up with as many ideas as you can – all team members must contribute. Discuss all the ideas and decide on which solution your team will develop.	One lesson
DESIGN/PLAN	Research what has already been done to solve your problem. Plan out your solution – develop a timeline of activities, draw diagrams, perform research as needed to assist with your planning. Assign roles to group members. Make sure everyone has a meaningful role that they can achieve.	Two lessons
PROTOTYPE /MAKE	Develop a prototype of your solution. The form of your prototype will depend on your solution: • Electronic solutions (app, website etc) may have a wire frame as a prototype. • Physical solutions may have a simple model.	Changeable depending on the size /type and scope of project.
TEST	Test your prototype. This can be done in different ways: • For a model, test if it does what you want it to do. • Ask classmates for feedback about what works well and what needs to be improved. • Ask your teacher for feedback. • If you have a target audience, ask them for feedback.	Changeable depending on the size /type and scope of project.
IMPROVE	Based on the feedback from the previous step, make improvements to your solution. Work your solution up into a more complex/complete prototype.	Changeable depending on the size /type and scope of project.
COMMUNICATE & SHARE	Share your solution with your class. Enter your solution in the Green Innovation Awards.	One lesson

STEM Design Thinking Process Marking Criteria

Phase	Criteria	Marks
IDENTIFY & DEFINE	Uses computers to research two topics. Identifies extensive and relevant existing problems in both areas.	5
BRAINSTORM /IDEATE	Identifies one area of research and three existing problems for further inquiry. Demonstrates that a variety of ideas & solutions to the three problems have been formulated and considered.	5
DESIGN/PLAN	Demonstrates that research has been undertaken in the following areas: • What is already known about the problem • Solutions that have been tried, along with their successes and failures • Demonstrates planning by the use of tools such as: Timelines, Flow charts, Diagrams, Team roles & Procedures	10
PROTOTYPE /MAKE	Develops at least one prototype such as: Physical models, Wireframes, Diagrams, Promotional materials.	10
	Demonstrates effective time management.	5
TEST	Demonstrates the prototype/s have been tested and evaluated by: • Collecting feedback from at least 3 people • Collecting data showing the testing of the prototype • Evidence of success and improvements needed	10
	Demonstrates equitable teamwork	5
IMPROVE	Demonstrates improvements made to the prototype/s by implementing improvements based on the feedback collected during the previous phase.	5
	Demonstrates resilience when solving problems.	5
COMMUNICATE & SHARE	Clearly communicates their solution by: • Identifying the problem they are solving • Describing the solution they investigated • Explaining how the solution solves the problem	5
	Demonstrates effective communication skills.	5
Final Mark		70
Mark as a percentage		

Student Self-Reflection

Look at the STEM Skills posters and fill out the table below.

Skill	When it was used	How it was used
Communication		
Teamwork		
Problem Solving		
Critical Thinking		
Creativity and Innovation		