

Water... WOW!

STAGE 3 EDUCATION

Module 10: Water Solutions

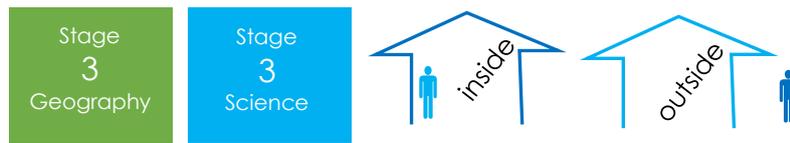
This module is largely open-ended and provides the opportunity to let students use their imaginations to come up with creative solutions to solve water problems, following the solution fluency process.

In this module, students will:

- review the benefits of water
- identify the problems associated with urban waterways
- work through the 6Ds of Solution Fluency to define a problem, plan and devise a solution and deliver their suggested solution



Module 10: Water Solutions



Teacher Background

This module is largely open-ended and provides the opportunity to let students use their imaginations to come up with creative solutions to solve water problems, following the solution fluency process:

The 6Ds of Solution Fluency

- DEFINE: What is the problem that we face? (defining the problem or challenge)
- DISCOVER: What's causing the problem, and why do we need to solve it? (investigate and research the background of the problem)
- DREAM: What does the ideal solution look like? (consider the problem and develop a solution to it)
- DESIGN: How will we create our solution? (plan the initial framework for the solution)
- DELIVER: What will the production process look like? (the actual development stage of the task)
- DEBRIEF: Did the solution suit the purpose and the audience? (reflection on learning process and relevance of content, processes, skills or techniques)

Water Sensitive Urban Design

See the [Pollution Prevention factsheet](#) for an overview of present strategies for prevention of water pollution in the Georges River. At the end, it offers some simple tips for reducing pollution. But, it also alludes to higher level pollution prevention, including Water Sensitive Urban Design. There is also a factsheet providing an overview of [Water Sensitive Urban Design](#). There is far more detailed information available about [opportunities for a water sensitive greater Sydney](#), with a focus on benefits for people. Water sensitive designs, such as urban wetlands, can also provide habitats that support complex communities of native animals and plants.

There are also useful videos about things like [raingardens](#), [gross pollutant traps](#), and suggested activities in worksheets to [use science and technology to solve Australia's water problems](#). But, this module is mainly designed to encourage students to apply their water knowledge and learnings for the other modules to consider what they regard to be a major water problem and then work through a solution.

Sequence for Module 10: Water Solutions

Syllabus Outcomes	<p>ST3-1WS-S Plans and conducts scientific investigations to answer testable questions, and collects and summarises data to communicate conclusions.</p> <p>ST3-2DP-T Plans and uses materials, tools and equipment to develop solutions for a need or opportunity.</p> <p>ST3-3DP-T Defines problems, and designs, modifies and follows algorithms to develop solutions.</p> <p>GE3-2 Explains interactions and connections between people, places and environments.</p> <p>GE3-3 Compares and contrasts influences on the management of places and environments.</p>
Learning Intentions	<p>For students to:</p> <ul style="list-style-type: none"> ◆ to review the benefits of water in our community ◆ identify the problems associated with waterways and the urban water cycle ◆ work through the 6Ds of Solution Fluency to define a problem, plan and devise a solution and deliver their suggested solution ◆ present their solution to an audience
Teaching & Learning Activities	<p><u>Inquiry Question:</u> <i>Can we design a solution to an identified problem?</i></p> <ul style="list-style-type: none"> ◆ From reviewing the modules students list the problems associated with water. These may include shortage of water, water overuse or pollution. ◆ Using the 6Ds of Solution Fluency (<i>Define, Discover, Dream, Design, Deliver, and Debrief</i>: do a web search for more information and find that which best suits your class) students undertake a planning and designing process to find a solution to their identified problem. ◆ View the video Poop and Paddle: An Eco-Friendly Floating Toilet to stimulate the thinking process of designing a solution to a problem.
Resources	<ul style="list-style-type: none"> > Opportunities for a water sensitive greater Sydney https://watersensitivecities.org.au/wp-content/uploads/2016/06/47952-SW-GREATER-SYDNEY-DOCUMENT-JANUARY-2016-WEB-1.pdf > Raingardens https://www.youtube.com/watch?v=4pz8vHuGEHs > Gross pollutant traps https://www.youtube.com/watch?v=m9b05au0eAs > Using science and technology to solve Australia's water problems http://www.awa.asn.au/documents/Science2_Using_science_and_technology_to_solve_Australia_s_water_problems.pdf > Poop and paddle https://www.youtube.com/watch?v=sjvN2vt3kbg&feature=youtu.be
Feedback	<p>Your feedback is important to us. Please complete this quick online survey: http://bit.ly/ModulesFeedback. We hope that teachers and students found the modules to be useful for learning about water and waterways.</p>

Biographies of authors

Dr David Reid

David is a scientist who studies waterways for his work at Georges Riverkeeper in southern Sydney. He grew up near Lake Macquarie and the beaches south of Newcastle, where he spent much time swimming, surfing, exploring the life in water and generally enjoying being close to water. After finishing school, he went to university and his studies eventually led to completion of a PhD on waterbugs and food webs in farmland streams. Gaining those qualifications has allowed him to do research and monitoring work in waterways around the world, including those in New South Wales, Victoria, South Australia, New Zealand and New York City (see https://www.researchgate.net/profile/David_Reid15). He still enjoys having fun in water too!

Antonina Fieni

Antonina loves rivers. She is often seen paddling up rivers and creeks looking for Eastern water dragons or sacred kingfishers. When not paddling, Antonina is teaching environmental science and geography at the Georges River Environmental Education Centre and at the Field Study Centre at Sydney Olympic Park. Her qualifications include a Bachelor of Education and a Graduate Diploma in Environment.

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Georges Riverkeeper is an alliance of Councils
with collective responsibility for the Georges
River and its catchment.

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