



















# STEM challenge teacher guide

Early Years: T/1/2		
	Teacher Notes:	Learning Resources:
 Define	<p>Introduce terms to students: environment, sustainability</p> <p>Define the problem: what are some environmental issues faced in the NT?</p> <p>Brainstorm and record ideas into a floor book, or onto a poster to be displayed.</p>	<p><a href="#">Solution Fluency on Vimeo</a><sup>i</sup></p> <p><a href="#">Use your creative thinking skills! - ABC Education</a><sup>ii</sup></p> <p><a href="#">Growing in STEM. The Design Process: Engineering Practices in Preschool   NAEYC</a><sup>iii</sup></p>
 Discover	<p>Visit the Junior Landcare website or Australians Together and choose some activities to further learning about the environment.</p> <p>Watch Wall-E – a Disney film about a robot that cleans up the Earth in the year 2700. Can be used to prompt conversation about environment and sustainability. Read more about the film <a href="#">here</a><sup>iv</sup>.</p> <p>If Wall-E is unavailable to you, Bushwacked on ACTV on eLearn has some invaluable resources and includes study guides.</p>	<p><a href="#">Just for kids   Junior Landcare</a><sup>v</sup></p> <p><a href="https://australianstogether.org.au/assets/Curriculum-Resources/F-SciHASS-Caring-for-Country-TG.pdf">https://australianstogether.org.au/assets/Curriculum-Resources/F-SciHASS-Caring-for-Country-TG.pdf</a><sup>vi</sup></p> <p><a href="https://elearn.ntschoools.net/actf/bushwhacked">https://elearn.ntschoools.net/actf/bushwhacked</a><sup>vii</sup></p>
 Dream	<p>Students work in pairs or small groups to brainstorm solutions and explore possibilities. Have students write/draw/record their ideas.</p> <p>Students can share their ideas with their classmates and decide as a team which one they like best to create a prototype.</p>	
 Design	<p>This is the fun part! Use recycled materials, art and craft supplies etc to allow students to create their prototype.</p> <p>Allow students time to share their work, get feedback and then revise their prototype before presenting it as the final product.</p>	
 Deliver	<p>Give students a platform to present their findings. Run a science afternoon in your classroom and invite a buddy class, parents and leadership to attend and listen to the students' presentations.</p> <p>Join us at the science fair at CDU on August 16<sup>th</sup> and display student work.</p>	
 Debrief	<p>Have students reflect upon their learning dispositions and group work. What went well? What might you do differently next time?</p>	<p><a href="#">good teamwork and bad teamwork (youtube.com)</a><sup>viii</sup></p>

Middle/Upper Primary: Years 3-6		
	Teacher Notes:	Learning Resources:
 Define	<p>Brainstorm as a class – what is sustainability?</p> <p>Define terms: environment, sustainability</p> <p>Define the problem: what are some environmental issues faced in the NT?</p>	<p><a href="#">Solution Fluency on Vimeo</a><sup>ix</sup></p> <p><a href="#">Use your creative thinking skills! - ABC Education</a><sup>x</sup></p> <p><a href="#">BTN - Behind The News (abc.net.au)</a><sup>xi</sup></p> <p><a href="#">Special: Environmental Sustainability - Behind The News (abc.net.au)</a><sup>xii</sup></p> <p><a href="https://www.youtube.com/watch?v=XMKYybtUJ-o">https://www.youtube.com/watch?v=XMKYybtUJ-o</a><sup>xiii</sup></p>
 Discover	<p>Watch clips provided on BTN, or War on Waste to immerse students in various information about sustainability.</p> <p>Allow students time to explore and research ways in which we are sustainable in the NT. How can we improve upon what we already do?</p>	<p><a href="#">War On Waste : ABC iview</a><sup>xiv</sup></p> <p><a href="#">Youth Waste Warriors : ABC iview</a><sup>xv</sup></p> <p><a href="#">Arid Lands Environment Centre (alec.org.au)</a><sup>xvi</sup></p> <p><a href="#">Waste &amp; Recycling   City of Darwin   Darwin Council, Northern Territory</a><sup>xvii</sup></p> <p><a href="https://www.csiro.au/en/research/indigenous-science">https://www.csiro.au/en/research/indigenous-science</a><sup>xviii</sup></p> <p><a href="https://www.facebook.com/PowerWaterCorp/videos/thats-my-water-nt-water-in-traditional-culture/719449465494847/">https://www.facebook.com/PowerWaterCorp/videos/thats-my-water-nt-water-in-traditional-culture/719449465494847/</a><sup>xix</sup></p>
 Dream	<p>Students work in pairs or small groups to brainstorm solutions and explore possibilities. Have students write/draw/record their ideas.</p> <p>Students can share their ideas with their classmates and decide as a team which one they like best to create a prototype.</p>	<p><a href="#">How I actually get my "ORIGINAL" Ideas (youtube.com)</a><sup>xx</sup></p> <p><a href="#">12 methods for generating ideas (with importance and uses)   Indeed.com UK</a><sup>xxi</sup></p>
 Design	<p>This is the fun part! Use recycled materials, art and craft supplies etc to allow students to create their prototype.</p> <p>Allow students time to share their work, get feedback and then revise their prototype before presenting it as the final product.</p>	
 Deliver	<p>Give students a platform to present their findings. Run a science afternoon in your classroom and invite a buddy class, parents and leadership to attend and listen to the students' presentations.</p> <p>Join us at the science fair at CDU on August 15<sup>th</sup> and display student work.</p>	
 Debrief	<p>Have students reflect upon their learning dispositions and group work. What went well? What might you do differently next time?</p>	<p><a href="#">Leadership and effective collaboration. (youtube.com)</a><sup>xxii</sup></p>

Middle School: Years 7-9		
	Teacher Notes:	Learning Resources:
 Define	<p>Define terms: environment, sustainability</p> <p>What is the problem? How can we narrow the focus to really identify the needs of the NT?</p>	<p><a href="#">Solution Fluency on Vimeo</a><sup>xxiii</sup></p> <p><a href="#">Use your creative thinking skills! - ABC Education</a><sup>xxiv</sup></p> <p><a href="#">Special: Environmental Sustainability - Behind The News (abc.net.au)</a><sup>xxv</sup></p> <p><a href="#">NT Aboriginal ranger groups helping reduce a knowledge gap to protect marine life</a><sup>xxvi</sup></p>
 Discover	<p>Watch clips provided on BTN, or War on Waste to immerse students in various information about sustainability.</p> <p>Allow students time to explore and research ways in which we are sustainable in the NT. How can we improve upon what we already do?</p> <p>Get in touch with the local council/waste management or the NT <a href="#">environmental protection agency</a> and have a guest speaker come to talk to the students.</p>	<p><a href="#">War On Waste : ABC iview</a><sup>xiv</sup></p> <p><a href="#">Fight For Planet A: Our Climate Challenge : ABC iview</a><sup>xxvii</sup></p> <p><a href="#">Youth Waste Warriors : ABC iview</a><sup>xxviii</sup></p> <p><a href="#">Eco Eye: Sustainable Solutions : ABC iview</a><sup>xxix</sup></p> <p><a href="#">Arid Lands Environment Centre (alec.org.au)</a><sup>xvi</sup></p> <p><a href="#">Waste &amp; Recycling   City of Darwin   Darwin Council, Northern Territory</a><sup>xvii</sup></p> <p><a href="#">How First Australians ancient knowledge can help us survive the bushfires of the future</a><sup>xxx</sup></p>
 Dream	<p>Use idea generation tools to work in small groups and think of possible solutions to the problem.</p> <p>Students can share their ideas with their classmates and decide as a team which one they like best to create a prototype.</p>	<p><a href="#">How to Generate Design Ideas! (youtube.com)</a><sup>xxxi</sup></p> <p><a href="#">12 methods for generating ideas (with importance and uses)   Indeed.com UK</a><sup>xxxii</sup></p>
 Design	<p>Give students time to create their prototype using technology, lego, recycled materials etc.</p> <p>Allow students time to share their work, get feedback and then revise their prototype before presenting it as the final product.</p>	
 Deliver	<p>Introduce students to the concept of an 'elevator pitch'. A short, 30 sec-1 min pitch which shares the best parts of their project and why it forms the best solution to the problem. Have students plan their pitch and share with the class.</p> <p>Join us at the science fair at CDU on August 15<sup>th</sup> and display student work. Roster students to stay with their project and pitch their ideas to the public.</p>	<p><a href="#">The Secret to Successfully Pitching an Idea   The Way We Work, a TED series (youtube.com)</a><sup>xxxiii</sup></p> <p><a href="#">How to Give a Great Elevator Pitch (With Examples) - Harvard FAS   Mignone Center for Career Success</a><sup>xxxiv</sup></p>
 Debrief	<p>Have students reflect upon their learning dispositions and group work. What went well? What might you do differently next time?</p>	<p><a href="#">Incredible Teamwork From Little Clownfish   Blue Planet II (youtube.com)</a><sup>xxxv</sup></p>

## All Year levels

The National Science Week website has a variety of valuable resources, including the resource book for this year's theme: *Species Survival: More than just Sustainability* [https://www.scienceweek.net.au/wp-content/uploads/2024/02/Species\\_Survival\\_resource\\_book.pdf](https://www.scienceweek.net.au/wp-content/uploads/2024/02/Species_Survival_resource_book.pdf)<sup>xxxvi</sup>

The CSIRO program [Two-Way Science: An Integrated Learning Program for Aboriginal Desert Schools](#)<sup>xxxvii</sup> is a fantastic resource.

- <sup>i</sup> <https://vimeo.com/56775615>
- <sup>ii</sup> <https://www.abc.net.au/education/use-your-creative-thinking-skills/13855234>
- <sup>iii</sup> <https://www.naeyc.org/resources/pubs/yc/sep2018/design-process-engineering-preschool#:~:text=Based%20on%20the%20museum%E2%80%99s%20process%2C%20we%20developed%20the,wit h%20others.%20How%20could%20it%20be%20improved%3F%20 https://australianstogether.org.au/assets/Curriculum-Resources/F-SciHASS-Caring-for-Country-TG.pdf>
- <sup>iv</sup> <https://www.whatchawant.us/blog/wall-e-a-masterpiece-of-animation-and-thought-provoking-themes#:~:text=Wall-E%20presents%20a%20compelling%20commentary%20on%20the%20environmental,pollution%2C%20and%20the %20neglect%20of%20our%20natural%20resources.>
- <sup>v</sup> <https://juniorlandcare.org.au/just-for-kids/>
- <sup>vi</sup> <https://australianstogether.org.au/assets/Curriculum-Resources/F-SciHASS-Caring-for-Country-TG.pdf>
- <sup>vii</sup> <https://elearn.ntschoools.net/actf/bushwhacked>
- <sup>viii</sup> [https://www.youtube.com/watch?v=fUXdrl9ch\\_Q](https://www.youtube.com/watch?v=fUXdrl9ch_Q)
- <sup>ix</sup> <https://vimeo.com/56775615>
- <sup>x</sup> <https://www.abc.net.au/education/use-your-creative-thinking-skills/13855234>
- <sup>xi</sup> <https://www.abc.net.au/btn>
- <sup>xii</sup> <https://www.abc.net.au/btn/specials/environmental-sustainability-special/12133114>
- <sup>xiii</sup> <https://www.youtube.com/watch?v=XMKYybtUJ-o>
- <sup>xiv</sup> <https://iview.abc.net.au/show/war-on-waste>
- <sup>xv</sup> <https://iview.abc.net.au/show/youth-waste-warriors>
- <sup>xvi</sup> <https://www.alec.org.au/>
- <sup>xvii</sup> <https://www.darwin.nt.gov.au/resident-services/waste-recycling>
- <sup>xviii</sup> <https://www.youtube.com/watch?v=UZbt35AU7O8>
- <sup>xviii</sup> <https://www.csiro.au/en/research/indigenous-science>
- <sup>xix</sup> <https://www.facebook.com/PowerWaterCorp/videos/thats-my-water-nt-water-in-traditional-culture/719449465494847/>
- <sup>xx</sup> <https://www.youtube.com/watch?v=WUillDVWxM4>
- <sup>xxi</sup> <https://uk.indeed.com/career-advice/career-development/generating-ideas#:~:text=12%20methods%20for%20generating%20ideas%201%201.%20SCAMPER,...%208%208.%20Social%20media%20...%20More%20items>
- <sup>xxii</sup> <https://www.youtube.com/watch?v=Hel3LeOciOU>
- <sup>xxiii</sup> <https://vimeo.com/56775615>
- <sup>xxiv</sup> <https://www.abc.net.au/education/use-your-creative-thinking-skills/13855234>
- <sup>xxv</sup> <https://www.abc.net.au/btn/specials/environmental-sustainability-special/12133114>
- <sup>xxvi</sup> NT Aboriginal ranger groups helping reduce a knowledge gap to protect marine life
- <sup>xxvii</sup> <https://iview.abc.net.au/show/fight-for-planet-a-our-climate-challenge>
- <sup>xxviii</sup> <https://iview.abc.net.au/show/youth-waste-warriors>
- <sup>xxix</sup> <https://iview.abc.net.au/show/eco-eye-sustainable-solutions>
- <sup>xxx</sup> <https://www.theguardian.com/commentisfree/2020/jan/11/how-first-australians-ancient-knowledge-can-help-us-survive-the-bushfires-of-the-future>
- <sup>xxxi</sup> [https://www.youtube.com/watch?v=maq4v\\_Bld2Q](https://www.youtube.com/watch?v=maq4v_Bld2Q)

<sup>xxxii</sup> <https://uk.indeed.com/career-advice/career-development/generating-ideas#:~:text=12%20methods%20for%20generating%20ideas%201%201.%20SCAMPER,...%208%208.%20Social%20media%20...%20More%20items>

<sup>xxxiii</sup> <https://www.youtube.com/watch?v=I0hVIH3EnIQ>

<sup>xxxiv</sup> <https://careerservices.fas.harvard.edu/blog/2022/09/07/how-to-give-a-great-elevator-pitch-with-examples/>

<sup>xxxv</sup> [https://www.youtube.com/watch?v=WWIDa7CA\\_5w](https://www.youtube.com/watch?v=WWIDa7CA_5w)

<sup>xxxvi</sup> [https://www.scienceweek.net.au/wp-content/uploads/2024/02/Species\\_Survival\\_resource\\_book.pdf](https://www.scienceweek.net.au/wp-content/uploads/2024/02/Species_Survival_resource_book.pdf)

<sup>xxxvii</sup> <https://www.publish.csiro.au/book/7949/>