

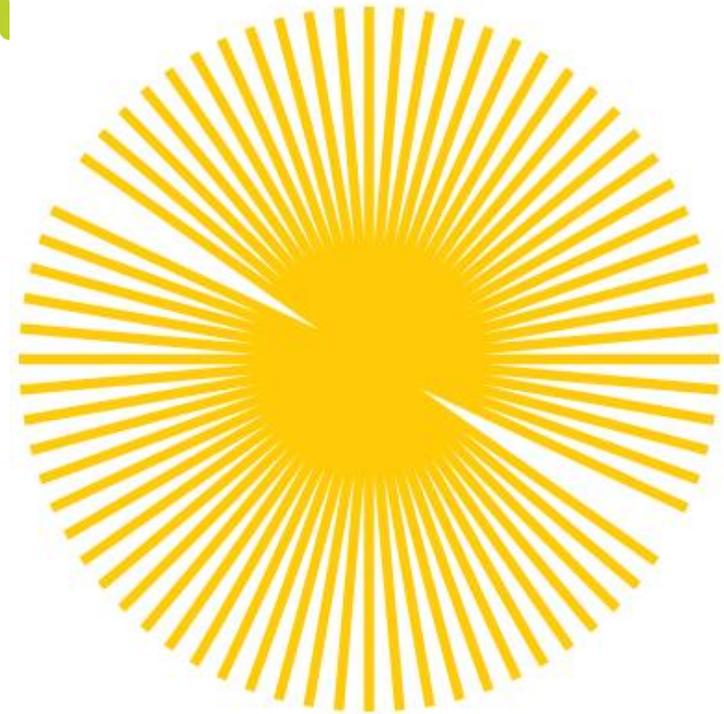
# DESIGN EMERGENCY

Template

Program name:

School:

Teacher's name:



# DESIGN EMERGENCY

## What is Design Emergency?

Design Emergency is a program that introduces students of all ages to design, and design thinking skills. The program helps students understand the way designers work and equips them with the same tools to help them improve the lives of their family, school and wider community. Students taking part in the Design Emergency program make prototypes, create personas, use their imagination and think outside the box. The program provides opportunities for students and teachers to work with practicing designers.

It will fulfill a number of syllabus outcomes and support Quality Teaching dimensions including:

Literacy, Numeracy, Science and Technology, Creative Arts and HSIE.

For more information on design thinking visit

<http://www.designthinkingforeducators.com>

<http://digitaleskimo.net/approach/considered-design>

## How to use this document

This template document offers teachers a place to write their own program and lesson plans that directly connect to the design thinking process.

On the left hand side of the page are a number of activities that take you through the stages of the design thinking process. The process itself is not strictly linear and teachers can re visit activities or whole stages of the process if necessary to gain greater insights or find more creative solutions.

It is not necessary to complete all activities especially in the Discovering stage. Chosen activities will be dependent on the nature of the challenge, time and resources.

It is very important that this is a living document so please don't hesitate to email any changes or additions you think are necessary to [a.mauer@object.com.au](mailto:a.mauer@object.com.au)

## Topic Title

## Syllabus Links

## Quality teaching Dimensions

### Intellectual quality:

- Deep knowledge
- Deep understanding
- Problematic knowledge
- Higher order thinking
- Metalanguage
- Substantive communication

### Quality learning environment:

- Explicit quality criteria
- High expectations
- Student direction

### Significance:

- Background knowledge
- Cultural knowledge
- Knowledge integration
- Connectedness
- narrative

## General Capabilities

- Literacy
- Numeracy
- Information and communication technology capability
- Critical and creative thinking
- Personal and social capability
- Ethical behaviour
- Intercultural understanding

## Tools

- A clear wall. This will become the Design Emergency Wall where activities will be carried out.
- An envelope/folder/journal for each student to store their ideas, experiments, sketches, photos etc.
- Post it notes
- Loose leaf paper
- Textas
- Blu-tac
- A range of simple materials for prototyping e.g. cardboard, paddle pop sticks, glue scissors etc.

Assessment

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## DESIGN EMERGENCY METHODOLOGY

Title	Activity	In Class Design Tasks		
Introduction to Design	<p>As a class discuss and create an inspiration cloud or mind map about design. Students may also like to create a collage about design.</p> <p>Introduce students to the Design Emergency Methodology</p> <p><b>Design Emergency Methodology:</b>  <b>Identifying</b> – How do I Identify an issue?  <b>Discovering</b> – How do I find out about the current situation?  <b>Interpreting</b> – How do I interpret my discoveries to find the core problems?  <b>Imagining</b> – How do I generate ideas that could provide possible solutions?  <b>Experimenting</b> – I have an idea how do I build it?  <b>Developing</b> – How do I develop my experiments so they can be realised?</p>			
		<b>Time</b>	<b>Tools</b>	<b>Syllabus Links</b>
			Virtual brainstorm <a href="https://bubbl.us">Bubbl.us</a>	

## IDENTIFYING

Students need an issue and a design goal that inspires them, motivates them and has meaning in their lives.

Title	Activity	In Class Design Tasks			
Identifying an Issue and setting the Design Goal	<p>This first step is vital. It is important for each student to clearly understand the issue so they are focused in the same direction.</p> <p>The issue is generally a simple identified problem such as ‘the sports equipment is messy, broken, dirty and not used’</p> <p>The design goal is the ultimate motivation behind why the students want to fix the problem.</p> <ul style="list-style-type: none"> <li>• Find places (physical or virtual) in the school environment or community and identify issues that are experienced in these places.</li> <li>• Select by group or class the place and issue that is most interesting or popular. This is your Issue.</li> <li>• Ask the class what excites them about improving this area.</li> <li>• Ask why, why, why, why, why? The purpose is to ask directed “why” questions in response to each consecutive answer 3 – 5 times. This technique helps create a scaffold between the Issue and the Design Goal.</li> <li>• Usually the last answer to your ‘why’ question will be a goal. Ask ‘why’ to a few different students to see if you can uncover a few different goals.</li> <li>• Choose three goals and construct them into a sentence.</li> <li>• Display the Issue and the Design Goal on the Design Emergency Wall in the classroom to be referred to.</li> </ul>				
		<b>Time</b>	<b>Tools</b>	<b>Syllabus Links</b>	
			Virtual brainstorm <a href="https://bubbl.us">Bubbl.us</a>		

## DISCOVERING

Now that the students have decided on their Issue and the Design Goal/s they want to achieve they can set to work on Discovering. In Discovering designers research the current situation by collecting information that will allow a greater understanding of the Issue and the users.

Designers use empathetic research to help them understand the user. Getting into the shoes of the users allows a better understanding of the current situation. This is user-centred design. Watching what people do, asking questions and observing how they interact with their environment gives the designer clues about what the user thinks and feels. It also helps them learn about what they need. Designers avoid trying to find solutions at this stage.

For example one issue may be that the sports equipment is broken, a possible solution is to buy more sports equipment. This quick and easy solution may not be the correct resolution to the Issue; you need to discover why the sports equipment is broken in the first place.

Title	Activity	In Class Design Tasks		
Share what you know	Chances are students already know something about the issue.  How: <ul style="list-style-type: none"> <li>• They can share and document what they already know as a group or individually.</li> <li>• Ask students to write one piece of information on a post it note and read it out loud. Get some feedback from others.</li> <li>• Make sure students don't make assumptions or attempt to find solutions. They should try and stick to facts.</li> <li>• Figure out areas and issues that they don't know about.</li> <li>• Group the post-it notes together to help plan the discovery research.</li> </ul>			
		<b>Time</b>	<b>Tools</b>	<b>Syllabus Links</b>
			Post-it notes Whiteboard <a href="http://Linoit.com">Linoit.com</a>	

Title	Activity	In Class Design Tasks		
Create to Discover  ‘Thinking with your hands’	<p>Create to Discover helps students’ expand their understanding of the current situation. This gives them a fresh perspective by revealing new opportunities, possibilities and highlighting problem areas that weren’t apparent.</p> <p>How:</p> <ul style="list-style-type: none"> <li>• Students need to choose an option which best suits their issue, for example:               <ul style="list-style-type: none"> <li>○ A model of the space where the Issue takes place (e.g. the playground, the sports rooms or canteen);</li> <li>○ A role play (what is currently happening)</li> <li>○ A story board or flowchart showing the events that take place,</li> </ul> </li> <li>• 30 Minutes will be enough time for students to create. It is a very quick exercise.</li> <li>• Discuss and Capture any learnings that were discovered. Students are to keep their creations for future reference.</li> </ul>			
		<b>Time</b>	<b>Tools</b>	<b>Syllabus Links</b>
			Butchers paper Post-it notes Whiteboard <a href="http://Bubble.us">Bubble.us</a>	

Title	Activity	In Class Design Tasks		
Observe and Capture	<p>Observe and Capture is going out into ‘the field’ and being immersed into the context of the current situation.</p> <p>Discuss the importance of observing the user and their environment. Observing how people interact with their environment gives us clues about what they need. E.g. What things work? What things need improving? What is the mood or feeling?</p> <p>Discuss the different methods of capturing information or data that would be most useful in understanding the user and their needs.</p> <p>For example:</p> <ul style="list-style-type: none"> <li>• Recording times,</li> <li>• measuring distance</li> <li>• taking notes</li> <li>• filming</li> <li>• graphing peoples movements</li> <li>• quoting conversation</li> <li>• sketching etc.</li> </ul> <p>Discuss what tools students will need in order to capture this information.</p> <p>For example:</p> <ul style="list-style-type: none"> <li>• camera</li> <li>• notebook</li> <li>• post-it notes</li> <li>• pencils</li> <li>• recording devices (video and audio)</li> </ul> <p>How:</p> <ul style="list-style-type: none"> <li>• This activity can be done in groups or individually.</li> <li>• Have students follow the A-E-I-O-U activity sheet.</li> <li>• Students should use a variety of tools and methods to capture their observations.</li> <li>• Encourage the students to capture both positive and negative observations. Students need to capture as much as they can and not just rely on their memories. The more they record, the more discoveries they have to work with.</li> </ul>			
		Time	Tools	Syllabus Links
		<ul style="list-style-type: none"> <li>• A-E-I-O-U Activity sheet</li> </ul>		

Title	Activity	In Class Design Tasks		
			<ul style="list-style-type: none"> <li>• camera</li> <li>• notebook</li> <li>• post-it notes</li> <li>• pencils</li> <li>• recording devices (video and audio)</li> </ul>	
Interviews	<p>Interviews give us a first hand account of how the users feel about the Issue, what they like, what they want to see improved and why. It is important to talk to the user so we don't assume what they need.</p> <p>Students are given the Interview activity card to work from. The guide has open-ended questions to ask the interviewees. However, it is advised to brainstorm additional questions that are specific to the Issue.</p> <ul style="list-style-type: none"> <li>• Discuss with the class the importance of interviewing a range of different people for diversity in responses. They may want to interview their parents, students from different age groups, teachers or other staff.</li> <li>• Students may want to practice interview questions with other class members. The students might like to role-play by pretending the classroom is a TV studio and they are reporting for the nightly news!</li> <li>• Remind the students to act just like the reporters on TV. A good reporter listens, takes notes, smiles, encourages, doesn't interrupt and is inquisitive.</li> <li>• Students keep their captured interview answers in their document portfolio.</li> </ul>			
		<b>Time</b>	<b>Tools</b>	<b>Syllabus Links</b>
			Interview activity cards	

Title	Activity	In Class Design Tasks		
Constructing Characters	<p>Constructing characters is a way of understanding the user. They act as ‘stand ins’ for real users to help guide students in making decisions. Characters or personas represent a larger group not individuals.</p> <p>Students might create a number of characters or personas based on observations of many different people or users. When Constructing Characters students should focus on:</p> <ul style="list-style-type: none"> <li>• what motivates them,</li> <li>• what interests them,</li> <li>• what they think,</li> <li>• how they feel and,</li> <li>• how they behave.</li> </ul> <p>How:</p> <ul style="list-style-type: none"> <li>• Use interviews, observations or what they already know about their users</li> <li>• Collate their findings under the headings above</li> <li>• Use visuals such as collages or drawings</li> <li>• Draw a character in their journals or trace around a classmate</li> <li>• Have them speak directly using speech bubbles or annotate their qualities</li> <li>• Describe their interests and qualities in a story</li> </ul>			
		<b>Time</b>	<b>Tools</b>	<b>Syllabus Links</b>
			Constructing Character Examples activity sheet	

## INTERPRETING

Students come back with the stories of their Discoveries. These stories will be interpreted to help uncover the problems that have created the Issue.

Interpreting will uncover clues, themes and connections. It involves sharing, sorting, and condensing the Discoveries to provide a specific direction for generating ideas later.

Description	Activity	In Class Design Tasks		
<p><b>The Detective Board</b></p>	<p>The students now have a collection of Discoveries after observing; capturing and interviewing that need Interpreting. The Detective Board is a tool that can be used to share stories, unpack and view all of the Discoveries at once to more easily find connections, groupings and themes. The Detective Board aims to synthesise and condense all of the Discoveries into meaningful findings and insights.</p> <p>The Detective Board is a collection of all of the Discoveries in one place. It is a form of data visualisation on a wall or space in the classroom that can be referred to during the rest of the Design Emergency. It is a collection of images, notes, graphs, maps, quotes, diagrams, sketches etc.</p> <ul style="list-style-type: none"> <li>• Create a large empty space wall in your classroom. This is your Design Emergency wall.</li> <li>• Have students present all of their Discoveries to the class and add them to the wall. It is important for all students to present to gain different perspectives of the same situation.</li> <li>• Encourage the students to discuss, ask questions and listen carefully in order to capture details and subtle differences.</li> <li>• Use post it notes for additional findings that were uncovered while presenting, highlight important quotes, key words and reminders.</li> <li>• As a class discuss and group the Discoveries into similar themes, ideas and issues. Look for both positive and negative aspects of the current situation.</li> <li>• Circle the groups and use headings to synthesize the findings in that group e.g. the sports equipment room headings might include – large space, well lit, lots of equipment, disorganised, broken equipment, poor access, dirty, fights etc.</li> </ul>			
		Time	Tools	Syllabus Links
			Whiteboard Post-it notes <a href="http://Linoit.com">Linoit.com</a> Fig. 2	

	<ul style="list-style-type: none"> <li>Students vote for which headings that they see most important to tackle.</li> <li>Construct a concise sentence using the chosen headings. The sentence should include both positive and negative aspects of the problem. e.g. “The sports equipment room is a large space that can accommodate all of our sports equipment. We know the students would like to use the sports equipment, however it is disorganised and broken.”</li> <li>Explore further into the problem/s by asking the students consecutive directed ‘why’ questions about the sentence. See example/figure 2. Asking at least 3 - 5 directed ‘whys’ will uncover the Insight to the problem.</li> </ul>			
<b>The Design Emergency</b>	<p>Defining the Design Emergency is a pivotal step in design thinking. It gives a clear direction and finds the core problem/s of the Issue. The Design Emergency is the challenge that the students will be tackling.</p> <p>Defining the Design Emergency is a step-by-step process. This may be difficult for some students as it is using higher order thinking.</p> <ul style="list-style-type: none"> <li>Transform the Insight, which was found through the Detective Board exercise, into the Design Emergency using this sentence structure: How can (who) design the (what) so that (why)? e.g. How can Year 6 design the sports room experience so that students are responsible for the care and organisation of the sports equipment and can easily retrieve and return it in good order?</li> <li>Display the Design Emergency in the classroom. This is the challenge the students will tackle.</li> </ul>			
		Time	Tools	Syllabus Links
			Portfolios	

## IMAGINING

Up until now students have been focused on defining the Design Emergency. Now it is time to explore ideas for possible solutions. Imaging is the time when students generate lots of ideas and no idea should be discounted as being too improbable. Outlandish ideas often spark innovation.

### Before Getting Started

Here are IDEO’s guidelines for a successful brainstorm:

- Defer judgement; no idea is too simple, too crazy, too expensive!
- Encourage wild ideas; This may spark a great idea from someone else
- Build on the ideas of others; think AND rather than BUT.
- Stay focused
- One conversation at a time
- Be visual; draw your ideas as opposed to just writing them down.
- Go for quantity; the more ideas the better, they will be narrowed down late

Title	Activity	In Class Design Tasks		
Warm Up Activity	Students work in small groups. They are given an object (e.g. paperclip, egg carton, bottle, CD) and asked to come up with as many different uses for it as they can think of. This exercise aims to gain confidence in the students to generate ideas quickly and without fear of judgement.			
		<b>Time</b>	<b>Tools</b>	<b>Syllabus Links</b>
			5 objects (e.g. paperclip, egg carton, bottle, CD)	

Thinking outside the box	<p>Generating ideas is an important step in design thinking and how students can explore possibilities to tackle the Design Emergency.</p> <p>Thinking outside the box is an interactive brainstorm exercise. Students individually brainstorm ideas on their box and present them to the class. Ideas are then pushed further through a class brainstorm.</p> <p>The students are given the Brainstorm Box activity sheet (best printed at A3). Don't construct the boxes until they have completed all the sides.</p> <ul style="list-style-type: none"> <li>• If the Design Emergency encompasses a range of problems you may want to break it down by asking students to focus on different aspects to brainstorm.</li> <li>• The brainstorm box has six sides for the students to fill in and decorate. There is a space to fill in the Design Emergency, the Design Goal, some Discoveries and 3 remaining sides for 3 ideas.</li> <li>• Students present to the class one by one when their boxes are finished and constructed.</li> <li>• Encourage discussion around the ideas being presented.</li> <li>• Conduct a class brainstorm. Now that the initial ideas have been recorded on the boxes encourage the students to push ideas further and think outside the boxes.</li> <li>• Record all ideas and display or hang the boxes in the classroom for inspiration.</li> </ul>			
		Time	Tools	Syllabus Links
			Brainstorm Box Activity Sheet	

<b>Imagining another place</b>	<p>Imagining Another Place asks what can we learn and replicate in our design by drawing inspiration from somewhere else.</p> <p>Imagining Another Place is referred to by world renowned designer Bruce Mau as ‘working the metaphor’ and is also known as using an analogous environment. Working the metaphor involves researching other seemingly unrelated environments and understanding how people behave and experience that place.</p> <ul style="list-style-type: none"> <li>• Students are to consider other possible environments or places that have similar properties to their Design Emergency.</li> <li>• E.g. the sports room was imagined as a sports equipment shop. Students used the metaphor of a retail experience to begin brainstorming ideas such as a sales desk; a credit card (borrowing card); students as shop attendants; 16rganizing the equipment like a shop; etc.</li> <li>• Note: it might prove difficult for students to find the metaphor and teachers might need to assist or direct them.</li> <li>• Brainstorm ideas or create another box (Thinking Outside the Box activity sheet) using the inspiration of this new place to help them solve The Design Emergency. What can be learnt from this metaphor?</li> </ul>			
		Time	Tools	Syllabus Links
		Fig. 3		
<b>Crowdsourcing</b>	<p>When we crowdsource we get fresh ideas from people not directly involved in the project.</p> <p>Crowdsourcing is an open call for ideas. Crowdsourcing can be anything from a suggestion box in the school office, setting up a social networking page, asking an expert or putting out a call for ideas in the school newsletter.</p> <ul style="list-style-type: none"> <li>• Students research different types of crowdsourcing on the</li> </ul>			
		Time	Tools	Syllabus Links

	<p>internet.</p> <ul style="list-style-type: none"> <li>• Discuss different types of crowdsourcing to find a method that best suits the Design Emergency.</li> <li>• Set up their crowdsourcing process and ask “How might we...?” questions based on the Design Emergency and collate the responses and ideas that come in.</li> <li>• Asking an expert is another form of Crowdsourcing. The Design Emergency might have particular obstacles or areas of expertise that the students may need additional advice on.</li> </ul>		<a href="http://Linoit.com">Linoit.com</a>	
<p><b>Selecting</b></p>	<p>It is important that the students choose which ideas they want to prototype. This will give the students ownership of the idea and maintain their engagement and energy.</p> <p>The selected ideas will be carried through into the Experimenting stage. When selecting the ideas to test keep in mind the Design Emergency.</p> <ul style="list-style-type: none"> <li>• Here are a few selection techniques to choose from: <ol style="list-style-type: none"> <li>1. Post it voting; each student silently votes for the idea/s they like best, so they aren’t swayed by peer’s votes, and then places their votes on the board and explain why they made that choice.</li> <li>2. Arrange all of the ideas into 4 categories and have each student vote for their favourite idea in each category. Categories may include the long shot, the wise choice, the easy to please, the brave.</li> <li>3. A ballot box</li> </ol> </li> <li>• Be realistic about how many ideas you will take into the Experimenting stage. You may like to create groups to focus on particular ideas.</li> <li>• Create a space on the Design Emergency Wall for a ‘Parking Lot’ of all the ideas that weren’t chosen. The students may need to come back to these ideas if their initial ideas aren’t successful.</li> </ul>			
		Time	Tools	Syllabus Links

## EXPERIMENTING

As the name states this stage is genuinely about experimenting. In the Experimenting stage students play with their ideas through many different forms of prototypes. Prototypes are a physical representation of an idea that can be interacted with, tested and learnt from. Prototyping is about learning; learning what works and what doesn't. Prototypes are intended to be quickly and easily changed. Prototyping is like speed dating. It's non-committal, interactive and quick, you learn what you like and what you don't, then move on. Encourage your students to speed prototype and not get caught up in decorating, being precious or perfecting it.

Title	Activity	Design Tasks		
<b>Making Prototypes and getting Feedback</b>	Prototyping is about learning and testing ideas. A prototype can be anything from a model of the space, a diagram of a new system or process, a storyboard of the user's experience or a scenario acted out through role play.  Making <ul style="list-style-type: none"> <li>Define what needs to be learnt from the prototypes. Students should prototype with a question in mind. e.g. What is the best way for the sports equipment to be organised?</li> <li>Set a 'making' time limit.</li> <li>Ensure that the prototypes can be easily changed.</li> </ul>			
	Testing and Getting Feedback <ul style="list-style-type: none"> <li>"I like... I wish... What if...?" Students are to use this model to give their feedback. e.g. I like where the shelves are in the sports room model I wish there was away to see all the sports equipment choices I could choose from. What if the table was here instead, so it doesn't block the skipping ropes?</li> <li>Set a 'testing' time limit.</li> <li>Make sure that one or more of the makers stay with their prototype to observe and capture the feedback and make changes at the time, developing the prototype as they go.</li> <li>Remaining group members can move around to test other prototypes and give feedback.</li> </ul>	Time	Tools	Syllabus Links
		Fig. 4		



## DEVELOPING

In the Developing stage students reflect on their feedback and decide if any changes need to be made before finally presenting a solution to the Design Emergency.

Developing is the step that involves change, growth and refinement of ideas and prototypes. This is generally referred to as iteration, the act of repeating the process with the aim of approaching a desired goal. At this point you might find yourself iterating by creating more prototypes, refining your prototypes or visiting your ‘parking lot’ of ideas. The results of one iteration are used as the starting point for the next iteration.

Title	Activity	In Class Design Tasks		
<p><b>Have you solved your Design Emergency?</b></p>	<p>This step encourages evaluation and asks the students if they have successfully solved their challenge. We also want to know:</p> <ul style="list-style-type: none"> <li>• If the idea works</li> <li>• If they achieved the goal</li> <li>• What changes to make</li> <li>• If the user’s needs were met</li> <li>• Why it does or does not work</li> <li>• Whether its objectives were met</li> <li>• Its effectiveness</li> </ul> <p>This is the time where students discuss, evaluate and develop their ideas and prototypes. This step may involve iteration and repeating previous steps. This stage of development will result in the final idea or prototype ready to be pitched.</p>			
	<ul style="list-style-type: none"> <li>• Students share and select the best prototypes.</li> <li>• Discuss the features and why those prototypes were chosen.</li> <li>• Revisit the Discoveries made in the first step and compare and contrast the prototypes with them.</li> <li>• Discuss and evaluate               <ul style="list-style-type: none"> <li>○ Concept evaluation - did we achieve our goal? Involves asking questions such as - What did we set out to achieve? What are the signs that show we have done this? What are we not doing that we intended to?</li> <li>○ Function evaluation - does it work?</li> </ul> </li> </ul>	Time	Tools	Syllabus Links

	<p>Involves asking questions such as - What's working? What's not working? How could we improve things? Did we meet our users' needs?</p> <ul style="list-style-type: none"> <li>• Iterate. After evaluating the prototypes are there any missing elements or mistakes that can be changed or altered? Do the students need to go collect more Discoveries? Can student Interpret something differently? Or is there an idea that everyone loved in the 'parking lot' of ideas that can be prototyped?</li> </ul>			
<p><b>Pitch your Idea</b></p>	<p>Just like a real designer the students need to pitch their idea/s. By pitching the ideas/s they can motivate others to help out or implement the idea.</p> <p>A pitch is how the students communicate their idea and story. There are no rules on how the students can pitch their ideas, in fact the more creative the better. Some examples include a presentation at the school assembly, a letter in the school newsletter, a performance at lunch, an email, a YouTube video etc.</p> <ul style="list-style-type: none"> <li>• Identify who to present the pitch to. Who can help</li> <li>• make your idea a reality?</li> <li>• Brainstorm creative ways to pitch the idea/s.</li> <li>• Use GROW to tell the story: <ul style="list-style-type: none"> <li>○ Goal – What was the Design Goal the students set out to achieve?</li> <li>○ Reality – What was the current situation? What was The Issue and Design Emergency?</li> <li>○ Opportunity – What are the opportunities for change you are presenting? What is the idea?</li> </ul> </li> <li>• What's next? – What needs to happen to make the idea a reality?</li> </ul>			
		Time	Tools	Syllabus Links
			GROW activity sheet	

