Hackathon Resource Pack

#worldchanging

The material enclosed provides a set of tools and processes to help students develop the skill of creativity and enable them to reach a higher level of creativity through collaboration. These resources can be used at the discretion of the teacher depending on the skill level of their students
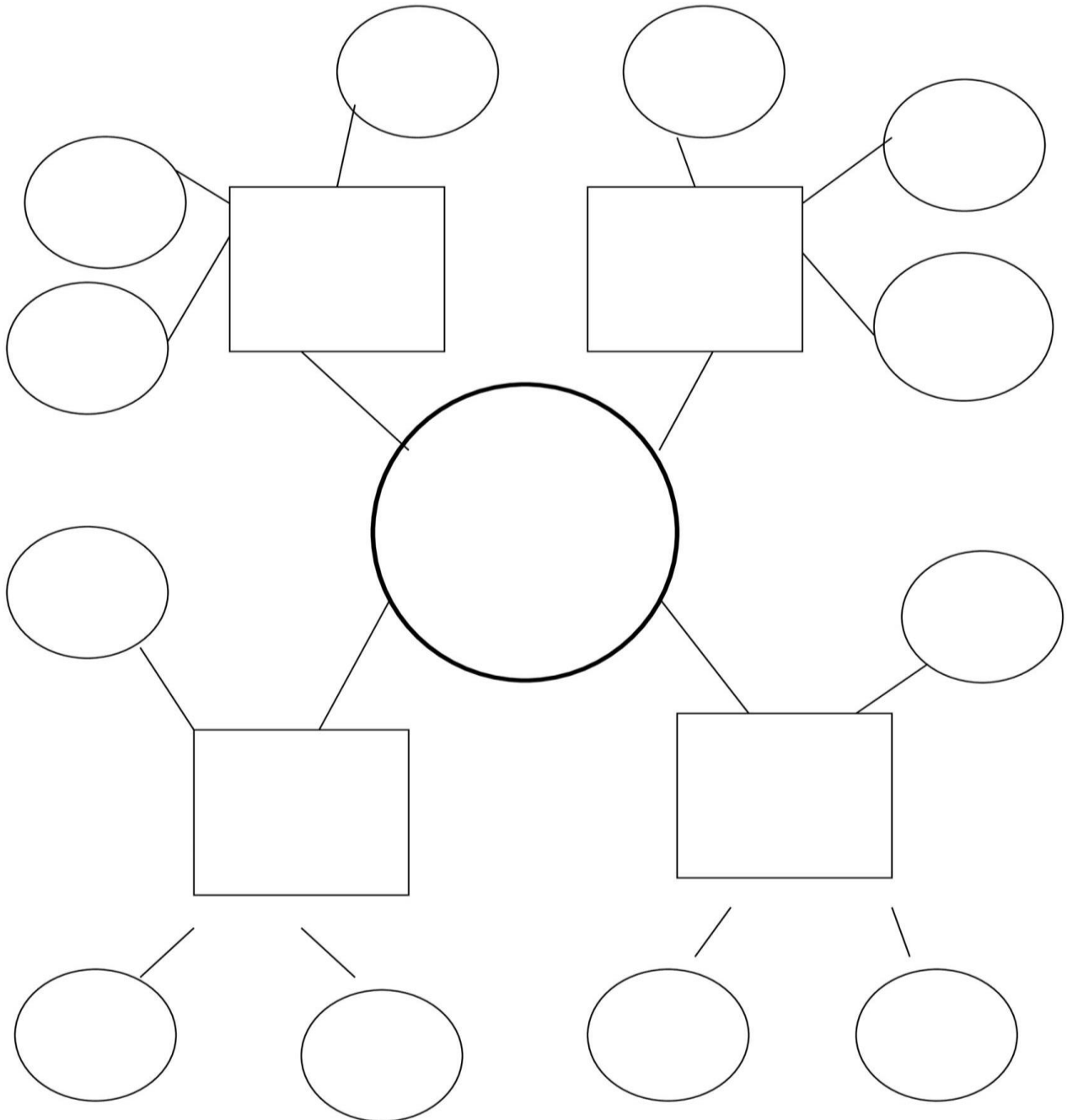
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Explore the Theme

Take some time before the hackathon begins to familiarise yourself with the concepts of the Hackathon Challenge theme:

How can we use our oceans to innovate for a changing climate?

Record key ideas in the space below

To- Do Checklist

Friday August 14th

- ☐ Choose which problem your team is going to address
- ☐ Do some further research around this aspect of the theme
- ☐ Devise questions for your Design Thinking coach to fully understand your user's specific need or problem
- ☐ Explore possible solutions
- ☐ Interview your Design Thinking coach via zoom to narrow your focus for your hack
- ☐ Begin designing a rough prototype (a rough design for your solution) to show to your mentor on Monday and gain feedback
- ☐ Sign-up for your mentoring sessions on Monday
- ☐ Come up with a list of materials
- ☐ Make a plan
- ☐ Agree on a Team Charter

Over the weekend

- ☐ Continue to work on your hack as per your plan – as a group or individually
- ☐ Email your Design Thinking Coach, if needed
- ☐ Get the materials that you will require for your build or presentation
- ☐ Make sure you are addressing the assessment criteria and information required in your one-page summary
- ☐ Complete the permission form that must be uploaded with your entry

Monday August 17th

- ☐ Mentoring sessions via Zoom - discuss your prototype/ design to gain feedback. Use the *HCM Interview Planner* included in this pack.
- ☐ Make any changes/updates to your hack depending on advice from your mentor
- ☐ Continue working on your hack
- ☐ Beginning planning your presentation, using the questions in the one page summary
- ☐ Hand-in your permission form to your teacher

Tuesday August 18th

- ☐ Finalise your hack
- ☐ Complete your one page summary (this should act as a pseudo script for your presentation)
- ☐ Film your presentation (no longer than 3min, in .mp4 or .mov format)
- ☐ Make sure your teacher has everything they need to submit your entry
- ☐ Completed one-page summary
- ☐ Film file
- ☐ Acquittal form (one per school)
- ☐ Completed permission forms

Wednesday August 19th

- ☐ Wait to hear if you have made it into the top 5 finalists

Thursday August 20th

- ☐ If you have made it as a finalist, attend a virtual event showcase to hear the winners announced live.

GOOD LUCK!

Step 1: Choosing which problem to address

1. Look at the problem statements published on the website

2. Each student should independently write down which problem they think is most important and why. *Students might want to take some time to do a bit of independent research to help them reach a conclusion.*

3. Each student to present their ideas

4. From the group's ideas, try to find commonalities that can lead to a share vision and passion to solve this problem

5. Use the questions below to get everyone in your group thinking about your shared vision:

   - What would the world look like if your problem was solved?

   - How would the world be different?

   - What actions do we need to take to create a better world in terms of solving your problem?

   - What role do you (the designer/innovator) play? What role does the community play?

   - What things in the world/industry would need to change?

   - Who would be the end-user of your solution?

   Brainstorm your ideas on a large scale – use a whiteboard, butcher paper or post-it notes that you can stick on the wall. Also take into consideration the thoughts of the team, agree on which problem you will tackle in you hack.

Step 2: Meet your Mentors

Now that you have agreed on a problem to hack, it's time to meet your mentors!

You will have the opportunity to work with two mentors:

1. **Design Thinking Coach (DTC)** – this mentor will be pre-assigned to your team and you will have already organised on a time to have a Zoom session with on Friday, if possible. Your DTC will act as your main source of support for the hackathon, and can be contacted via email later this afternoon and over the weekend. Each DTC can reply to your team twice and only via your teacher. If you wish, you may also organise an additional session with your DTC on Monday or Tuesday, subject to their availability.

2. **Hackathon Challenge Mentor (HCM)** –The HCMs sessions have a different focus to the DTCs. This is an opportunity for teams to discuss the challenge area, relevant science and technologies, and they can see feedback on their proposed solutions. Based on the feedback teams receive from their mentors, students can revise their designs and continue to build. Students may pick **two** HCMs from this list and sign up for sessions with them on Monday Aug 17th on the form emailed to your teacher. Please note that that these mentors have offered their availability noted on the form and sessions are on a first come, first serve basis.

Taking into consideration the thoughts of the team, agree on your TWO mentors and sign up for a session with each of them on Monday 17 August.

Step 3: Design Thinking Process – Who are you designing for?

The Design Thinking Process is a widely accepted method to use in hackathons. Your DTC will guide you through this process and help you starting thinking about your end-user – who you are essentially designing the solution for. Using the links below, your teacher can also help you navigate through the Design Thinking phases.
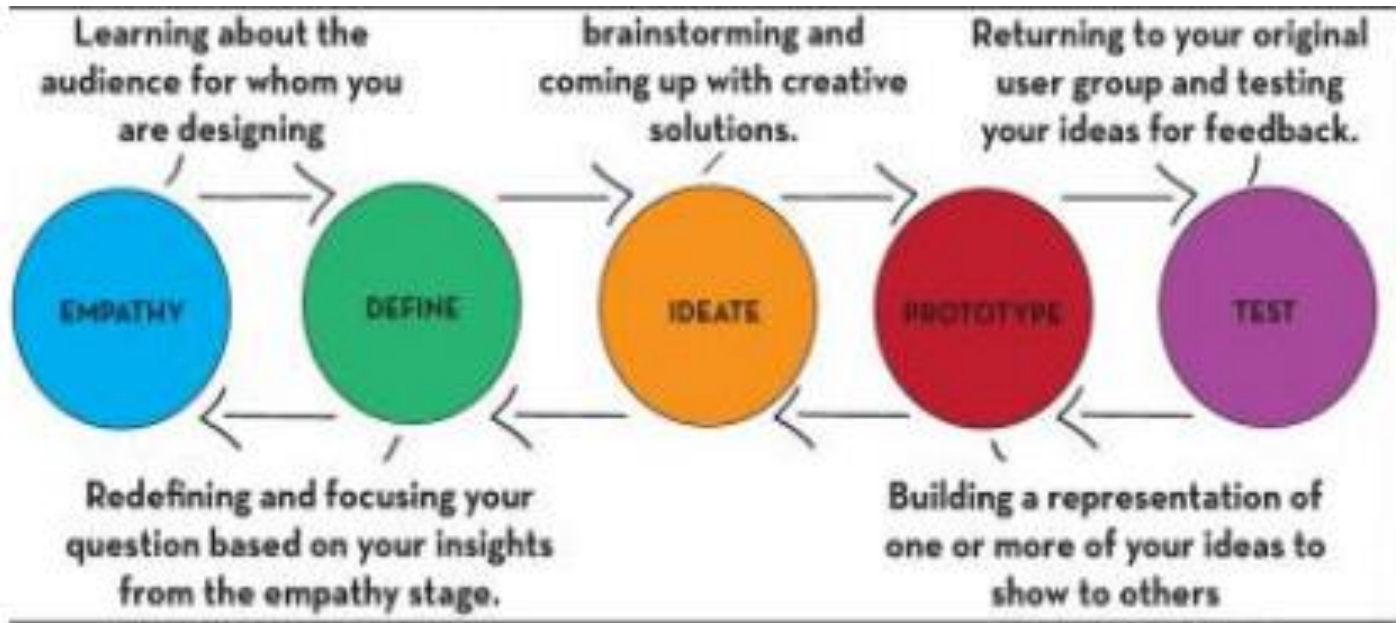
EMPATHY
Goal:
To truly understand the people you are designing for through interviews and observations.

Purpose:
To discover design opportunities within the gaps between what people do and what they say they do.

DEFINE
Goal:
To craft a Point of View statement:
"(Name of user) needs a way to (do something) because/but (statement of issue)." Ex. "Sheila needs a way to have privacy in the classroom because she needs quiet to concentrate."

Purpose:
To synthesize and distil the empathy findings into one specific user and his or her need.

IDEATE
Goal:
To generate as many ideas as possible to potentially solve the user's need.

Purpose:
To focus on the quantity of ideas. Push for "new" and "crazy" ideas to open the mind to different solution possibilities.

PROTOTYPE
Goal:
To build rapid, physical representations of an idea.

Purpose:
To bring an idea out of the brain in order to show it in any physical way.

TEST
Goal:
To allow the user to interact with prototypes, watching for moments where the user is confused, stuck or unhappy.

Purpose:
To learn even more about the user and to refine solutions.

Useful Links:
http://mindyahrens.weebly.com/scaffolding-creativity.html
https://dschool.stanford.edu/about#innovators

Step 4: Unpacking the problem – The Problem Tree

What is the root cause of a problem? Often there isn't one simple answer. The bigger the problem, the more likely it is that its roots will be widespread, and mapping out the causes can quickly make the problem seem overwhelming.

The Problem Tree helps you think of a problem in a thorough manner and provides a structured way to analyse it. It pushes you to deconstruct all possible causes for the problem rather than the obvious ones. It will also prompt your team to focus on the specific cause of the problem that your hack will target.

It also helps to differentiate causes from effects or symptoms, giving you a better idea of the solutions needed to solve a problem permanently, and it helps to build a shared understanding of what it is you're working on.

How to use the Problem Tree - *PowerPoint Presentation with video links for this activity included in email*

Teamwork: All team members should be equally involved in this process so that the core problem, cause and effects are agreed upon and all team members are happy with explanations given.

Visualize: Watch this video showing how to use a problem tree in practice. If you can't, find another way for everyone to imagine a tree with its trunk, roots and branches. You can draw a tree on the board and use sticky notes to represent causes and effects. You can also use this resource to construct a mind-map that can be shared with your mentors.

Start work: Explore and define your core problem – this becomes the tree trunk. Then, take a look at the root causes of your problem, capturing each of these at the bottom of the tree. You may find there are lots of these! Lastly, look up to the branches to define the effects (or consequences) of the problem and its causes. You now have your tree!

Lead the discussion: Use questions to draw out responses. Which causes are easiest, or most difficult, to address? Are you all thinking along the same lines? Do you need to re-frame the problem? Your roots and branches will change based on your discussion.

Once you are all on the same page, you have your Problem Tree. This takes time, but it's worth it! Do this right, and you will have everything that you need to develop effective and grounded objectives, and begin designing your solution

https://pmdprostarter.org/problem-tree/

Step 5: Turning a Problem into a Solution – The Objective Tree

Think of ANOTHER tree with roots and branches! Like the Problem Tree, the Objective Tree is a great tool to help you consider different perspectives, and to define the different routes that you could take to solve your problem.

This tool helps you to define where and where not to intervene. It provides a structure for the conversation that you need to have with your team, the output of which becomes your solution or hack.

How to use the Objective Tree

Teamwork: Involve people who know something about the issues and context that your solutions will operate in. This would be a great time to liaise with your Design Thinking Coaches and to really start thinking about the end-users of your hack.

Visualize: Watch this underline video with your team to show how the Objective Tree works in practice. If you can't, find another way for everyone to imagine a tree with its trunk, roots and branches. You can also use this resource to construct a mind-map that can be shared with your mentors.

Start work: You need to turn your Problem Tree into an Objective Tree. Your tree trunk becomes your design objective, and the roots and branches are redefined to focus on solutions. As you work through the roots and branches of your Problem Tree, overlaying each of them with solutions, you develop the framework that you need to assess how and where your team can best respond.

Lead the discussion: Use questions to draw out responses. Are you all thinking along the same lines? Do you need to re-frame areas for improvement?

Once you are all on the same page, you have your Objective Tree. Do this right, and you will have everything that you need to progress onto the next stage – designing your hack!

https://pmdprostarter.org/objective-tree/

Devise questions for your Design Thinking coach to fully understand your user's specific need or problem

Step 6: Design your hack – Crazy Eights

Need some inspiration? Try playing Crazy Eights! This is a fantastic activity to get creative and come up with ideas, all in eight minutes. You will need:

- Markers
- A3 paper
- Masking tape or Blu-Tac
- Scissors
- Coloured dot stickers or post-it note tabs in different colours
- A timer

https://www.youtube.com/watch?v=KgJCk5sRdoU

More inspiration for idea generation and innovation activities:
https://www.sessionlab.com/library/idea_generation

We recommend:
- Headlines from the future
- Lotus blossom
- Bad idea brainstorm

Once you have agreed on a design, create a rough draft of your prototype to discuss your ideas with your mentors on Monday August 14th and gain feedback. Remember to think large scale while designing, use a whiteboard or butcher paper to sketch your ideas. You should use any feedback to make revisions, until you have your final design.

Begin designing a rough prototype (a rough design for your solution) to show to your mentor on Monday and gain feedback

Step 7: Planning for the weekend and beyond

- List, in date order, the different tasks you will need to do.
- Decide who will do each task and what is needed.

Date	Task	Who will do this?	What is needed? (materials, money, people)

Step 8: HCM Mentoring Sessions

Prior to the interview with your HCM:

- Clearly define your team's purpose/intention for the interview.
- The interview will run for 15 minutes, so it will need to be planned well to make the most of your time with your HCM.
- Prepare some questions relevant to your hack and decide who in your team is going to ask the HCM each question. Use the **HCM Interview Planner** (below).
- Consider some specific and open-ended questions* related to your hack. The questions you ask will depend on what you have discovered through the hackathon resources.
- Assign one team member to make notes (or check if they record the interview and transcribe it afterwards).
- Assign another team member to keep track of time.
- Do your research on the HCM to tailor your questions to their area of expertise.

During the interview

- Build rapport with your HCM
- Introduce your team, your chosen problem, what you have done so far during the hack, and the current status of your proposed solutions
- Ask your question and listen carefully to the response. During the hackathon, HCMs are unable to answer questions that are too broad, please be as specific as you can.
- Use active listening, clarifying questions and paraphrase to check your understanding.

Conclusion of the interview

- Thank the HCM for their time and ask if there is anything else they would like to add
- Continue to listen and take notes as there might be some valuable information relevant to your hack.
- Finally, ask the HCM if they are willing to answer any follow-up questions via email (all emails must be approved and sent by your teacher and cc: events@ansto.gov.au)

*An open-ended question is a question that requires a full answer, using the subject's own knowledge or feelings. These questions are objective, do not lead the person being asked, and result in an answer that requires an explanation. Examples:

- "What happened after I left?"
- "Why did Jim leave before Susan?"
- "What did you do at work today?"
- "What do you think about the new season of this TV show?

HCM Interview Planner

- Prepare questions relevant to your hack and decide who in your team will be the note-taker, timekeeper, and who is going to ask the HCM each question.
- Consider some specific and open-ended questions related to your hack. The questions you ask will depend on what you have discovered through the hackathon resources.

Name of Mentor:		Date and Time:
Purpose/Intention for interview:		
QUESTIONS	**WHO** (interviewer)	**ANSWERS/NOTES** Note your mentor responses
Time keeper:		Note Taker:

Attributions

Design Thinking Phases *from Design Thinking and Metacognitive Reflective Scaffolds: A Graphic Design-Industrial Design Transfer Case Study*. Chien-Sing Lee & Kuok-Shoong Daniel Wong, CELDA, 2015.
https://files.eric.ed.gov/fulltext/ED562133.pdf

PMDProStarter Problem Tree - https://pmdprostarter.org/problem-tree/ (used under CC)

PMDProStarter Objective Tree - https://pmdprostarter.org/objective-tree/ (used under CC)