DT Applied
Design Thinking Mix-in
Teacher Workbook

Supported by:
accenture  aws  Commonwealth Bank
Grok Academy acknowledges the traditional owners and custodians of country throughout Australia and acknowledges their continuing connection to land, sea and community. We pay our respects to the people, the cultures and the elders past, present and emerging.
DT Applied
Design Thinking Mix-in
Teacher Workbook

Contents

Introduction ................................................................. 2
Explanation of workbook .............................................. 3
The design thinking cycle .............................................. 4
Suggested scenarios ..................................................... 5
Managing group work ................................................... 6
Curriculum links v8.4. ................................................... 7
Curriculum links v9.0 ..................................................... 8
Suggested lesson sequence (2 weeks) .............................. 9
Suggested lesson sequence (8 weeks) .............................. 12
Module 0: Design thinking introduction ......................... 13
Module 0: Activities ..................................................... 14
Module 1: Investigating and empathising ......................... 19
Module 1: Activities ..................................................... 20
Module 2: Defining the problem ...................................... 26
Module 2: Activities ..................................................... 27
Module 3: Ideation and prototyping ................................ 31
Module 3: Activities ..................................................... 32
Module 4: Evaluation and iteration ................................ 40
Other resources ............................................................ 41
Glossary ................................................................. 42
Worksheets and cards .................................................. 43
Notes ................................................................. 83
Introduction

This *DT Applied Challenge: Design Thinking* Teacher Workbook was designed by the Education Team at Grok Academy.

These unplugged resources have been designed to accompany the *DT Applied Challenge: Design Thinking* online course, which can be accessed at [grokacademy.org](http://grokacademy.org). Resources were developed in collaboration with our industry partners: Accenture, Amazon Web Services (AWS), Commonwealth Bank of Australia (CBA), and Telstra.

This workbook provides teachers with information about design thinking and how it can be implemented in the classroom to scaffold student projects. This workbook includes curriculum links, suggested lesson sequences, and lesson activity plans to accompany the five modules in the online course. These resources can be used to support existing projects, or we have provided suggested project topics or scenarios that could be used.

We hope that you enjoy using these resources to engage your students in a design thinking project.

“Design thinking is for anyone who is creating something – whether it be solutions to problems, new products, new services, exploring new ideas. There are aspects of design thinking that can be applied to pretty much everything!”

— Emma, Product Manager, Commonwealth Bank of Australia.

Supported by:
Explanation of workbook

What is this workbook?
The DT Applied Challenge: Design Thinking workbook provides a series of lessons and activities to engage students in a human-centred design thinking process. The accompanying activities offer different ways to develop solutions to a problem while working with teammates, collating data, surveying, interviewing, and observing users, creating prototypes, being innovative, empathetic, creative, and resilient.

Why use this workbook?
As part of the Digital Technologies subject, students engage in design thinking practices to be innovative and collaborative. This workbook provides a framework that offers guidance for design thinking projects. You can decide exactly which activities and worksheets are useful for your students to engage with, depending on the project you are working on.

How to use this workbook?
This workbook is designed for use in the classroom either alongside the online course, or independently. There are a variety of activities for each phase of the design process, and you may choose to use all or a selection of these activities.

When should I use this workbook?
This workbook and its accompanying activities can be used whenever there is a project to do or problem to solve. Regardless of the size of your project, the activities will help students to investigate and generate solutions for identified problems.

What do I get?
The DT Applied Challenge: Design Thinking workbook allows students to engage in human-centred design thinking processes with provision of a series of lesson plans and worksheets, mapped to the Australian Curriculum: Digital Technologies (both V8.4 and V9). While we’ve mapped this activities to the Digital Technologies curriculum, the activities are broad enough to be relevant to any project in any subject. Students will build critical and creative thinking skills, gain knowledge, and solve challenges collectively. Techniques and skills developed include team building, listening to others, asking better questions, interviewing, generating ideas, creating user stories, collecting data, designing surveys, recording observations, prototyping, critical review, reflection, prioritising and planning, and growth mindset development.

Assessing student work
As students work on a design thinking project, their completed worksheets can be included into a portfolio of work. Each module has its own success criteria which can be used to give feedback to students and assess their progress through the course.

What is design thinking?
Design Thinking is a problem-solving approach that emphasises the user at the centre of the problem. It is a set of techniques and processes for creative problem solving, including ideation, failing fast, prototyping, user testing and evaluation, and iteration. Design thinking encourages the development of dispositions such as empathy, collaboration, open-mindedness, and resilience to failure.

“Design thinking is ensuring you have the customer at the centre of what you are trying to achieve. Falling in love with the problem, before you fall in love with the solution, is what design thinking is all about.”

— Kim, Head of Growth & Transformation, Amazon Web Services.
The design thinking cycle

Design thinking projects are rarely linear. While most projects will move through specific phases, design thinking projects move in all directions, both backward and forward, and phases are often repeated. Each phase of a design thinking process is deeply linked and interconnected. The design thinking process is cyclic, repetitive, and iterative.

There are different models to describe the design thinking process, but all include:

Investigating and empathising

Empathy is at the heart of effective problem-solving. The best solutions come from a deep understanding of the user — the person at the centre of the problem. Effective design thinkers avoid making assumptions about their user’s thoughts, feelings and actions. User research techniques, such as interviews, surveys and observations, help us to develop an accurate understanding of the user and their needs. We repeatedly return to the user over the course of a project to seek feedback and ensure that the project remains user focused.

Defining

During a design thinking project, it’s important to tightly define the problem that we are trying to solve. Through collating and analysing the data collected from user research, we can pinpoint the issues that are most painful or problematic for our users and define a problem statement — how might we solve the identified problem? As the project progresses, and we develop our understanding of the user and their problem, we may refine the problem statement further.

Ideating and prototyping

Once we have defined the problem, we can start ideating solutions. The goal with early ideation is to think creatively and generate as many ideas as possible. Later, we can refine our ideas and decide on the best solution to prototype and test with users. A prototype can be anything that helps explain or model your idea to get feedback from users, for example prototypes can be a simple sketch, a 3-D model, or a basic version of the solution idea.

Evaluating and iteration

Evaluation in design thinking means to seek feedback. Feedback can be from your teammates, your peers, or, preferably, users of the product. This feedback informs the next round, or iteration, of design as adjustments are made to create improved solutions. Feedback helps to determine if a solution will work, but more importantly, tells us when a solution won’t work! If our idea is going to fail, we want it to fail fast, so feedback is sought early and often in a design thinking project.
Suggested scenarios

The possibilities for using design thinking processes for group projects are endless. You can use the accompanying activities and worksheets to solve your own design thinking project.

Below are several different problems that can form the basis of a design thinking group challenge.

1. Museums of art, science, technology and natural history have existed since the nineteenth century. How might we design a new museum to be built in your capital city to enhance the lives of its citizens and visitors?

2. 20% of Australians aged 16-85 experience a mental illness in any year. How might we improve the mental health of teenagers in today’s social media driven society?

3. Social media use has been connected to the decline in our teen’s mental health and reduced connection with others. How might we reduce teenager’s social media use and/or increase their connection with others (friends/family)?

4. Regular physical activity is essential for good physical and mental health and wellbeing. How might we enhance the health of school aged children?

5. Australia’s wildlife has had to adapt to survive in cities, suburbs and towns, often competing for food, water, refuge and space. How might we make the interaction better for animals, people, or both?

6. Australia is the driest continent inhabited by humans, with very limited freshwater sources. Despite the lack of freshwater, Australians use the most water per capita globally. How might we improve the water situation in Australia?

7. Identify a physical or social problem faced by humans during the Covid-19 pandemic in 2020 and 2021. How might we improve your identified physical or social problem in Australia?

8. Public spaces are an important asset to our cities, providing people with many opportunities to come together and engage with the community. How might we provide a new public space that is age inclusive for your community?

9. Australians are creating more waste than ever. How might we reduce either the rubbish that enters our environment or what ends up in our landfill?

Consideration for younger students

Students in younger grades may require more scaffolding for the chosen scenario. A scaffolded problem can assist students by allowing them to start with a more defined problem to then move through one iteration of the design thinking cycle. An example for Years 3-4, 5-6 and 7-8 students is provided below, based on suggested scenario 9.

Years 3–4 students:
Australians are creating more waste than ever. How might we help reduce plastic waste? Plastic sticks around for a long time and most of it goes into rubbish dumps. How could you teach other students about plastic waste and ways to reduce their use of plastic?

Years 5–6 students:
Australians are creating more waste than ever. How might we help students and families to reduce the amount of rubbish that ends up in our town/suburb’s landfill from packed school lunches or the tuckshop? Can you think of ways to help your fellow students reduce the amount of rubbish they produce, or, can you think of ways to help your school create an eco-friendly tuckshop?

Years 7–8 students:
Australians are creating more waste than ever. How might we reduce either the rubbish that enters our environment or ends up in our landfill? Investigate the different practices of ‘reduce, reuse, recycle’ that apply to your school and choose one. Can you think of ways to help your school reduce, reuse or recycle?
Managing group work

**Recommended team sizes**

2-3 students per group is recommended. If larger group sizes are used, a maximum of 6 students in a group is recommended.

**Team responsibilities and team roles**

There are a series of cards that define each of the Team Responsibility and Team Roles.

The cards are located in the worksheets and cards section at the back of this book or an online copy can be accessed at:

- [https://groklearning.com/a/resources/dt-applied-design-thinking-student/](https://groklearning.com/a/resources/dt-applied-design-thinking-student/)

**Team Responsibility jobs include:**

- Spokesperson
- Group Administrator
- Resource Manager.

**Team Role jobs include:**

- Group Facilitator
- Equal Voice Captain
- Challenger.

**How to use?**

If there are 3 students in a group, randomly assign one Team Responsibility and one Team Role to each student. If there are between 4 and 5 students in a group, first assign the three Team Responsibility cards, then a Team Role to each student. Left over Team Roles are then allocated to group members. If there are 6 students in a group, each student will fill either one Team Responsibility or one Team Role.

It is recommended that students remain as their allocated Team Responsibility for the duration of the project. It is recommended that students assigned a Team Role, alternate these between activities.

**Icebreaker and teamwork activities**

These have been designed to assist students in the group to build rapport and develop relationships. These activities also include a group contract, which can be signed by all group members and referenced throughout the project. These activities are included in the Module 0 resources, pp. 13–18.
### Australian Curriculum Version 8.4

<table>
<thead>
<tr>
<th>Content Description</th>
<th>Year Level</th>
<th>Notes</th>
<th>Applicable Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Define problems in terms of data and functional requirements drawing on previously solved problems (ACTDIP017)</td>
<td>Years 5 and 6</td>
<td>Partial coverage: Elaborations: describing in simple terms the nature of a problem and what a solution needs to achieve; using and interpreting data.</td>
<td>- Problem statement - Persona template</td>
</tr>
<tr>
<td>Plan, create and communicate ideas and information, including collaboratively online, applying agreed ethical, social and technical protocols (ACTDIP022)</td>
<td>Years 5 and 6</td>
<td>Partial coverage: Elaborations: applying practices that support the organisation of collaborative problem-solving</td>
<td>- Ideas brainstorm, headline and vote</td>
</tr>
<tr>
<td>Define and decompose real-world problems taking into account functional requirements and economic, environmental, social, technical and usability constraints (ACTDIP027)</td>
<td>Years 7 and 8</td>
<td>Partial coverage: Elaboration: identifying that problems can be decomposed into sub elements.</td>
<td>- Problem statement</td>
</tr>
<tr>
<td>Acquire data from a range of sources and evaluate authenticity, accuracy and timeliness (ACTDIP025)</td>
<td>Years 7 and 8</td>
<td>Partial coverage: Elaboration: acquiring data from a range of sources.</td>
<td>- Secondary research - Interviews - Observations - Surveys</td>
</tr>
<tr>
<td>Define and decompose real-world problems precisely, taking into account functional and non-functional requirements and including interviewing stakeholders to identify needs (ACTDIP038)</td>
<td>Years 9 and 10</td>
<td>Partial coverage: Elaborations: developing a preliminary specification for an opportunity or a need that typically contains a problem statement; using techniques such as interviewing.</td>
<td>- Problem statement - Interviews</td>
</tr>
<tr>
<td>Evaluate how student solutions and existing information systems meet needs, are innovative, and take account of future risks and sustainability (ACTDIP031)</td>
<td>Years 9 and 10</td>
<td>Partial coverage: Elaboration: judging the quality of a student solution based on specific criteria.</td>
<td>- Feedback - Prototype reflection evaluation</td>
</tr>
<tr>
<td>Plan and manage projects using an iterative and collaborative approach, identifying risks and considering safety and sustainability (ACTDIP044)</td>
<td>Years 9 and 10</td>
<td>Partial coverage: Elaboration: developing an evolutionary prototype iteratively and incrementally.</td>
<td>- Sketch buddy - Prototype planner</td>
</tr>
<tr>
<td>Content Description</td>
<td>Year Level</td>
<td>Notes</td>
<td>Applicable Activities</td>
</tr>
<tr>
<td>---------------------</td>
<td>------------</td>
<td>-------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Define problems with given design criteria and by co-creating user stories (AC9TDI4P01)</td>
<td>Years 3 and 4</td>
<td>Partial coverage: Elaborations: Create a user story; developing a problem statement; recognising a range of familiar problems and defining achievable solutions using given design criteria.</td>
<td>Problem statement – Pain points</td>
</tr>
<tr>
<td>Generate, communicate and compare designs (AC9TDI4P03)</td>
<td>Years 3 and 4</td>
<td>Partial coverage: Elaborations: brainstorming possible design ideas and discussing these with their peers; discussing whether the needs identified from the user story are met by generated design ideas; ideating multiple design ideas and comparing them against user stories.</td>
<td>Ideas brainstorm, headline and vote – Feedback – Sketch buddy – Pain points</td>
</tr>
<tr>
<td>Define problems with given or co-developed design criteria and by creating user stories (AC9TDI6P04)</td>
<td>Years 5 and 6</td>
<td>Partial coverage: Elaborations: ideating a range of possible design ideas, discussing them and judging them against design criteria and user stories; suggesting modifications to the preferred design ideas.</td>
<td>Ideas brainstorm, headline and vote – Sketch buddy – Feedback</td>
</tr>
<tr>
<td>Define and decompose real-world problems with design criteria and by creating user stories (AC9TDI6P01)</td>
<td>Years 5 and 6</td>
<td>Partial coverage: Elaborations: using provided stimulus to identify an issue and writing a user story in groups; discussing possible design criteria based on a stimulus.</td>
<td>Prototype development planner – User story</td>
</tr>
<tr>
<td>Define and decompose real-world problems with design criteria and by interviewing stakeholders to create user stories (AC9TDI8P04)</td>
<td>Years 7 and 8</td>
<td>Partial coverage: Elaborations: asking a series of questions and sub-questions to understand the problem and breaking it down into manageable parts; using a template such as “As a &lt;type of user&gt;, I want &lt;some goal&gt; so that &lt;some reason&gt;”.</td>
<td>Problem statement – Prototype development planner</td>
</tr>
<tr>
<td>Evaluate existing and student solutions against the design criteria, user stories and possible future impact (AC9TDI8P10)</td>
<td>Years 7 and 8</td>
<td>Partial coverage: Elaboration: reviewing the requirements of a user story to ensure that their solution meets the user’s needs.</td>
<td>Prototype development planner</td>
</tr>
<tr>
<td>Define and decompose real-world problems with design criteria and by interviewing stakeholders to create user stories (AC9TDI10P04)</td>
<td>Years 9 and 10</td>
<td>Partial coverage: Elaborations: creating user stories by interviewing a stakeholder to complete a template such as “As a &lt;type of user&gt;, I want &lt;some goal&gt; so that &lt;some reason&gt;”; defining the problem with precision and some awareness of scope.</td>
<td>Problem statement – Prototype development planner</td>
</tr>
<tr>
<td>Evaluate existing and student solutions against the design criteria, user stories, possible future impact and opportunities for enterprise (AC9TDI10P10)</td>
<td>Years 9 and 10</td>
<td>Partial coverage: Elaborations: judging the quality of the output of their solution against the design criteria.</td>
<td>Feedback – Prototype reflection evaluation</td>
</tr>
</tbody>
</table>
## Suggested lesson sequence

### Two-week sequence

<table>
<thead>
<tr>
<th>Lesson 1</th>
<th>Time Required</th>
<th>Notes/Details</th>
<th>Resource/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skittles starter</td>
<td>10 minutes</td>
<td>Conversation starter activity designed to help students become familiar with their fellow group members.</td>
<td>Skittles starter worksheet, Packets of Skittles</td>
</tr>
<tr>
<td>Scenario cards</td>
<td>15 minutes</td>
<td>Students reflect on typical scenarios that occur during teamwork activities.</td>
<td>Scenario cards</td>
</tr>
<tr>
<td>Group contract</td>
<td>15 minutes</td>
<td>A team building activity to develop a set of group norms and agree to a final group contract that includes expectations.</td>
<td>Group contract worksheet, Focus questions</td>
</tr>
<tr>
<td>Group roles</td>
<td>15 minutes</td>
<td>Group role and responsibility cards assign tasks to students working together on projects. 2-3 students per group is recommended.</td>
<td>Group role/responsibility cards</td>
</tr>
<tr>
<td>Progress check-in</td>
<td>5 minutes</td>
<td>Students reflect on the completed tasks and consider their next step/s. This is also an opportunity for teacher or peer feedback.</td>
<td>Progress check-in worksheet</td>
</tr>
</tbody>
</table>

### Lesson 2

<table>
<thead>
<tr>
<th>Time Required</th>
<th>Notes/Details</th>
<th>Resource/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review</td>
<td>5 minutes</td>
<td>Students familiarise themselves with their group roles and responsibilities. Re-read through group contract.</td>
</tr>
<tr>
<td>Ideas brainstorm</td>
<td>15 minutes</td>
<td>Students record as many ideas as possible, not considering limits.</td>
</tr>
<tr>
<td>Problem statement</td>
<td>15 minutes</td>
<td>Students describe the problem that they are trying to solve by focusing on the user and considering the 4 W's.</td>
</tr>
<tr>
<td>Iceberg</td>
<td>20 minutes</td>
<td>Students consider the thoughts, feelings, behaviours and motivations of a user that may be hidden beneath the surface.</td>
</tr>
<tr>
<td>Progress check-in</td>
<td>5 minutes</td>
<td>Students reflect on the completed tasks and consider their next step/s. This is also an opportunity for teacher or peer feedback.</td>
</tr>
</tbody>
</table>

### Lesson 3

<table>
<thead>
<tr>
<th>Time Required</th>
<th>Notes/Details</th>
<th>Resource/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review</td>
<td>5 minutes</td>
<td>Students familiarise themselves with their group roles and responsibilities. Re-read through completed worksheets from Lesson Two.</td>
</tr>
<tr>
<td>Pain points</td>
<td>25 minutes</td>
<td>Students identify their user, the user’s two main problems, and further analyse these pain points.</td>
</tr>
<tr>
<td>Persona</td>
<td>25 minutes</td>
<td>Students create the persona of a typical user.</td>
</tr>
<tr>
<td>Progress check-in</td>
<td>5 minutes</td>
<td>Students reflect on the completed tasks and consider their next step/s. This is also an opportunity for teacher or peer feedback.</td>
</tr>
</tbody>
</table>

### Lesson 4

<table>
<thead>
<tr>
<th>Time Required</th>
<th>Notes/Details</th>
<th>Resource/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review</td>
<td>5 minutes</td>
<td>Students familiarise themselves with their group roles and responsibilities. Re-read through completed worksheets from Lesson Three.</td>
</tr>
<tr>
<td>Ideas brainstorm</td>
<td>15 minutes</td>
<td>Students record as many ideas as possible and vote on their favourite idea and the one most likely to succeed.</td>
</tr>
<tr>
<td>Sketch buddy</td>
<td>15 minutes</td>
<td>Students identify one idea for a prototype and sketch it, using feedback from peers to refine and improve the sketch.</td>
</tr>
<tr>
<td>Prototype planner</td>
<td>20 minutes</td>
<td>Students use a worksheet to guide development of a prototype to improve their idea before creation.</td>
</tr>
<tr>
<td>Progress check-in</td>
<td>5 minutes</td>
<td>Students reflect on the completed tasks and consider their next step/s. This is also an opportunity for teacher or peer feedback.</td>
</tr>
</tbody>
</table>
# Suggested lesson sequence

## Eight-week sequence

<table>
<thead>
<tr>
<th>Lesson 1</th>
<th>Time Required</th>
<th>Notes/Details</th>
<th>Resource/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skittles starter</td>
<td>15 minutes</td>
<td>Conversation starter activity designed to help students become familiar with their fellow group members.</td>
<td>Skittles starter worksheet, Packets of Skittles</td>
</tr>
<tr>
<td>Personality reflection</td>
<td>10 minutes</td>
<td>Students become familiar with their own and each other’s personality traits.</td>
<td>Personality reflection worksheet</td>
</tr>
<tr>
<td>Scenario cards</td>
<td>25 minutes</td>
<td>Students reflect on typical scenarios that occur during teamwork activities.</td>
<td>Scenario cards</td>
</tr>
<tr>
<td>Progress check-in</td>
<td>10 minutes</td>
<td>Students reflect on the completed tasks and consider their next step/s. This is also an opportunity for teacher or peer feedback.</td>
<td>Progress check-in worksheet</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lesson 2</th>
<th>Time Required</th>
<th>Notes/Details</th>
<th>Resource/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review</td>
<td>5 minutes</td>
<td>Students familiarise themselves with their group roles and responsibilities. Re-read through completed worksheet/s.</td>
<td>Group role/responsibility cards, Completed worksheet/s</td>
</tr>
<tr>
<td>Y-chart</td>
<td>15 minutes</td>
<td>Students reflect on teamwork in an abstract way.</td>
<td>Y-chart worksheet</td>
</tr>
<tr>
<td>Group contract</td>
<td>15 minutes</td>
<td>A team building activity to develop a set of group norms and agree to a final group contract that includes expectations.</td>
<td>Group contract worksheet, Focus questions</td>
</tr>
<tr>
<td>Group roles</td>
<td>20 minutes</td>
<td>Group role and responsibility cards assign tasks to students working together on projects. 2-3 students per group is recommended.</td>
<td>Group role/responsibility cards</td>
</tr>
<tr>
<td>Progress check-in</td>
<td>5 minutes</td>
<td>Students reflect on the completed tasks and consider their next step/s. This is also an opportunity for teacher or peer feedback.</td>
<td>Progress check-in worksheet</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lesson 3</th>
<th>Time Required</th>
<th>Notes/Details</th>
<th>Resource/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review</td>
<td>5 minutes</td>
<td>Students familiarise themselves with their group roles and responsibilities. Re-read through completed worksheet/s.</td>
<td>Completed worksheet/s, Group role/responsibility cards</td>
</tr>
<tr>
<td>Ideas brainstorm</td>
<td>25 minutes</td>
<td>Students record as many ideas as possible, not considering limits and then vote on ideas.</td>
<td>Voting cards, post-it notes</td>
</tr>
<tr>
<td>Problem statement</td>
<td>25 minutes</td>
<td>Students describe the problem that you are trying to solve by focusing on the user and considering the 4 W’s.</td>
<td>Problem statement worksheet</td>
</tr>
<tr>
<td>Progress check-in</td>
<td>5 minutes</td>
<td>Students reflect on the completed tasks and consider their next step/s. This is also an opportunity for teacher or peer feedback.</td>
<td>Progress check-in worksheet</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lesson 4</th>
<th>Time Required</th>
<th>Notes/Details</th>
<th>Resource/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review</td>
<td>5 minutes</td>
<td>Students familiarise themselves with their group roles and responsibilities. Re-read through completed worksheet/s.</td>
<td>Completed worksheet/s, Group role/responsibility cards</td>
</tr>
<tr>
<td>Iceberg</td>
<td>20 minutes</td>
<td>Students consider the thoughts, feelings, behaviours and motivations of a user that may be hidden beneath the surface.</td>
<td>Iceberg worksheet</td>
</tr>
<tr>
<td>Interview preparation/Secondary research</td>
<td>30 minutes</td>
<td>Students to plan an interview/s with users to collect their data or complete secondary research into their problem.</td>
<td>User interviews worksheet</td>
</tr>
<tr>
<td>Progress check-in</td>
<td>5 minutes</td>
<td>Students reflect on the completed tasks and consider their next step/s. This is also an opportunity for teacher or peer feedback.</td>
<td>Progress check-in worksheet</td>
</tr>
<tr>
<td>Lesson</td>
<td>Time Required</td>
<td>Notes/Details</td>
<td>Resource/s</td>
</tr>
<tr>
<td>--------</td>
<td>---------------</td>
<td>---------------</td>
<td>------------</td>
</tr>
<tr>
<td>5*</td>
<td>Review</td>
<td>Students familiarise themselves with their group roles and responsibilities. Re-read through completed worksheet/s.</td>
<td>Completed worksheet/s Group role/responsibility cards</td>
</tr>
<tr>
<td></td>
<td>Interviews</td>
<td>Students conduct an interview/s with users to collect their data.</td>
<td>Completed User interviews worksheet</td>
</tr>
<tr>
<td></td>
<td>Progress check-in</td>
<td>Students reflect on the completed tasks and consider their next step/s. This is also an opportunity for teacher or peer feedback.</td>
<td>Progress check-in worksheet</td>
</tr>
<tr>
<td>6</td>
<td>Review</td>
<td>Students familiarise themselves with their group roles and responsibilities. Re-read through completed worksheet/s.</td>
<td>Completed worksheet/s Group role/responsibility cards</td>
</tr>
<tr>
<td></td>
<td>Observations**</td>
<td>Students identify who they will observe, where and when, and conduct their observation completing the worksheet.</td>
<td>Observation notes worksheet</td>
</tr>
<tr>
<td></td>
<td>Group discussion</td>
<td>Students discuss the notes from interviews and observations of their users.</td>
<td>Completed Observation notes worksheet</td>
</tr>
<tr>
<td></td>
<td>Progress check-in</td>
<td>Students reflect on the completed tasks and consider their next step/s. This is also an opportunity for teacher or peer feedback.</td>
<td>Progress check-in worksheet</td>
</tr>
<tr>
<td>7</td>
<td>Review</td>
<td>Students familiarise themselves with their group roles and responsibilities. Re-read through completed worksheet/s.</td>
<td>Completed worksheet/s Group role/responsibility cards</td>
</tr>
<tr>
<td></td>
<td>Pain points</td>
<td>Students identify their user, the user’s two main problems, and further analyse these pain points.</td>
<td>Pain points worksheet</td>
</tr>
<tr>
<td></td>
<td>Persona template</td>
<td>Students create the persona of a typical user.</td>
<td>Persona template worksheet</td>
</tr>
<tr>
<td></td>
<td>Progress check-in</td>
<td>Students reflect on the completed tasks and consider their next step/s. This is also an opportunity for teacher or peer feedback.</td>
<td>Progress check-in worksheet</td>
</tr>
<tr>
<td>8</td>
<td>Review</td>
<td>Students familiarise themselves with their group roles and responsibilities. Re-read through completed worksheet/s.</td>
<td>Completed worksheet/s Group role/responsibility cards</td>
</tr>
<tr>
<td></td>
<td>Persona scenario</td>
<td>Students develop a scenario during which the persona would use the product or service.</td>
<td>Persona scenario worksheet</td>
</tr>
<tr>
<td></td>
<td>User journey</td>
<td>Students consider the process for the user of needing or wanting a product/service, to engaging with and using it.</td>
<td>User journey worksheet</td>
</tr>
<tr>
<td></td>
<td>Progress check-in</td>
<td>Students reflect on the completed tasks and consider their next step/s. This is also an opportunity for teacher or peer feedback.</td>
<td>Progress check-in worksheet</td>
</tr>
<tr>
<td>9</td>
<td>Review</td>
<td>Students familiarise themselves with their group roles and responsibilities. Re-read through completed worksheet/s.</td>
<td>Completed worksheet/s Group role/responsibility cards</td>
</tr>
<tr>
<td></td>
<td>Problem statement</td>
<td>Students describe the problem that they are trying to solve by focusing on the user and considering the 4 W’s.</td>
<td>Problem statement worksheet</td>
</tr>
<tr>
<td></td>
<td>Ideas brainstorm &amp; vote</td>
<td>Students record as many ideas as possible, not considering limits and then vote on ideas.</td>
<td>Voting cards, post-it notes</td>
</tr>
<tr>
<td></td>
<td>Progress check-in</td>
<td>Students reflect on the completed tasks and consider their next step/s. This is also an opportunity for teacher or peer feedback.</td>
<td>Progress check-in worksheet</td>
</tr>
</tbody>
</table>

* Students could complete a survey instead of an observation during Lesson 6.
** Lesson 5 and 6 are completed if user interviews, observation or surveys are being conducted by the students for research. Skip to Lesson 7 if students will only use secondary research for their project.
## Suggested lesson sequence

### Eight-week sequence (continued)

<table>
<thead>
<tr>
<th>Lesson 10</th>
<th>Time Required</th>
<th>Notes/Details</th>
<th>Resource/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review</td>
<td>5 minutes</td>
<td>Students familiarise themselves with their group roles and responsibilities. Re-read through completed worksheet/s</td>
<td>Completed worksheet/s Group role/responsibility cards</td>
</tr>
<tr>
<td>Impact effort matrix</td>
<td>25 minutes</td>
<td>Students rate ideas on the effectiveness or impact on the user, while also rating ideas against the resources or effort required.</td>
<td>Impact effort matrix</td>
</tr>
<tr>
<td>User story</td>
<td>25 minutes</td>
<td>Students write a user story and use this as a foundation to scaffold their thinking about a possible solution.</td>
<td>User story worksheet</td>
</tr>
<tr>
<td>Progress check-in</td>
<td>5 minutes</td>
<td>Students reflect on the completed tasks and consider their next step/s. This is also an opportunity for teacher or peer feedback.</td>
<td>Progress check-in worksheet</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lesson 11</th>
<th>Time Required</th>
<th>Notes/Details</th>
<th>Resource/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review</td>
<td>5 minutes</td>
<td>Students familiarise themselves with their group roles and responsibilities. Re-read through completed worksheet/s</td>
<td>Completed worksheet/s Group role/responsibility cards</td>
</tr>
<tr>
<td>Prototype development planner</td>
<td>20 minutes</td>
<td>Students use the worksheet to guide development of a prototype to improve their idea before creation.</td>
<td>Prototype development planner</td>
</tr>
<tr>
<td>Prototype development</td>
<td>30 minutes</td>
<td>Options: Sketch, Role Play, Storyboard</td>
<td>Sketch buddy Role-play Planner Storyboarding your role-play</td>
</tr>
<tr>
<td>Progress check-in</td>
<td>5 minutes</td>
<td>Students reflect on the completed tasks and consider their next step/s. This is also an opportunity for teacher or peer feedback.</td>
<td>Progress check-in worksheet</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lesson 12</th>
<th>Time Required</th>
<th>Notes/Details</th>
<th>Resource/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review</td>
<td>5 minutes</td>
<td>Students familiarise themselves with their group roles and responsibilities. Re-read through completed worksheet/s</td>
<td>Completed worksheet/s Group role/responsibility cards</td>
</tr>
<tr>
<td>Share prototype for feedback</td>
<td>30 minutes</td>
<td>Students share their chosen prototype with another group, or the whole class, seeking feedback on their design idea.</td>
<td>Feedback worksheet Peer feedback worksheet</td>
</tr>
<tr>
<td>Prototype reflection evaluation</td>
<td>20 minutes</td>
<td>Students evaluate their prototype using a series of focus questions.</td>
<td>Prototype reflection evaluation worksheet</td>
</tr>
<tr>
<td>Progress check-in</td>
<td>5 minutes</td>
<td>Students reflect on the completed tasks and consider their next step/s. This is also an opportunity for teacher or peer feedback.</td>
<td>Progress check-in worksheet</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lesson 13</th>
<th>Time Required</th>
<th>Notes/Details</th>
<th>Resource/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review</td>
<td>5 minutes</td>
<td>Students familiarise themselves with their group roles and responsibilities. Re-read through completed worksheet/s</td>
<td>Completed worksheet/s Group role/responsibility cards</td>
</tr>
<tr>
<td>Ideas brainstorm</td>
<td>10 minutes</td>
<td>Students brainstorm on their design idea, using the feedback from the previous lesson.</td>
<td>Post-it notes</td>
</tr>
<tr>
<td>Prototype iteration</td>
<td>40 minutes*</td>
<td>Students iterate on their prototype design after receiving peer feedback. Students may choose to repeat the previous prototype, e.g. another Sketch buddy worksheet, if they had a sketch prototype. Alternatively, students may choose to use a different prototype for this iteration. Options include: Sketch, Role Play, Storyboard.</td>
<td>Sketch buddy Role-play Planner Storyboarding your role-play</td>
</tr>
<tr>
<td>Progress check-in</td>
<td>5 minutes</td>
<td>Students reflect on the completed tasks and consider their next step/s. This is also an opportunity for teacher or peer feedback.</td>
<td>Progress check-in worksheet</td>
</tr>
</tbody>
</table>

* Depending on prototype chosen, students may need an additional 1 or 2 lessons to work on their chosen prototype.
Module 0: Design thinking introduction

The first module of DT Applied Challenge: Design Thinking includes teamwork activities.

Teamwork is essential to the success of a design thinking project. Students will need to collaborate, share ideas, and problem-solve as a group.

This section helps students to develop their teamwork skills with icebreaker and team-building activities. The first three activities will help students to write a group contract. The scenario cards activity provides for rich discussion on how to work together as a team. The roles and responsibilities cards help students break up project work by assigning different jobs to team members.

This module includes the following activities:

- **Skittles starter**
  In this activity, students answer questions about themselves as a way of getting to know the members of their team.

- **Personality reflection**
  In this activity, students answer questions about how they work in a group, their organisational skills, their listening skills and their public speaking skills.

- **Y chart**
  In this activity, students identify what teamwork looks like, sounds like and feels like as they learn to work together as a team.

- **Group contract**
  In this activity, students develop and agree to a set of norms for the group.

- **Scenario cards**
  In this activity, students reflect and discuss common groupwork problems.

- **Progress check-in**
  In this activity, students record the activities that they have completed, write a plan for the next steps and reflect upon their progress with the project. Teachers provide feedback to students about meeting the learning intentions for this part of the project. **Success criteria/learning intentions for this module can be found below.**

**Learning intentions**

- Be able to develop understanding of how to work as a team.
- Be able to understand what good teamwork looks like, sounds like, feels like.
- Be able to problem solve example team scenarios.
- Be able to identify groupwork expectations.
- Be able to identify own personality traits.

**Success criteria**

- Demonstrate ability to work as a team to record a group contract.
- Demonstrate ability to reflect on example team scenario problems.
- Develop teamwork expectations.
- Develop a set of norms for groupwork.
- Demonstrate ability to reflect upon own personality traits.
- Demonstrate ability to work with team members.
Module 0: Activities

Skittles starter

Team members need to work together towards a common goal and communicate with each other. Part of working together includes understanding each other’s differences. This activity is designed to help student groups to become familiar with their fellow group or team members.

**You will need**
- Skittles starter worksheet
- Individual packets of Skittles
- a pencil.

**Step-by-step (20 minutes)**

1. Each team member will choose two different coloured Skittles.
2. Students use the worksheet to answer a question (based on skittle colour) in a round robin style.
3. Continue until each group member has answered two questions.

**Want more?**
Write an alternative question for a Skittle starter.

**Adapting this activity**
You may choose to limit the number of questions by instructing students to choose a set number of skittles or limit this activity by giving it a set time, such as 10 minutes.

**Keep the conversation going**
- Can you think of other ways to start a conversation with a new group or team?
- Why is it helpful to get to know each other when you are forming a new group or team?
- What other considerations should you make when you are forming a new group or team?

---

Teamwork

This activity encourages students to think about teamwork in an abstract way. Students complete the worksheet by either writing or drawing what teamwork looks like, sounds like and feels like. This activity is helpful to set up group expectations of cooperation and teamwork for project work.

**You will need**
- Teamwork worksheet
- a pencil.

**Step-by-step (20 minutes)**

1. Individually complete the Teamwork worksheet.
2. Together as a group discuss individual responses.
3. Identify the common features of teamwork from your individual responses.

**Want more?**
Complete the worksheet by identifying what teamwork does NOT look like, does NOT sound like and does NOT feel like. Compare the answers and discuss either as a group or whole class activity.

**Adapting this activity**
You may choose for students to complete this worksheet as a whole group task.
Personality reflection

Working on group projects together involves understanding your own personality traits and reflecting on how this impacts your ability to collaborate with your team members. This activity is designed to help groups of students become familiar with their own and each other’s personality traits.

You will need

- Personality reflection worksheet
- a pencil.

Step-by-step (20 minutes)

1. Individually complete the Personality reflection worksheet.
2. In a round robin style, each team member shares one thing they will bring to the team and one thing they do well.

Want more?

Students can be encouraged to use their completed personality reflections and look at the group responsibility/role cards and identify the responsibility/role they are most suited to.

Adapting this activity

Students can complete this activity in pairs, with one student asking the other student questions and recording their answers. Students then switch roles.

Developing a group contract

It is important that team members working together on a Design Thinking project can work collaboratively. In this activity students engage in a team building activity to develop a set of group norms and agree to a final group contract to identify the expectations of all group members.

You will need

- Group contract worksheet
- a pencil.

Focus questions

- How will our team communicate with each other?
- How do group members speak to each other?
- How do we make decisions?
- How do we reach a decision if everyone doesn’t agree?
- How do we make sure everyone contributes?
- When there is conflict, we agree to...?
- How will our team work together to meet deadlines?

Step-by-step (30 minutes)

1. Discuss the focus questions as a group.
2. Use your answers to complete each section of the Group contract worksheet.
3. Sign the final Group Contract.

Adapting this activity

You may adapt this activity for younger students by either removing the Task deadlines section or providing example answers for the focus questions.
# Module 0: Activities

## Group role and responsibility cards

The group role and responsibility cards assign tasks to students working together on projects. 2-3 students per group is recommended. If larger group sizes are used, a maximum of 6 students in a group is recommended. It is recommended that students remain as their allocated Responsibility for the duration of the project. Students assigned a Role, alternate these between activities.

### You will need

**Group role and responsibility cards**

### Step-by-step (10 minutes)

1. If there are 3 students in a group, randomly assign one Responsibility and one Role to each student.
2. If there are between 4 and 5 students in a group, first assign the three Responsibility cards, then a Role to each student. Left over Roles are then allocated to group members.
3. If there are 6 students in a group, each student will fill either one Responsibility or one Role.

### Wrap up (+ group role and responsibility cards)

Five sets of group role and responsibility cards are included in the DT Applied Challenge: Design Thinking teacher pack.

If you don’t have the pack, the cards are located in the worksheets and cards section at the back of this book or an online copy can be accessed at:

- [https://groklearning.com/a/resources/dt-applied-design-thinking-student/](https://groklearning.com/a/resources/dt-applied-design-thinking-student/)

## Scenario cards

This activity encourages students to think and reflect on typical scenarios that occur during teamwork activities. This activity can be completed in small groups, or as a whole class activity.

### You will need

**Scenario cards**

### Step-by-step (30 minutes)

1. Place the Scenario cards face down in a pile.
2. One student to pick up one Scenario card and read the scenario aloud.
3. Take turns discussing the answer you most agree with or an alternative response.
4. Repeat Steps 1 and 2 with another card.
5. Continue to repeat Steps 1 and 2 until there is approximately five minutes remaining of the allocated time.
6. Groups engage in discussion and reflect on what they have discovered about the typical scenarios that can cause problems during a group project.

### Want more?

- Write an alternative solution for each Scenario card.
- Develop and act out a role play for one Scenario card.
- Write an example scenario of a possible teamwork conflict.

<table>
<thead>
<tr>
<th>Role</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group Facilitator</strong></td>
<td>Helps with research and literature review</td>
</tr>
<tr>
<td><strong>Spokesperson</strong></td>
<td>Leads the discussions</td>
</tr>
<tr>
<td><strong>Challenger</strong></td>
<td>Challenges their peers’ thinking</td>
</tr>
<tr>
<td><strong>Resource Manager</strong></td>
<td>Ensures final product is in correct format and available for sharing</td>
</tr>
</tbody>
</table>

---

*Developed by: [Grok Academy](https://grokacademy.org)*
Adapting this activity

- You may choose to complete all or only some of the scenarios on the cards.

- The Scenario cards can be used as a whole class activity, by using one as a prompt and having students choose an answer. Assign different spots in the classroom for the different answers. Students move to the spot for their answer and engage in discussion with the other students at that spot. Repeat for different scenarios.

Wrap up (+ scenario cards)

Five sets of scenario cards are included in the DT Applied Challenge: Design Thinking teacher pack.

If you don’t have the pack, the cards are located in the worksheets and cards section at the back of this book or an online copy can be accessed at:

- https://groklearning.com/a/resources/dt-applied-design-thinking-student/
Module 0: Activities
Progress check-in

This activity allows students to reflect on the completed tasks and consider their next step/s at the end of each lesson or module. There is also an opportunity for teacher or peer feedback to be provided to the student based on the learning intentions and success criteria for each module of work. Success criteria/learning intention for this module can be found on page 13.

You will need
- Progress check-in worksheet
- a pencil.

Step-by-step (15 minutes)

1. Students record the activities that the group has started on the Progress check-in worksheet.
2. Students record completed activities by marking a X in the Completed? box.
3. Students record the next steps for the team for their group project in the Where to next box.
4. Students identify what has made them mad, sad and glad, during this section of the group project.

Focus questions
- What activities have you and your teammates worked on so far?
- Are there any activities that you need to finish?
- What activities are you going to complete next?
- What annoyed you during this group project?
- What is stopping you from performing at your best?
- What are some of the things that have disappointed you or that you wish could be improved?
- What makes you happy when you think about this project?
- What are you enjoying the most?

Adapting this activity
- Students may complete the Progress check-in worksheet at the end of each lesson or at the end of each module of work.
- Students may provide their peers with feedback by completing the success criteria part of the worksheet.

Feedback

1. Say what you like about the idea
2. Be honest (but kind) about any problems you see with the idea
3. Be constructive and suggest ways to improve or build on the idea

Wrap up (+ classroom poster)

To assist students with peer feedback, use the Feedback poster included in the DT Applied Challenge: Design Thinking Mix In Pack.

If you don’t have the pack but would like to print your own poster you can access it at:
- https://groklearning.com/a/resources/dt-applied-design-thinking-student/

Content is licensed under a Creative Commons Attribution 4.0 International license.

Supported by:
- Accenture
- AWS
- Commonwealth Bank
- Grok Academy
Module 1: Investigating and empathising

The second module of DT Applied Challenge: Design Thinking includes empathy and investigation activities.

Empathy, the ability to identify and understand the feelings of another, allows designers to see the world as the user sees it. Empathy requires investigating users to determine their thoughts and feelings. It means putting aside your own personal ideas, biases, and beliefs. Empathy is the key to designing an innovative solution that will meet the user’s needs.

This module includes the following activities:

- **Ideas brainstorm, headline and vote**
  In this activity, students work both independently and as a group to brainstorm ideas for the problem. Students individually vote on their favourite idea and the idea most likely to succeed to help narrow down design ideas for a specific problem.

- **Problem statement**
  In this activity, students identify a user need and write an accompanying problem statement.

- **Iceberg**
  In this activity, students consider the thoughts, feelings, behaviours and motivations of a user that may be hidden beneath the surface.

- **Interviews and surveys**
  In this activity, students identify users and develop interview and/or survey questions.

- **Observation**
  In this activity, students identify users or key stakeholders and record notes during observation of a user/key stakeholder.

- **Progress check-in (refer to page 18)**
  In this activity, students record the activities that they have completed, write a plan for the next steps and reflect upon their progress with the project. Teachers provide feedback to students about meeting the learning intentions for this part of the project. Success criteria/learning intentions for this module can be found below.

### Learning intentions

- Be able to brainstorm and build upon ideas.
- Be able to identify user needs.
- Be able to develop interview questions and survey questions.
- Be able to accurately identify users and/or key stakeholders for a specific problem.

### Success criteria

- Demonstrate ability to identify needs for a user/s.
- Demonstrate ability to identify users and/or key stakeholders for a specific problem.
- Demonstrate ability to write a problem statement for a user/s.
- Conduct interviews with user/s to gather feedback.
- Create appropriate survey questions and analyse survey data from user/s to gather feedback.
- Conduct observations with user/s to gather feedback.
**Module 1: Activities**

**Problem statement**

A problem statement is a description of the problem that you are trying to solve. It should be focused on the user and consider the 4 W’s - Who, What, Where, Why.

At the start of a project, a problem statement may be quite broad. If the topic is broad, students will need to go through multiple iterations of this activity. As you learn more about user wants and needs, you can refine the problem statement to be more specific. Students should revisit this problem statement activity after collecting user feedback to refine their problem statement.

This activity can be completed individually or as a team.

**You will need**

- Problem statement worksheet
- a pencil.

**Step-by-step (20 minutes)**

1. Answer each of the focus questions and record your notes in the worksheet.
2. Use your answers to write a problem statement with the sentence starter How might we...

**What makes a good problem statement?**

- It focuses on the user and their needs/pain points.
- It is broad enough to allow for creativity and many potential solutions.
- There is one user need per problem statement.
- It should not assume or include a specific solution.

**Focus questions**

- Who is experiencing the problem?
- What exactly is the problem the user or users are facing?
- What is the user trying to do?
- What is standing in the user’s way?
- Where is the problem experienced by people? Is it online, offline, in a specific geographical location, or somewhere else?
- Why is it important to solve this problem?

**Glossary**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain point</td>
<td>any problem that frequently frustrates or annoys your user or stops them from achieving their goals.</td>
</tr>
<tr>
<td>Problem statement</td>
<td>a statement of a current issue or problem you are investigating in order to find a solution for the user.</td>
</tr>
<tr>
<td>User</td>
<td>the person or group of people who will use the product or service.</td>
</tr>
</tbody>
</table>

**Adapting this activity**

- Younger students may benefit from being provided with a completed problem statement and then answering the focus questions.
- Younger or less experienced students should start with a more specific topic/problem from which to write their first problem statement. They may need one further opportunity to iterate and refine their problem statement.
- Older or more experienced students could start from a broader topic/problem to write their first problem statement but may need multiple opportunities to iterate and refine subsequent problem statements.
- An example of a scaffolded problem for younger students can be found on page 5.
Brainstorming is one of the most common design thinking techniques. It is useful at multiple points over the course of a project. The goal of a brainstorming session is to record as many ideas as possible, not considering limits. After the brainstorming session, groups work to pinpoint which ideas they will progress.

The simplest way to run a brainstorming session, is to write the problem statement in the middle of a large board/piece of paper, and have students record ideas on individual post-it notes. See the adaptation section for alternate ways to add more structure to a brainstorm.

You will need
- Large space (whiteboard or blank wall or A2 size paper)
- Post-it notes
- Ideas brainstorm poster
- Voting cards
- a pencil.

Step-by-step

Ideas brainstorm (20 minutes)
1. Together as a group complete an ideas brainstorm.
   See adapting this activity for alternate ways to brainstorm.

Headline (20 minutes)
2. As a group, compare the ideas to find HEADLINES or a CATEGORY that multiple ideas fit into.
3. Write each HEADLINE onto a post-it note and put this on a wall/the floor.
4. Arrange ideas by moving the post-it notes under the headlines.

Vote (10 minutes)
5. Students to consider different ideas using the Focus Questions
6. Each team member completes a voting card, one vote for:
   - Their favourite idea
   - The idea most likely to succeed
7. Voting cards are collected and votes tallied.
8. Students discuss the winning votes and decide which one to move forward with.

Focus questions
- What is the cost involved in the idea?
- How easy is it to produce or create the product/service?
- What are the time requirements to produce the product/service?
- Do we know how to make the product/service? If no, can we find out?

Adapting this activity

Yes... and
Students are invited to share one idea in turn. Group members ADD to this idea, using the sentence starter “Yes, and” or “What if we add this”. New ideas are recorded on a different coloured post-it note and given to the student who had the original idea. Continue adding to ideas until each group member has been able to share their 2 best ideas.

Five whys?
Students are encouraged to ask why over and over, as they consider their problem. Students record any ideas as they ask the question “why”.

8 in 8
Students are encouraged to think of eight ideas in eight minutes. Students can record their idea in words or as a sketch.
Module 1: Activities

Brainwriting
Students write down or draw an idea onto a post-it note. Once everyone is finished, each student passes their note to the right. The person to the right adds something to each idea. Continue passing until each idea has made a full lap around the circle.

Figure storming
Choose a well-known person (maybe an actor or other influential person) and imagine how they would approach the problem. Write down your ideas onto post-it notes.

Individual, then group brainstorm
Students individually brainstorm ideas. Then once all students have recorded their ideas, the group moves to the headline activity. This is a useful way to encourage all students to contribute ideas.

Wrap up (+ classroom poster)
To reinforce the outcomes from this activity, use the Brainstorming poster included in the DT Applied Challenge: Design Thinking teacher pack. If you don’t have the pack but would like to print your own poster you can access it at:
- https://groklearning.com/a/resources/dt-applied-design-thinking-student/

Brainstorming rules
No judging of ANY ideas
Write down LOTS of ideas
Be CRAZY with your ideas
There are NO limits
BUILD on team ideas
One idea = ONE post-it note
Stay FOCUSED on the problem

Iceberg
This activity assists students to develop a deeper understanding of the user. Although we can tell a lot from what a person does or says, what we really want to uncover are the things below the surface. This worksheet encourages students to consider the thoughts, feelings, behaviours and motivations of a user that may be hidden beneath the surface.

You will need
- Iceberg worksheet
- a pencil.

Step-by-step (20 minutes)

1. Answer each of the focus questions and record your notes in the worksheet.
2. Use your answers to write a problem statement with the sentence starter How might we...

Focus questions
- Who is experiencing the problem?
- What exactly is the problem the user is facing?
- What is the user’s goal?
- What is standing in the user’s way?
- Where is the problem experienced by people? Is it online, offline, in a specific geographical location, or somewhere else?
- Why is it important to solve this problem?

Brainstorming

- What does the user tell you about the product or service?
- How is the user engaging with the product or service?
- What problems with product or service do you observe the user experiencing?
- Demographic information about the user (e.g. their age, their physical characteristics, language, education/occupation)
- What motivates the user?
- What frustrates the user?
- What goals does the user have?
- What are the user’s beliefs? What is the user thinking?
- Why are they using the product or service? Why aren’t they using the product or service?
- What are their likes and dislikes of the product or service?
User interviews

This activity assists students to plan and conduct an interview with users to collect their data. The two important considerations are user identification and deciding the questions to be asked. The goal of user interviews is to deeply understand the user’s pain points, needs and motivations. It is recommended this activity be completed as both individual and group work.

You will need

- User interview worksheet
- a pencil

Step-by-step (30 minutes)

1. Individually brainstorm questions. Record each question on an individual post-it note.
2. Share questions with group and build on each other’s ideas to develop more meaningful questions.
3. Identify any themes or subject areas for the questions and group the different questions under each subject/theme. Remove any duplicate questions.
4. Reduce the number of questions to between 5 and 10 questions.
5. Decide the order of questions. Consider ordering questions to allow the conversation to flow naturally.

It is important to leave room to ask open questions such as "why?", “tell me about _____?”, and “how do you feel about _____.”

Focus questions

- Who are the key groups of people who experience the problem or who will use the product/service?
- Who else can you think of how might be involved? Are there other people you need to interview? For example, a student may use a product but their parent or caregiver will pay for the subscription. You would need to know how both the student and parent/caregiver feel about it.
- What questions will give you the answers you need to understand the user and their problems?

Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain point</td>
<td>any problem that frequently frustrates or annoys your user or stops them from achieving their goals.</td>
</tr>
<tr>
<td>Problem statement</td>
<td>A statement of a current issue or problem of a product or service that needs to be improved/ resolved for the user.</td>
</tr>
<tr>
<td>User</td>
<td>the person or group of people who will use the product or service.</td>
</tr>
</tbody>
</table>

Adapting this activity

- Students consider why it is helpful to rewrite the problem as a human-centred problem statement.
- Students consider other user needs. This could include cost, availability or accessibility.
Module 1: Activities

Surveys

This activity assists students to plan and create a survey to collect user data. Two important considerations are user identification and deciding the questions to be asked. It is important to make your survey engaging, easy, and enjoyable. Questions need to be written as simply as possible to ensure they are understood by the respondent.

You will need
- Survey planning worksheet
- a pencil.

Step-by-step
Follow each step in the Survey planning worksheet.

Tips for creating a survey
1. Identify the questions you are trying to answer.
2. What barriers are you trying to identify?
3. Keep your questionnaire short. Either 8 -12 questions or able to be completed in 5 minutes.
4. Keep text brief and focused.
5. Short and clear questions. ONE question should ask ONE thing.
6. If a question is multiple choice, make sure you include an “I prefer not to answer” or “I’m not sure” option.
7. For a ranked question use a vertical format for responses, for example:
   i. Strongly agree
   ii. Slightly agree
   iii. Neither agree nor disagree
   iv. Slightly disagree
   v. Strongly disagree

Online resources
Students can use an online survey tool to complete a web survey with users. Scan the QR code to the left to view some suggested online survey websites.

Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed question</td>
<td>usually involve a yes/no or one word answer.</td>
</tr>
<tr>
<td>Open-ended question</td>
<td>questions that cannot be answered with a simple ‘yes’ or ‘no’ and require the person answering to give a detailed explanation.</td>
</tr>
<tr>
<td>Survey</td>
<td>a list of questions aimed at getting specific data from users.</td>
</tr>
<tr>
<td>User</td>
<td>the person or group of people who will use the product or service.</td>
</tr>
</tbody>
</table>

Quantitative vs qualitative

Quantitative research asks standardised questions and often includes just closed questions. Qualitative research provides more detailed and individualised responses to open-ended questions. Design thinking projects usually need qualitative research as you empathise with the users and try to identify their pain points.

Closed questions usually involve a yes/no response. Open questions are the most useful in interviews as it allows the interviewee to provide longer answers and explanations of what they are experiencing. Following up a closed question with a why, or could you tell me more, is a great way to get more intel from your interviewee.
Observations

Observing users in their world provides the opportunity to be empathetic, helps to understand user experiences, may help find user pain points and gathers honest feedback about any suggested ideas or solutions. This activity assists students to identify who they will observe, where and when, and provides a worksheet to help guide the recording of notes.

An observation could take place at the start of a project to understand user behaviours and identify pain points. Or you could conduct an observation later in the project to see how users interact with a prototype or solution you have designed.

You will need

- Observation worksheet
- a pencil.

Step-by-step (30 minutes)

1. Identify a user or key stakeholder to observe.
2. Arrange an observation day/time, ideally when the user will be using the product or service of your key idea.
3. Ask permission to take photographs or record video.
4. Complete the observation, recording your observations on the worksheet. Pay particular attention to what your user is doing, how they interact with others, and their body language.

Focus questions

- Who will you observe? Do you need to observe more than one user?
- Where will you be during the observation? It is important that your user can be as ‘natural’ as possible. Try to find a way to observe in a non-intrusive or obvious way.
- When is the best time is to conduct an observation? An observation in the morning may differ to the afternoon.
- How many observations do you need to do?
- Do you need to ask permission to photograph or video the observation?

Glossary

- **Empathy** the ability to identify and understand the feelings of another.
- **Observation** closely observe or monitor something or someone.
- **Pain point** any problem that frequently frustrates or annoys your user, or stops them from achieving their goals.
- **Stakeholder** a person with an interest or concern in something.
- **User** the person or group of people who will use the product or service.

Keep the conversation going

- Can you think of a different way to record data and/or information about your users?
- What data do you expect to get back from your observation?
- Would it be beneficial to conduct another observation of your user at a different time and/or in a different environment? Why?

Wrap up (+ classroom poster)

To reinforce the outcomes from this activity, use the Empathy poster included in the Design Thinking Mix-in Pack. If you don’t have the pack but would like to print your own poster you can access it at:

- https://groklearning.com/a/resources/dt-applied-design-thinking-student/
Module 2: Defining the problem

The third module of the DT Applied Challenge: Design Thinking centres on defining the problem.

After data collection, the next step is to collate and analyse it. The aim is to uncover key themes or patterns and try to pinpoint where you might work to have the greatest impact. This can be achieved by creating personas, considering scenarios and recording what the user is doing, thinking, saying and feeling. Personas represent the main types of user you have identified, especially their needs and problems. The persona scenario and user journey are methods to develop an in-depth look at the user, their pain points and how they experience them.

This module includes the following activities:

- **Ideas brainstorm, headline and vote (refer to page 21 and 22)**
  In this activity, students brainstorm ideas for the problem, individually vote on their favourite idea and the idea most likely to succeed to help narrow down design ideas for a specific problem.

- **Pain points**
  In this activity, students identify information about their user, and use this to define two pain points. This activity includes analysing the pain points and writing a How might we... statement.

- **Persona template**
  In this activity, students use their research to identify key features of their persona, including a description, their motivations, goals and pain points.

- **Persona scenario**
  In this activity, students consider the Who, What, When, Where and Why for their user to help define a persona and their scenario.

- **User journey**
  In this activity, students identify what their persona is doing over a period, and identify what they are doing, thinking & saying, and feeling.

- **Progress check-in (refer to page 18)**
  In this activity, students record the activities that they have completed, write a plan for the next steps and reflect upon their progress with the project. Teachers provide feedback to students about meeting the learning intentions for this part of the project. Success criteria/learning intentions for this module can be found below.

---

**Learning intentions**

- Be able to brainstorm and build upon ideas.
- Be able to give and receive feedback to improve design ideas.
- Be able to refine and improve on original design ideas.
- Be able to produce a persona based on research into user.
- Be able to identify pain points for the user.
- Be able to accurately identify a persona’s behaviour, feelings and thoughts.

---

**Success criteria**

- Demonstrate ability to provide constructive feedback to their peers.
- Demonstrate ability to accept constructive feedback from peers.
- Demonstrate ability to identify pain points for a user/s.
- Demonstrate ability to identify behaviour, thoughts and feelings of a persona.
- Demonstrate ability to produce a persona based on research into user.
Module 2: Activities

Pain points

In this activity, students identify their user, the user’s two main problems, and further analyse these pain points.

You will need
- Pain points worksheet
- a pencil.

Step-by-step (30 minutes)

1. Identify user attributes, their age, values and occupation (optional).
2. Record two main problems for the user.
3. Add details about problem 1 in the space Pain Point 1.
4. Add details about problem 2 in the space Pain Point 2.
5. Answer the questions Why is it so painful? and How might we.....? for both pain points.

How do you determine a user’s pain points?

- Analyse data collected from interviews, surveys and observations.
- Watch people engage with prototypes.
- Ask open ended questions.

Focus questions

- Who is the user? There is usually one user per user scenario.

How are the pain points for the user?
When the user uses the playground at lunch
The main problems are the field is taken by other students there are no alternative play spaces at school, sometimes forgets sports equipment e.g. soccer ball

Pain point 1
The problem is the field is taken by other students Why is it so painful? There are no other suitable space, to play sports at the school
How might we...? Make sure there is always available space to play sports during lunch

Pain point 2
The problem is Ashima sometimes forgets to bring sports equipment to school Why is it so painful? Without the right equipment Ashima and her friends can’t play sport during lunch
How might we...? Ensure that sports equipment is always available to students at lunch

Glossary

Open-ended questions questions that cannot be answered with a simple ‘yes’ or ‘no’ and require the person answering to give a detailed explanation.

Pain point any problem that frequently frustrates or annoys your user or stops them from achieving their goals.

Persona a fictional character, based on user research, that represents one main type of user, including their needs and problems.

Prototype a first or preliminary version of a product or service that is used to share your design idea/s and seek feedback from users.

User the person or group of people who will use the product or service.

Adapting this activity

- Students may complete this activity individually or as a group activity.
- If groups have more than one typical user, students can complete this activity for each user individually or in pairs. Following this, students should compare the pain point worksheets, particularly the pain points, and see if there are similarities or themes. The goal should be to identify one main pain point to focus on.
A thin thing noticed is that two of our personas, Ashima and Frankie, have a problem with the playground space at the school.

Oh yeah! So, I think that's the problem we need to solve!

### Module 2: Activities

**Persona template**

In this activity, students create the persona of a typical user. A persona gives a snapshot of a particular type of user, their personal characteristics, their likes and dislikes, their pain points and motivations. A persona is a fictional character but is based on your research.

#### You will need

- Persona template worksheet
- A pencil.

#### Step-by-step (30 minutes)

1. Brainstorm typical users of your product.
2. Choose one user and complete their details in the **Profile** section, including age, gender, education and occupation (optional).
3. Draw your persona in the box underneath the **Profile** box.
4. Include a **Quote** or something your persona would say about the product or service.
5. Complete the **Description** section of the worksheet for this persona.
6. Complete the **Motivations** section of the worksheet for this persona.
7. Complete the **Goals** section of the worksheet for this persona.
8. Complete the **Pain points (frustrations)** section of the worksheet for this persona.

#### Focus questions

- Who is the persona, what is their age, gender, education and occupation (optional)?
- Describe the persona.
- What is the persona's motivation/s for using the product or service?
- What is the persona's goal?
- What is the problem or problems the user is facing?
- Why does the user need the product or service?

#### Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>A reason or reasons for acting or behaving in a particular way.</td>
</tr>
<tr>
<td>Pain point</td>
<td>Any problem that frequently frustrates or annoys your user or stops them from achieving their goals.</td>
</tr>
<tr>
<td>Persona</td>
<td>A fictional character, based on user research, that represents one main type of user, including their needs and problems.</td>
</tr>
<tr>
<td>User</td>
<td>The person or group of people who will use the product or service.</td>
</tr>
</tbody>
</table>

#### Adapting this activity

- Students may complete this activity individually or as a group activity.
- Students may need to complete more than one persona if they have more than one typical user for their product or service. Following this, students should compare the persona templates, particularly the pain point or frustrations section, and see if there are similarities or themes. The goal should be to identify one main pain point to focus on.
Persona scenario

This activity typically follows the persona creation activity. Students develop a scenario during which the persona would use the product or service. It is important to focus on the persona’s goals, their need for the product or service, and where the persona will use the product or service.

You will need
- Persona scenario worksheet
- a pencil.

Step-by-step (20 minutes)

1. Students record a sentence about who the persona is.
2. Record the persona’s goal in the what section.
3. Record when the persona will use the product or service.
4. Record where the persona will use the product or service.
5. Record why the persona needs the product or service.

Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persona</td>
<td>a fictional character, based on user research, that represents one main type of user, including their needs and problems.</td>
</tr>
<tr>
<td>Scenario</td>
<td>descriptive or pictorial stories of the user or persona.</td>
</tr>
<tr>
<td>Pain point</td>
<td>any problem that frequently frustrates or annoys your user or stops them from achieving their goals.</td>
</tr>
</tbody>
</table>

Adapting this activity

- Students may complete this activity individually or as a group activity.
- Students may need to complete a persona scenario for each of their personas. Student groups can be split into pairs, with each pair completing a persona scenario.
Module 2: Activities

User journey

A user journey identifies the key moments across a timeline and records how that customer feels, their thoughts and actions during each interaction. In this activity students identify the stages for the product or service from birth to final use. Students then consider the process for the user of needing or wanting a product/service, to engaging with and using it.

You will need

- User journey worksheet
- a pencil.

Step-by-step (30 minutes)

1. Draw your persona in the top left corner.
2. Complete the information about the scenario, when and where is the scenario occurring.
3. Record the goals and expectations of the persona.
4. Record the timeline for the persona, this could be when they first need or want the product, through to engaging with it. Include the day/time/location.
5. Describe the persona’s actions for each part of the timeline.
6. Record what the persona is saying and doing for each part of the timeline.
7. Identify the persona’s feelings for each part of the timeline using emojis to represent sad, happy or neutral.

Focus questions

- What are the key moments for the user on their journey with the product/service?
- What is the user doing during the journey?
- What is the user thinking during the journey?
- How is the user feeling during the journey?

Glossary

- Emoji: a small icon used to represent an emotion, symbol or object.
- Persona: a fictional character, based on user research, that represents one main type of user, including their needs and problems.
- User: the person or group of people who will use the product or service.

Keep the conversation going

- Can you think of a different user for this product/service. What would their journey look like?
- Did you identify any barriers to your user for this product/service? If yes, what were the barriers? What steps could be taken to remove these barriers?
- Was your user unhappy or confused during part of their journey with the product/service? Why? What steps could be taken to ensure your user is happy/not confused with the product/service?
Prototypes are a physical way to record design ideas. A prototype is a scaled-down version of the product. The reason to create a prototype is to have something functional, something the user can see and interact with. Prototypes make ideas tangible so they can be tested and refined. Making things tangible allows for quick learning about the product/service. It is expected that there will be problems or flaws with your design when you prototype it. Prototypes help work out what does and doesn’t work.

This module includes the following activities:

- **Ideas brainstorm, headline and vote (refer to page 21 and 22)**
  In this activity, students brainstorm ideas for the problem, individually vote on their favourite idea and the idea most likely to succeed to help narrow down design ideas for a specific problem.

- **Impact effort matrix**
  In this activity, students rate the effectiveness or impact, on the user, of different ideas from low to high and against the resources or effort required.

- **User story**
  In this activity, students write a user story using a template, identify their idea, name their idea and answer three key questions to identify why it may fail, its impact on the user and how success can be measured.

- **Prototype development planner**
  In this activity, students use a worksheet to guide development of a prototype to improve their idea before creation.

- **Role plays**
  In this activity students create a scene for a user to explore a prototype, including worksheet to assist with planning dialogue. There are two worksheets for this activity to assist with planning.

- **Sketch buddy**
  In this activity, students identify one prototype idea, sketch it, and using feedback from peers refine and improve the sketch of the prototype.

- **Feedback**
  In this activity students give each other kind, honest and constructive feedback. Includes two accompanying worksheets.

- **Prototype reflection evaluation**
  In this activity, students answer four key questions to help them reflect and evaluate whether their chosen prototype addressed their user’s problems, met their expectations and if there is anything to change.

- **Progress check-in (refer to page 18)**
  In this activity, students record the activities that they have completed, write a plan for the next steps and reflect upon their progress with the project. Teachers provide feedback to students about meeting the learning intentions for this part of the project. **Success criteria/learning intentions for this module can be found below.**

### Learning intentions

- Be able to identify user viewpoints.
- Be able to identify pain points for the user.
- Be able to develop a series of questions to interview a user or key stakeholder.
- Be able to develop survey questions to gain insight into user or key stakeholders.
- Be able to practice understanding.
- Be able to give and receive constructive feedback.

### Success criteria

- Demonstrate curiosity about others’ viewpoints.
- Demonstrate ability to develop useful, and interesting questions, taking into consideration what information is needed for the project.
- Demonstrate ability to develop survey questions, taking into consideration what data is needed for the project.
- Show evidence of design ideas that they have improved and adapted after feedback in an iterative way.
- Demonstrate ability to provide a peer feedback that is relevant, useful and in a manner that is kind.
- Demonstrate ability to accept feedback from others and incorporate these ideas into their work.
Module 3: Activities

Impact effort matrix

In this activity, students prioritise their ideas after a brainstorming session. Students are encouraged to rate the effectiveness or impact on the user of different ideas from low to high, while also rating ideas against the resources or effort required. This activity allows students to consider constraints that could impact on their solution design.

You will need

- Impact effort matrix worksheet
- post-it notes
- a pencil.

Step-by-step (20 minutes)

1. Write each idea from the brainstorming session on a post-it note.
2. Team members to place the post-it notes on the chart where they fit best.
3. As a team, discuss each idea individually. Use the focus questions to decide where ideas are best placed on the matrix. Ideas are rated from low to high for user impact and effort/resource requirements.
4. Reposition ideas on the graph as needed.

Focus questions

- What will be the impact on the user?
- Will it help the user with their goal?
- Will it solve a frustration or pain point for the user?
- What resources will be needed to create this product?
- Are there any constraints?
- Do you need financial resources for this idea?
- Do you need to purchase materials?
- Are there technical or specialist resources?
- Will you need to find someone to create a part of your solution?

Glossary

Brainstorming  a method design teams use to generate ideas to solve problems.

Constraints  anything that might stop us from moving forward with a particular idea. For example, not having the necessary tools, the necessary skills, or enough time.

Pain point  any problem that frequently frustrates or annoys your user or stops them from achieving their goals.

User  the person or group of people who will use the product or service.

Adapting this activity

- Students may complete this activity individually or as a group activity.
- This activity can be followed by a peer feedback activity, with groups considering another group’s placement of ideas on the matrix.
User story

In this activity, students write a user story and use this as a foundation to scaffold their thinking about a possible solution. This activity assists students to consider the impact for the user and how to measure success of a product/service for their user.

You will need

- User story worksheet
- a pencil.

Step-by-step (30 minutes)

1. Students write a user story using the format: A user <describe the user’s characteristics> has <goal of user> so that <some reason>. E.g. The year 6 student wants a way to record how many books they read so that they can complete their 20-book summer reading challenge.
2. Draw or summarise an idea to help the user meet their goal.
3. Record a name for your idea.
4. Think of the 4 main key functions or ways the product/service will work and write them each down separately.
5. Answer the question – How might it fail?
6. Identify the impact for the user, using the sentence starter It will help the user because...
7. Answer the question – How might we measure success?, using the sentence starter The prototype will be successful if...

Focus questions

- Who is your main user?
- What is a catchy name for your product/service?
- What are the main functions of your product/service?
- How might your product/service fail?
- How might your product/service NOT help your user achieve their goal?
- How will you know that the product/service has helped your user achieve their goal?
- How will you know if the product/service has removed a frustration or pain point for your user?
- How will you know if the product/service is successful for your user?
- What makes a product/service successful for your user?

Glossary

- **Pain point**: any problem that frequently frustrates or annoys your user or stops them from achieving their goals.
- **Prototype**: a first or preliminary version of a product or service that is used to share your design idea/s and seek feedback from users.
- **User**: the person or group of people who will use the product or service.

Adapting this activity

- Students may complete this activity individually or as a group activity.
- Often there will be more than one typical user in a design thinking project, so students may wish to split their group into 2 or 3 smaller groups depending on group size. Each smaller group works on one user and completes the user story worksheet for their user.
Module 3 Activities
Prototype development planner

This activity is recommended to be completed after the team has brainstormed ideas and voted on the idea most likely to succeed (Ideas brainstorm, headline and vote pp. 21 and 22). In this activity students use a worksheet to guide development of a prototype to improve their idea before creation.

You will need
- Prototype development planner worksheet
- a pencil.

Step-by-step (30 minutes)

1. Students write a user story using the format: A user <describe the user’s characteristics> has <goal of user> so that <some reason>.
2. Write a few words to describe their chosen prototype (Different prototypes are detailed on page 35).
3. Draw where the prototype will be used.
4. Record who will test the prototype.
5. Record what tools, equipment and skills are needed to create the prototype.
6. Decide if you need to seek permission to test the prototype with a user.
7. Draw a labelled diagram of the prototype (page 37).
8. Record each step for creating the prototype.

Focus questions
- Who will use the prototype?
- What elements make up the prototype?
- Where will the prototype be used?
- When might problems occur with the prototype?
- Why would the problem/s happen?
- How could the problem be resolved?

Glossary
Persona a fictional character, based on user research, that represents one main type of user, including their needs and problems.
Prototype a first or preliminary version of a product or service that is used to share your design idea/s and seek feedback from users.

Adapting this activity
It is useful to have more than one prototype during a design thinking project, so students may wish to split their group into 2 or 3 smaller groups depending on group size. Each smaller group works on one prototype and completes the prototype development planner for their idea.
Types of prototypes

There are many ways to prototype. A prototype is the first or preliminary version of a product or service. It is a way to share your idea with other people to get feedback. You can prototype just about anything. Below are different prototype types.

**Create a storyboard**

Visualize the complete experience of your idea over time through a series of images, sketches, cartoons or even just text blocks. Stick figures work well. Use Post-it Notes and the Storyboard worksheet to create the storyboard so you can rearrange the order of your story.

**Write a headline**

Write a headline from a newspaper article reporting about your idea.

**Create a model**

Put together a simple 3-D model of your idea. Use paper, cardboard, LEGO or whatever else you can find.

**Write a letter**

Write a mock letter to be sent to parents that describes your idea.

**Sketch your idea**

Do a sketch on paper of your idea. Use the Sketch buddy worksheet to assist with edits.

**Create an ad**

Create an advertisement that promotes the best parts of your idea.

**Create a role-play**

Act out the experience of your idea. Play the different roles of the users that would use your idea and uncover questions they might ask. Use the Role-play planning worksheet to help plan out your idea.

**Create a mock-up or wireframe**

Build mock-ups of digital tools and websites with simple sketches of screens on paper. Use the Wireframe worksheet to assist with this type of prototype.
Module 3: Activities

Role-plays

This activity assists students to plan and act out a role-play. It can be applied to both tangible (products) and intangible (service) solutions. Role-playing allows for multiple scenarios to be acted out and for many ideas to be quickly generated. It can also help with creativity. Role-plays can be used to test multiple concepts and to evaluate which is best.

You will need

- Role-play planning worksheet
- Storyboarding your role-play worksheet
- a pencil.

Step-by-step (40 minutes)

1. Identify the situation to be investigated. What are you going to test?
2. Determine roles involved and props, if necessary.
3. Consider the location of the role-play and the key takeaway messages for the audience.
4. Create a story and a script using the Storyboarding role-play worksheet.
5. Assign characters to team members.
6. Perform the role play.

Focus questions

- Who are the key groups of people who use this product/service?
- Who are the main characters in your role-play?
- How does this role-play record the problem for the user?
- Who else is involved in the product/service? This could be other people involved in making the product or sometimes the person paying for the product/service is separate to the user.
- What relevant information do we have about users?
- How would the user act in a particular scenario?

Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role-play</td>
<td>to act out or perform the part of a person or character in a particular scenario.</td>
</tr>
<tr>
<td>Scenario</td>
<td>descriptive or pictorial stories of the user or persona.</td>
</tr>
<tr>
<td>User</td>
<td>the person or group of people who will use the product or service.</td>
</tr>
</tbody>
</table>

Adapting this activity

The key to the role-play is reflecting on it; for both students performing the role-play and any observing it. Consider groups performing their role-play to allow for peer feedback. This could be in front of another group or the whole class.

Keep the conversation going

- As a group discuss the role-play. Can you think of ways to improve the product/service?
- Complete another brainstorming activity after getting feedback from the role-play.
- Complete the role-play again, except instead of a typical user, have an extreme character? Extreme characters can be useful to help uncover problems and relevant issues that affect regular users, as it allows the team to think divergently. Extreme users can include a secret service agent, the Pope, or a gangster.

Role-play sheet

Summary of your design idea - product/solution

Characters/roles

Dialogue between characters

Props

Location of the role-play

What are the key takeaways for the audience?

Storyboarding your role-play

Characters:

1. Consider the different scenes or parts to your role-play
2. Illustrate how your role-play will run by doing frame by frame breakdown
3. Include dialogue between the characters for each scene or part of the role-play
Focus questions

- How could the design be simplified?
- How does this design solve the problem?
- What is the most important feature or function of the design idea?
- What feature or function could be removed, without impacting on the function of the design idea?
- What feature or function could be added to improve the function of the design idea?

Glossary

Sketch
a rough or unfinished drawing.

User
the person or group of people who will use the product or service.

Step-by-step (30 minutes)

1. Decide on a design idea and sketch* your first idea
2. Ask someone to review your sketch and give you feedback (use Peer feedback worksheet).
3. Use this feedback to focus on 1 part of your sketch* and do another sketch (p.2 Sketch buddy worksheet)
4. Repeat steps 3 and 4
5. Use the feedback to create a final design of your sketch* (p.3 Sketch buddy worksheet)
6. Discuss with a partner what you discovered by doing this sketch activity. Record this on your worksheet.

Sketch buddy

This activity assists students to identify one idea for a prototype and sketch it, using feedback from peers to refine and improve the sketch. Students will need opportunity to seek feedback to help them refocus their sketch.

You will need

- Sketch buddy worksheet
- a pencil.

Keep the conversation going

- Reflect on the sketch activity and identify what your group discovered.
- Consider a way to use the sketch and create a tangible prototype of the design. For example, could you create a 3-D model of your idea using LEGO/playdough/cardboard?

* Maximum time for each sketch is 4 minutes. This part of the activity should be done quickly.
Module 3: Activities

Feedback

This activity assists students to provide feedback on an idea, a prototype or a pitch. Adopting feedback approaches can positively impact the classroom culture and assist students to achieve success in their learning. Two powerful skills for students, that are particularly useful during design thinking processes, are to give a peer constructive feedback and to be able to accept constructive feedback. The goal of this activity is to scaffold peer feedback that is kind, honest and constructive.

You will need

- Feedback or Peer feedback worksheet (choose one)
- a pencil.

Step-by-step (20 minutes)

1. Determine who you are giving feedback to.
2. Use the focus questions to complete either Feedback or Peer feedback for the idea, prototype or pitch.

Focus questions

Feedback

- Glow – what is something that 
  glows or is great about the idea, prototype or pitch?
- Oh no – what is something that is wrong (oh no!) or may cause failure for this idea, prototype or pitch?
- Grow – how can you grow or improve this idea, prototype or pitch?

Peer feedback

- What did you like about the prototype?
- What do you wish could be changed or added to the prototype?
- Answer the question What if.......

Glossary

Constructive feedback giving feedback about improvements on an idea to re-design a product or solution, without criticizing the person.

Prototype a first or preliminary version of a product or service that is used to share your design idea/s and seek feedback from users.

Adapting this activity

- Students can present their idea to a whole class and receive feedback from multiple peers.
- Students can provide individual feedback to a student in a different group or a student within their project group.

Wrap up (+ classroom poster)

To reinforce the outcomes from this activity, use the Feedback poster included in the Design Thinking Mix-in Pack. If you don’t have the pack but would like to print your own poster you can access it at

This activity assists students to evaluate their prototype using a series of focus questions. Students can complete this activity individually or as a small group.

**You will need**
- Prototype reflection evaluation worksheet
- a pencil.

**Step-by-step (30 minutes)**
1. After a user engages with your prototype, answer each question.
2. Answer each focus question and record your answers.

**Focus questions**
- **What** did you test? Describe the prototype being explored by the user.
- **What** did you expect? Identify the key things being tested by this prototype.
- **How** well did the prototype work? Did it work the way you expected?
- **What** was the goal/s for this prototype? Was it achieved?
- **What** did your research show?
- **What** did your research show? Did the user like or dislike the prototype?
- **What** exactly did the user like or dislike about the prototype?
- **What**, if any, pain points did the user experience when they used the prototype? Describe the pain point.
- **What** would you change about the prototype?
- **What** would you add to the prototype?
- **What** could the next prototype be?

**Glossary**
- **Pain point** any problem that frequently frustrates or annoys your user or stops them from achieving their goals.
- **Prototype** a first or preliminary version of a product or service that is used to share your design idea/s and seek feedback from users.
- **User** the person or group of people who will use the product or service.

**Adapting this activity**
Students can complete this worksheet for another group’s prototype as a form of feedback.
Module 4: Evaluation and iteration

The fifth module of DT Applied Challenge: Design Thinking centres on evaluation and iteration.

Iteration, to repeat a process, is used in this module to incorporate feedback and improve ideas. In design thinking we iterate through empathising and ideating, prototyping, and testing to improve on our ideas. Students also reflect on the success of a prototype/s through evaluation. To evaluate means to judge the quality, value, or success of something.

This module includes the following activities:

- **Ideas brainstorm, headline and vote (refer to page 21 and 22)**
  In this activity, students brainstorm ideas for the problem, individually vote on their favourite idea and the idea most likely to succeed to help narrow down design ideas for a specific problem.

- **Prototype development planner (refer to page 34)**
  In this activity, students use a worksheet to guide development of a prototype to improve their idea before creation.

- **Feedback (refer to page 38)**
  In this activity students give each other kind, honest and constructive feedback. Includes two accompanying worksheets.

- **Prototype reflection evaluation (refer to page 39)**
  In this activity, students answer four key questions to help them reflect and evaluate whether their chosen prototype addressed their user’s problems, met their expectations and if there is anything to change.

- **Progress check-in (refer to page 18)**
  In this activity, students record the activities that they have completed, write a plan for the next steps and reflect upon their progress with the project. Teachers provide feedback to students about meeting the learning intentions for this part of the project.

Success criteria/learning intentions for this module can be found below.

**Learning intentions**

- Be able to brainstorm and build upon ideas.
- Be able to develop a prototype for a design idea.
- Be able to refine and improve on original design ideas.
- Be able to reflect and evaluate how well a prototype addresses user needs.
- Be able to give and receive constructive feedback.

**Success criteria**

- Demonstrate ability to develop a prototype for a design idea.
- Demonstrate ability to make improved changes to a prototype design.
- Demonstrate ability to evaluate a prototype design based on identified user needs.
- Demonstrate ability to provide constructive feedback to their peers.
- Demonstrate ability to accept constructive feedback from peers.
These online resources may be useful for students to use during this course.

<table>
<thead>
<tr>
<th>Resource website</th>
<th>Activity</th>
<th>Module 0</th>
<th>Module 1</th>
<th>Module 2</th>
<th>Module 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="https://miro.com/">https://miro.com/</a> *</td>
<td>Brainstorming</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><a href="https://mural.co/">https://mural.co/</a> *</td>
<td>Brainstorming</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><a href="https://www.lucidchart.com/pages/">https://www.lucidchart.com/pages/</a> *</td>
<td>Brainstorming</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><a href="https://stormboard.com/home">https://stormboard.com/home</a> *</td>
<td>Brainstorming</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><a href="https://mindmeister.com/">https://mindmeister.com/</a> *</td>
<td>Brainstorming</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><a href="https://coggle.it/">https://coggle.it/</a> *</td>
<td>Brainstorming</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><a href="https://www.popplet.com/">https://www.popplet.com/</a> *</td>
<td>Brainstorming</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><a href="https://padlet.com">https://padlet.com</a> *</td>
<td>Brainstorming</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><a href="https://infogram.com">https://infogram.com</a> *</td>
<td>Brainstorming</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><a href="https://www.surveymonkey.com/">https://www.surveymonkey.com/</a> *</td>
<td>Survey</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><a href="https://www.google.com/forms/about/">https://www.google.com/forms/about/</a> *</td>
<td>Survey</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><a href="https://www.websurveycreator.com/">https://www.websurveycreator.com/</a></td>
<td>Survey</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><a href="https://forms.office.com">https://forms.office.com</a> *</td>
<td>Survey</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><a href="https://canva.com/">https://canva.com/</a> *</td>
<td>Infographic</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td><a href="https://piktochart.com">https://piktochart.com</a> *</td>
<td>Infographic</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td><a href="https://prezi.com">https://prezi.com</a> *</td>
<td>Presentation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

*Please note: these suggested resources store user data on servers outside of Australia and consideration should be given to their use, in alignment with your school policy on student data and student’s Third Party Website Consent requirements.
### Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agile</td>
<td>the ability to quickly adjust to changes or new information.</td>
</tr>
<tr>
<td>Assumption</td>
<td>something that you assume to be correct, even without proof.</td>
</tr>
<tr>
<td>Bias</td>
<td>a personal judgment or belief.</td>
</tr>
<tr>
<td>Brainstorming</td>
<td>open-minded ideation to produce ideas or solve problems.</td>
</tr>
<tr>
<td>Closed question</td>
<td>usually involve a yes/no or one word answer.</td>
</tr>
<tr>
<td>Collate</td>
<td>collect and combine, or pull together, information.</td>
</tr>
<tr>
<td>Concept map</td>
<td>a mind map (words or images) that shows the relationships between different ideas and topics.</td>
</tr>
<tr>
<td>Constraint</td>
<td>anything that might stop us from moving forward with a particular idea. For example, not having the necessary tools, the necessary skills, or enough time.</td>
</tr>
<tr>
<td>Constructive feedback</td>
<td>feedback to suggests improvements on an idea, without criticism.</td>
</tr>
<tr>
<td>Convergent thinking</td>
<td>thinking that focuses on identifying a single answer to a problem.</td>
</tr>
<tr>
<td>Design thinking</td>
<td>a problem-solving approach that is human-centred, and that uses data and user feedback to design creative solutions.</td>
</tr>
<tr>
<td>Divergent thinking</td>
<td>thinking creatively and expansively to explore many possible ideas.</td>
</tr>
<tr>
<td>Emoji</td>
<td>a small icon used to represent an emotion, symbol or object.</td>
</tr>
<tr>
<td>Empathy</td>
<td>the ability to identify and understand the feelings of another.</td>
</tr>
<tr>
<td>Human-centred design</td>
<td>a problem-solving framework that develops solutions to problems by involving the human perspective in all steps of the process.</td>
</tr>
<tr>
<td>Hypothesis</td>
<td>a tentative idea or explanation for an observation, which can be tested and either supported or refuted by investigation.</td>
</tr>
<tr>
<td>Ideate</td>
<td>to imagine or come up with multiple ideas for solutions to problems, usually in succession and building off each idea.</td>
</tr>
<tr>
<td>Infographic</td>
<td>a visual representation of information or data.</td>
</tr>
<tr>
<td>Interview</td>
<td>to question or talk with someone to get information.</td>
</tr>
<tr>
<td>Iterate</td>
<td>to repeat a process. In design thinking we iterate through empathising and ideating, prototyping, and testing to improve on our ideas.</td>
</tr>
<tr>
<td>Key disposition</td>
<td>frequent and voluntary habit of thinking and doing.</td>
</tr>
<tr>
<td>Mock version</td>
<td>a smaller model or replica of something that will eventually be built.</td>
</tr>
<tr>
<td>Motivation</td>
<td>a reason or reasons for acting or behaving in a particular way.</td>
</tr>
<tr>
<td>Observation</td>
<td>closely observe or monitor something or someone.</td>
</tr>
<tr>
<td>Open-ended question</td>
<td>questions that cannot be answered with a simple ‘yes’ or ‘no’ and require the person answering to give a detailed explanation.</td>
</tr>
<tr>
<td>Pain point</td>
<td>any problem that frequently frustrates or annoys your user, or stops them from achieving their goals.</td>
</tr>
<tr>
<td>Persona</td>
<td>a fictional character, based on user research, that represents one main type of user, including their needs and problems.</td>
</tr>
<tr>
<td>Problem statement</td>
<td>a statement of a current issue or problem you are investigating in order to find a solution for the user.</td>
</tr>
<tr>
<td>Prototype</td>
<td>a first or preliminary version of a product or service that is used to share your design idea/s and seek feedback from users.</td>
</tr>
<tr>
<td>Prototype pitch</td>
<td>a presentation to users about your idea.</td>
</tr>
<tr>
<td>Role-play</td>
<td>to act out or perform the part of a person or character in a particular scenario.</td>
</tr>
<tr>
<td>Scenario</td>
<td>descriptive or pictorial stories of the user or persona.</td>
</tr>
<tr>
<td>Secondary research</td>
<td>collect existing research on a topic.</td>
</tr>
<tr>
<td>Sketch</td>
<td>a rough or unfinished drawing.</td>
</tr>
<tr>
<td>Stakeholder</td>
<td>a person with an interest or concern in something.</td>
</tr>
<tr>
<td>Storyboard</td>
<td>a number of squares with illustrations that plans a narrative.</td>
</tr>
<tr>
<td>Survey</td>
<td>a list of questions aimed at getting specific data from users.</td>
</tr>
<tr>
<td>Touchpoints</td>
<td>any point of contact between a customer and a service or service provider.</td>
</tr>
<tr>
<td>User</td>
<td>the person or group of people who will use the product or service.</td>
</tr>
<tr>
<td>User story</td>
<td>a short description of what a user will do with a product or service, used to help plan and develop the features of the product or service.</td>
</tr>
<tr>
<td>Validate</td>
<td>check or prove that something is correct.</td>
</tr>
<tr>
<td>Wireframe</td>
<td>a basic, 2-D representation of a web page, app interface, or product layout.</td>
</tr>
<tr>
<td>Yes, and</td>
<td>a technique used in group work during ideation or brainstorming to help create and build on innovative ideas, the opposite to the statement, &quot;No, But...&quot;, which limits ideas.</td>
</tr>
</tbody>
</table>
Worksheets and cards
Skittles starters

With interesting questions, you can start to get to know your team mates.

Take turns to pick a Skittle out of the packet, and answer the question.
Cut these out to make yourself a deck of conversation starters.

**Green Skittle**
What is your strange talent?
What is something that you are really good at?

**Purple Skittle**
Do you prefer to speak to someone directly or communicate via email or text message? Why?
Do you like talking in front of other people/the class?

**Red Skittle**
What makes you a good friend?
What makes you a good team player?

**Yellow Skittle**
If you could have any job, regardless of the pay, what would you choose?
What is one job that you would definitely NOT want to do? Why?

**Any colour Skittle**
What is something surprising that people may not know about you?

---

grokacademy.org
Personality reflection

What I bring to the team: ____________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

How I feel about working in a team (colour or highlight the emoji that reflects how you feel):

😊😊😊😊😊

Put an ✗ in the column to show what you think about each statement:

<table>
<thead>
<tr>
<th></th>
<th>Disagree</th>
<th>Sometimes</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am organised</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I like speaking in front of other people</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am very creative and imaginative</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am good at listening to others</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It’s OK to make mistakes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Something I do well is: ____________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
Teamwork

Use this Y chart to write or draw what you know about teamwork.
Complete each section to develop your group contract. Creating a group contract will help you to work together as a team during your project.

**Team processes**

How our team will communicate:

How our team will agree on decisions:

**Team expectations**

It is our group expectation that all team members will:

**Task deadlines**

We will make sure we meet our deadlines by:

**Contract signing**

We, (group name): ____________________
do hereby agree to the terms of this contract.

Group member signatures: ____________________
____________________
____________________
____________________
____________________
____________________
Progress check-in

Activities we did

Completed?

☐

☐

☐

☐

Where to next

Mad, sad & glad

Mad

Sad

Glad

Mad – List the things that are driving you crazy. What is stopping you from performing at your best?
Sad – What are some of the things that have disappointed you or that you wish could be improved?
Glad – What makes you happy when you think about this project? What are you enjoying the most?
Choose from the presented ideas and record your vote on the card.

**Instructions**

Write down your favourite idea from the team brainstorming activity.

Write down the idea you think is MOST LIKELY TO SUCCEED from the team brainstorming activity.

---

Write down your favourite idea from the team brainstorming activity.

Write down the idea you think is MOST LIKELY TO SUCCEED from the team brainstorming activity.

---

name: ____________________________

Group: ____________________________

Date: _____________________________

---
Visible

What does the user tell you about the product or service?

How is the user engaging with the product or service?

What problems with product or service do you observe the user experiencing?

Demographic information about the user (e.g. their age, their physical characteristics, language, education/occupation)

Not visible

What motivates the user?

What frustrates the user?

What goals does the user have?

What are the user's beliefs? What is the user thinking?

Why are they using the product or service? Why aren't they using the product or service?

What are their likes and dislikes of the product or service?
**User interview**

Here is a list of questions that can be used - you do not need to ask ALL of them. **Highlight any questions from the list you will ask the user. Add your own questions in the boxes below.**

**Quick tips**

Ask follow-up open ended questions including why or why not to keep the conversation going. Use non-verbal gestures such as eye contact, nodding or smiling during the interview.

---

### Topic-specific questions

- How much time do you usually spend on [problem/task]?
- Tell me about the last time you tried to do the [problem/task]?
- Why do you keep doing [problem/task]?
- Why is [problem/task] important to you?
- What type of workarounds help you with this task?
- What's the hardest part about [problem/task]?
- What could make this [problem/task] easier?
- How does this [problem/task] impact other areas of your life?
- Are you looking for a solution or alternative for [problem/task]?

---

### Idea-specific questions

- What do you think of this product or idea?
- Why do you think someone would use this product or idea?
- Can you see yourself ever using this product or idea?
- How do you think this product or idea is going to help you?
- Would you use this product or service today?
- What might stop people from using this product or service?

---

**Add other questions here**

---

**Name:** __________________________

**Group:** __________________________

**Date:** __________________________

**Interviewee:** __________________________
Quantitative vs qualitative

Quantitative research asks standardised questions and often includes just closed questions. Qualitative research provides more detailed and individualised responses to open-ended questions. Design thinking projects usually need qualitative research as you empathise with the users and try to identify their pain points.

Open vs closed questions

Closed questions usually involve a yes/no response. Open questions are the most useful in interviews as it allows the interviewee to provide longer answers and explanations of what they are experiencing. Following up a closed question with a why, or could you tell me more, is a great way to get more intel from your interviewee.

Survey planning sheet

Checklist to consider when planning survey

☐ Web survey or paper survey (choose one)
☐ Addition of a blurb - Yes/No (circle one)
☐ Do you need/want quantitative or qualitative data?
☐ Use of open questions and/or closed questions
☐ Scaled questions - Yes/No (circle one)
☐ Use positively worded questions
☐ Anonymous survey - Yes/No (circle one)
☐ Do you need to ask the survey respondent's gender?
Survey planning sheet

**Beginning**
- Start with broad, general interest questions that are easy to answer.
- For example, multiple-choice questions.

**Middle**
- The most difficult or challenging questions are placed in this part.
- Questions can be multiple choice or open-ended questions.
- You can use questions such as “why?”, “tell me about _____?”, and “how do you feel about ______”.

**End**
- More general questions that are easier to answer.
- For example, demographic and other classification questions.

### Ideas

- Enter ideas here.

- Enter ideas here.

- Enter ideas here.
Survey planning sheet

Beginning questions/sentences

Things to consider:

- Writing a sentence or two/blurb about why you are conducting research to include at the start of the survey
- Use closed questions in the beginning part of the survey:
  - e.g. Using true/false or yes/no questions
Survey planning sheet

Middle questions

Things to consider:

• Using a scaled question in this part of the survey:
  - Strongly agree
  - Slightly agree
  - Neither agree nor disagree
  - Slightly disagree
  - Strongly disagree

• Use of questions such as “why?”, “tell me about _____?”, and “how do you feel about _____”.

Name: __________________________
Group: __________________________
Date: __________________________

Survey planning sheet

End questions/sentences

Things to consider:

- Finish with general questions
- Example questions could be:
  - Age bracket of survey respondent,
    e.g. 0-10 years, 11-19 years, 20-29 years
- Include a message to say thank you at the end of your survey
Observation notes

To help you record your observations, complete each section of the planner.

Quick tips
• Take notes as carefully and detailed as possible.
• Take photos OR record videos - remember to get permission!
• Try to stay unbiased and just write what you SEE!

People: describe the people you are observing. What is their age, body language, clothing?

Setting: describe where you are, what else is in the space.

Activities: describe what people are doing, how they are moving around. Describe any interaction between people.

Artefacts: describe any items or equipment the people interact with in the space.

Wrap up: write down ONE surprise. Write down ONE impression.

One thing that surprised me was

An impression I got from this observation was

Key stakeholder you are observing: __________
Place: ____________________________
Date: ____________________________
Time: ____________________________
Length: __________________________ minutes
Permission to photograph: □ YES □ NO
Permission to video: □ YES □ NO

grokacademy.org
User info

Name: 
Group: 
Date: 

Age: 
Values: 
Occupation: 

What are the pain points for the users

When the user [engages in activity/uses product]

the main problems are 

[add more details about the problem]

Pain point 1

The problem is 

Why is it so painful? It is painful because 

How might we ...?

Pain point 2

The problem is 

Why is it so painful? It is painful because 

How might we ...?
Persona template

Profile

Gender: __________________________
Age: __________________________
Education: ______________________
Occupation: _____________________

Profile

Description

Motivations

Goals

Pain points (frustrations)

Quote

""

""
Persona scenario

Questions to consider

- Who is the persona?
- What is a specific task or goal the persona has?
- When and where do they use the product or service?
- The reason behind why the user needs the product or service.
### Timeline
Add relevant information e.g. day/time/location

<table>
<thead>
<tr>
<th>Doing</th>
<th>Thinking &amp; Saying</th>
<th>Feeling</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the persona doing during this part of the timeline?</td>
<td>What is the persona thinking and/or saying?</td>
<td>Draw an emoji for how the persona feels during this part of the timeline</td>
</tr>
</tbody>
</table>

- **Sad**
- **Happy**
- **Neutral**
Impact effort matrix

Instructions:
Use this chart to help prioritise your ideas after a brainstorming session.

1. Write each idea on a post-it note
2. Each team member to place their post-it notes on the chart where they fit best
3. As a team, discuss where each idea is placed and reposition as needed

An idea that is high impact, low effort, is a good place to start.
Prototype development planner

To help you develop your idea into a prototype, complete each section of the planner.

User story:

[ ] [user]

[ ] [user characteristics]

[ ] [user goal]

[ ] [reason]

Summarise your prototype in a few words.

Who will you test the prototype with?

Draw where the prototype will be used. E.g. classroom, outside space.

What tools, equipment and skills do you need?

Do you need to ask permission?
What elements make up the prototype? Draw a labelled diagram of the idea.

What steps will you take to develop your prototype?

Step 1
Step 2
Step 3
Step 4
Role-play planning sheet

Summary of your design idea - product/solution

Characters/roles

Props

Location of the role-play

What are the key takeaways for the audience?

Dialogue between characters

Name: ____________________________
Group: __________________________
Date: ___________________________

grokacademy.org
Storyboarding your role-play

1. Consider the different scenes or parts to your role-play
2. Illustrate how your role-play will run by doing frame by frame breakdown
3. Include dialogue between the characters for each scene or part of the role-play

Characters:

Name: ____________________ Name: ____________________ Name: ____________________ Name: ____________________

Dialogue:

1

2

Dialogue:

1

2
Sketch

Focus for Sketch 2:

Choose 1 part of your design

Re-focus your idea!

抽 your idea

Name: ____________________________
Group: ___________________________
Date: ____________________________
Focus for Sketch 3:

Choose 1 part of your design
Sketch

Use feedback and ideas from the 3 previous sketches, to produce a 4th sketch of your design!

Iteration is the key to a great design

What I discovered about my design idea?
Feedback

Glow

Oh no

Grow
Prototype reflection evaluation

**What did you test:** What was the prototype being explored by a user?

**What did you expect:** Did the product/service work the way you expected? Were your goals achieved?

**What did your research show:** Did the user like/dislike the prototype? Were there any pain points for the user?

**What would I change:** What would you change or add to the product/service to improve it? What could the next prototype be?
### Prototype reflection evaluation

**What did you test:**
- What was the prototype being explored by a user?

**What did you expect:**
- Did the product/service work the way you expected? Were your goals achieved?

**What did your research show:**
- Did the user like/dislike the prototype? Were there any pain points for the user?

**What would I change:**
- What would you change or add to the product/service to improve it? What could the next prototype be?
### Instructions
The front side has either different **roles** you can alternate between OR the different **responsibilities** you can take on during the team project activities.

It is recommended that you keep the same responsibility for the duration of the project. You can fill both a **responsibility** and a **role** during group activities.

One way to distribute **roles** and **responsibilities** is to place cards face down and randomly choose a responsibility and a role.

<table>
<thead>
<tr>
<th>Everyone</th>
<th>Everyone</th>
<th>Everyone</th>
</tr>
</thead>
</table>
| - Helps with research and ideation  
- Remembers to keep the user in focus  
- Contributes to design ideas  
- Engages in tasks and activities  
- Helps with presentations | - Helps with research and ideation  
- Remembers to keep the user in focus  
- Contributes to design ideas  
- Engages in tasks and activities  
- Helps with presentations | - Helps with research and ideation  
- Remembers to keep the user in focus  
- Contributes to design ideas  
- Engages in tasks and activities  
- Helps with presentations |
Half your team agree on one project idea, and the other half agree on a second project idea. What do you do?

One group member always pushes for their own ideas and refuses to work on anyone else's! What do you do?

One of the group members does not contribute to group discussions or idea brainstorming and refuses to do interviews or the prototype pitch in front of the class. What do you do?

Your group has almost finished designing a solution and you are close to the project due date. Someone in your group comes up with a new idea that everyone agrees is better than your current one. What do you do?

Your group has been asked to present your project idea in front of the class, but no-one in your group wants to speak in front of the class. What do you do?

Your group task is to share ideas and give each other feedback. One group member becomes angry about the feedback given to them by a team member. They refuse to make any suggested changes to their idea. What do you do?

One group member has spent the entire week drawing up a diagram of their own solution idea. Everyone else in the group is working on the interview and survey questions, which are due today. What do you do?

One group member continuously talks over the top of other team members and interrupts others who are sharing their ideas. What do you do?
1. Agree to their idea so you can just get back to work and deliver something to the teacher by the end of the lesson.
2. Go to the teacher and demand that this group member be placed in a new group as you are unable to work with them.
3. Let the group member work on their idea independently, while the rest of the group work together on the other idea.
4. What else could you do?

1. Start on both projects.
2. Pick just one project to create by putting both into a hat and choosing randomly.
3. Ask the teacher to tell you which project will get the best mark and start that one.
4. What else could you do?

1. Instructions
   Read the scenario. Discuss your answers with your teammates.
   These cards are to be used for prompts for team discussion. Different teams will answer the questions differently. There is no right answer.

1. Pick a name out of a hat.
2. Share the work, so that each member of the group presents one part of the presentation.
3. Take votes from the group on who should do the presentation.
4. What else could you do?

1. Throw out your old idea and start work on the new, better solution.
2. Continue work on the original solution because you want to submit your project on time.
3. Decide that half the group will work overtime to finish solution 1, and the other half will start work on solution 2.
4. What else could you do?

1. Ask the teacher to move this group member because they are not respecting their team members.
2. As a team, review the group contract and discuss if anything could change to ensure everyone feels their ideas are heard and valued.
3. The equal voice captain has a chat to the group member about talking over the top of their other group members.
4. What else could you do?

1. Ask the teacher to move this group member because they are not working together with the team.
2. As a team, review the group contract and discuss what has been happening over the last week with a team member working on the wrong task.
3. The team facilitator has a chat to the group member about pulling their weight and helping the other group members with the urgent tasks.
4. What else could you do?

1. Ask the teacher to move this group member because they are not able to accept feedback from the group.
2. The team facilitator leads a discussion with all the group members about giving and receiving feedback.
3. The challenger has a chat to the group member about how to use feedback to help improve their design ideas.
4. What else could you do?
Two group members always spend the lesson talking together about their netball team and are not helping with any of the project work.
What do you do?

One group member often makes criticisms about their teammates’ work, saying things like “That’s wrong, you should do it this way”.
What do you do?
1. Ask the teacher to remove them from the group because they are not working together with the other group members.

2. As a team, review the group contract and discuss what has been happening with two team members not engaging in any work.

3. The equal voice captain has a chat to the group member about improving communication with other group members.

4. What else could you do?

The team facilitator leads a group discussion about how to give each other feedback, suggesting saying things like “It might help if we do it this way” rather than “You’re wrong”.

As a team, review the group contract and discuss if anything could change to ensure everyone feels able to share their ideas without being criticised.

What else could you do?

As a team, review the group contract and discuss if anything could change to ensure everyone feels able to share their ideas without being criticised.