

This sequence of three posters illustrates how to use an authentic context to design, implement and evaluate a solution. It shows how design thinking can be applied to the processes and productions skills in the Australian Curriculum: Technologies, in particular Digital Technologies. This provides an opportunity for students to create an app alternating between typing code and using blocks. Depending on the context chosen, students may produce a working model, applying their understanding of systems, materials or engineering.

CONTEXT : DESIGN AND CREATE AN APP THAT HELPS TEENS NAVIGATE THE CHALLENGES THEY FACE IN THEIR TEENAGE YEARS

Design thinking (non-linear)

EMPATHISE

Understand the needs of the user in the context of the design challenge.

DEFINE

Define the challenge based on what you learned about the user.

IDEATE

Combine creativity and your understanding of the problem to generate ideas for the design challenge.

PROTOTYPE

Develop basic examples of your preferred design idea.

TEST

Review your prototype against design criteria and user story.

The Australian Curriculum: Processes and productions skills

DIGITAL TECHNOLOGIES

Achievement standard

Students develop and modify innovative digital solutions, decompose real-world problems, and critically evaluate alternative solutions against stakeholder elicited user stories.

Content descriptions

Investigating and defining

Define and decompose real-world problems with design criteria and by interviewing stakeholders to create user stories | AC9TDI10P04

Generating and designing

Design and prototype the user experience of a digital system | AC9TDI10P07
Generate, modify, communicate and critically evaluate alternative designs | AC9TDI10P08

Producing and implementing

Implement, modify and debug modular programs, applying selected algorithms and data structures, including in an object-oriented programming language | AC9TDI10P09

Evaluating

Evaluate existing and student solutions against the design criteria, user stories, possible future impact and opportunities for enterprise | AC9TDI10P10

DESIGN AND TECHNOLOGIES

Achievement standard

Students create, adapt and refine design ideas, processes and solutions and justify their decisions against developed design criteria that include sustainability. They communicate design ideas, processes and solutions to a range of audiences, including using digital tools. Students independently and collaboratively develop and apply production and project management plans, adjusting processes when necessary. They select and use technologies skilfully and safely to produce designed solutions.

Content descriptions

Investigating and defining

Analyse needs or opportunities for designing; develop design briefs; and investigate, analyse and select materials, systems, components, tools and equipment to create designed solutions | AC9TDE10P01

Generating and designing

Generate, iterate and communicate design ideas, decisions and processes using technical terms and graphical representation techniques, including using digital tools | AC9TDE10P02

Producing and implementing

Select and use suitable materials, components, tools, equipment and techniques to safely make designed solutions | AC9TDE10P03

Evaluating

Develop design criteria independently including sustainability to evaluate design ideas, processes and solutions | AC9TDE10P04

Applying design thinking to an authentic context

Design and create an app that helps teens navigate the challenges they face in their teenage years.

Investigating and defining

Students define and decompose real-world problems and develop design criteria. They interview stakeholders to create user stories.

The design criteria for an app that helps teens navigate this time in their lives might be developed around key elements such as these:

- User-interface
- Engagement and motivation
- Inclusivity
- User safety

EMPATHISE

Use an empathy map to visualise teens' thoughts, feelings, needs and behaviours to inform stakeholder interview questions.

Use stakeholder interviews to check assumptions, gather insights and deepen understanding of the target audience.

Develop a user story:

- As a **<type of user>** I want to **<a goal>** so that **<reason for the goal or benefit>**.

For example: As a teenager, I want to receive daily suggestions, so that I can stay motivated, build healthy habits and earn rewards for my progress.



DEFINE

Define the problem clearly. Create a concise problem statement that addresses the core issue.



'Teenagers struggle with stress and healthy living due to academic pressure, social media, and lack of resources.'

Generating and designing

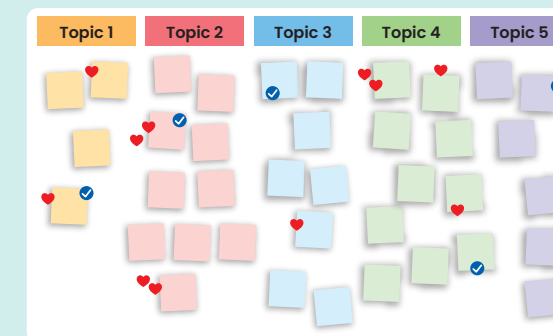
Students generate multiple designs creating many and varied possibilities using a range of ideation techniques, for example, using graphic organisers, role-play or mind mapping.

They critically evaluate to eliminate, refine or modify alternative design ideas by assessing them against these criteria and stories.

IDEATE

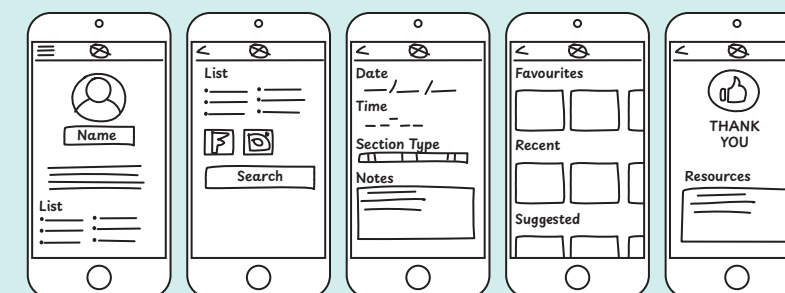
Create an affinity diagram by writing down ideas for app features on sticky notes and grouping similar ideas together. Once grouped, label each category to identify the main themes and prioritise which features to focus on for the app design. Review against design criteria and user stories.

Use SWOT analysis to help students critically evaluate their ideas, providing them with clear insights on the key functions to develop in the app.



PROTOTYPE

Develop design ideas and user flows using paper prototyping.



TEST

Use the prototype to review and check the preferred design against the user story and design criteria to ensure it meets the design requirements. If elements do not satisfy the design requirements revisit ideation stage.

Applying design thinking to an authentic context

Design and create an app that helps teens navigate the challenges they face in their teenage years.

Producing and implementing

The preferred design idea is implemented and developed into a solution.

Platforms such as MIT app inventor enables students to use visual programming blocks. This partially meets the Producing and implementing sub-strand of the Australian Curriculum for Years 9–10. App Lab is a programming environment where students can make simple apps coding in JavaScript, a text-based coding language.

Examples of implementing a digital solution:

Fit-habit

My fitness and health app sets daily challenges for physical activity, water intake, and healthy eating. It rewards users for sticking to healthy routines with streaks and achievements.



MindfulMe

My wellbeing app promotes mental and physical health, with mindfulness exercises and screen time management.



PlanPal

My user-friendly app helps teens plan their day effectively by allowing them to set goals, schedule tasks and manage their time.



GetEcoSmart

Use my app to receive daily challenges, such as reducing water usage, recycling correctly or going plastic-free for a day, to promote sustainable habits.



Evaluating

Students evaluate the effectiveness of their solution against the design criteria and user stories. They reflect on the future impact and opportunities for enterprise of their solution.

Students systematically compare each feature of their app against the original user story and design criteria. For example, they can list the elements of the user story and check off which features address each part.



Reflection and self-assessment

Students reflect on their app design and development process. They write a self-assessment discussing how well they believe their app fulfills the user story and design criteria, highlighting strengths and areas for improvement.

Future impact and opportunities for enterprise

Organise a session where students discuss the potential positive and negative impacts of their app on users and the environment.

Students outline key aspects of their app's enterprise potential.

- Who is the target audience?
- What is unique about the app?
- Potential for the app be monetised?

Positives

- Helps students plan their day

Negatives

- The user has to enter their own data