PBL/Design Project unit:

Teacher/s:

Class/es: Starting date: Duration:

Lesson length: Lesson frequency:

Unit description

.

Key Inquiry Question/s	**Problem Statement**	**Driving Question**

GENERAL CAPABILITIES

[X] CCT ⚙   [X] ICT 📚   [X] Personal & Social 👥   [ ] Ethical Understanding ⚖   [ ] Intercultural Understanding 🌐   [X] Literacy ✏   [ ] Numeracy

LEARNING AREAS

[ ] English   [ ] Mathematics   [ ] Science   [X] Technologies   [ ] HASS   [ ] The Arts   [ ] Health & PE   [ ] Languages

CROSS CURRICULUM PRIORITIES

[ ] Aboriginal and Torres Strait Islander histories and cultures ✋   [ ] Asia and Australia's engagement with Asia ⓐ   [ ] Sustainability 🌱

DESIGN THINKER'S 'MODUS OPERANDI'

1. Fact-finding

- *Explore and investigate technologies and materials*
- *Collect and interpret data*
- *Identify design needs and opportunities*

2. Generating Ideas

- *Imagine, communicate and record design ideas*

3. Judging Ideas

- *Analyse and evaluate design ideas*

4. Planning

- *Design courses of action*
- *Document project plans*
- *Monitor projects*

5. Producing

- *Test and implement designed solutions*

6. Reflecting

- *Reflect on design processes*
- *Evaluate designed solutions*
- *Reflect on learning*

Project Phase (What the students will do)	Capabilities Learning Goals (eg CCT, P&SC, ICT)	Learning Areas Learning Goals (eg Design Thinking)	Thinking & Learning Activities	Resources	Main Teaching Points
Aspiration + **I**nspiration = **M**otivation *Aspirational!* Students will identify any **aspirations** (interests, passions, personal goals) that they might have that can be factored into the project.	👫 *Describes and reflects on personal strengths.* 👫 *Identifies their abilities, talents and interests as learners.* ⚙️ *Poses exploratory questions based on personal interests and experiences.*		Complete MIPAC worksheet, relating your answers to the theme / topic / problem / content. Create your own version of a 'Wonder Wheel', relating your questions to the theme / topic / problem / content.	'MIPAC' BLM from the *Minds Wide Open Blackline Masters Book* Example: 'Wonder Wheel' BLM from the *Minds Wide Open Blackline Masters Book*	
ENTRY EVENT *Inspirational!* Students will have an experience that will **draw their attention** to the topic, issue or problem - one that will **engage them emotionally** and **inspire** them to want to explore the topic more or pursue a solution to a problem? Students will view a 'design hero' at work solving a problem that affects people or the environment.	👫 *Describes the influence that people, situations and events have on their emotions.*	◆ *Defines needs, opportunities or problems.* ◆ *Describes contributions of people in design and technologies occupations.* ◆ *Describes how design and technologies contribute to meeting present and future needs.*	**Whole class discussion** What feelings and thoughts are you having after experiencing this Entry Event? How are/were people, places or things harmed or disadvantaged by the original problem? What do you think were some of the causes of the problem? How do you think the designer went about solving the problem? Why do you think she/he made the choices they made? What are some of the ways that the designer / problem solver has made the world a better place for the present and into the future?	Video, book, guest speaker, guest demonstrator, incursion, excursion …	

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FACT FINDING *Investigate. Get all the facts* The students will identify the problem to be solved and/or define the purpose of their product, service or environment. The students will gather viewpoints and perspectives of others (eg those affected by the problem, or the end-users of their future product). The students will research the topic to fill in gaps in their knowledge. The students will identify any new skills they will need to learn in order to complete the project.	*Poses exploratory questions based on personal interests and experiences.* *Discusses the value of diverse perspectives and describes a point of view that is different from their own.* *Manages and maintains digital data using common methods.* *Contributes to groups and teams, suggesting improvements in methods used for group investigations.* *Describes personal strengths and challenges and identifies skills they wish to develop.*	*Identifies needs, opportunities or problems and describes them.* *Collects, manipulates and interprets data from a range of sources to support decisions.* *Identifies needs, opportunities or problems and describes them.*	**View:** The Coloured Thinking Caps tutorial by Sofia – Black & White Thinking Cap **Whole class discussion** (teacher-directed)**:** Answer questions from the Black & White Thinking Cap poster. **Warm-up activity**. CCT Crunches – *FOO Fight* or *Posing the Question* or *What's the Problem?* **Small group discussion** (student-directed)**:** Answer the Black & White Thinking Cap questions in your *Thinking Journal*. (Students refer to the *Black & White Thinking Cap* page in their thinking journal. Answering the questions in the journal will help 'steer' them through this phase of the design thinking / problem solving process.) Draft, edit and finalise the 'Problem Statement' and 'Driving Question'. Consider if your solution will likely be a PRODUCT, SERVICE or ENVIRONMENT	*Minds Wide Open Teacher's Toolbox* http://cct.education/ http://cct.education/cct-crunches-5-6/ Thinking Journal B&W BLM page from *Minds Wide Open Blackline Masters Book* BLM pages from *Minds Wide Open Blackline Masters Book*	

Project Phase (What the students will do)	Capabilities Learning Goals (eg CCT, P&SC, ICT)	Learning Areas Learning Goals (eg Design Thinking))	Thinking & Learning Activities	Resources	Main Teaching Points
IDEATION *Generate ideas* The students will generate a minimum of seven ideas for their potential product/solution. The students won't judge their ideas until the next session.	*Explores situations using creative thinking strategies to propose a range of alternatives.* *Expands on known ideas to create new and imaginative combinations.* *Uses class discussions as learning tools to explore ideas.*	*Records design ideas using techniques including labelled drawings.* *Generates design ideas for specified audiences using graphical and non-graphical representation techniques.*	**View:** The Coloured Thinking Caps tutorial by Sofia – Rainbow Cap **Warm-up activity.** CCT Crunches - *Alternative Uses* or *Sketch Your Imagination* or *Raising the Bar.* **Whole class discussion** (teacher-directed)**:** Consider questions from the Rainbow Thinking Cap poster. **Small group discussion** (student-directed)**:** Answer the Rainbow Cap questions in your *Thinking Journal.* (Students refer to the *Rainbow Thinking Cap* page in their thinking journal. Answering the questions in the journal will help 'steer' them through this phase of the design thinking / problem solving process.)	Minds Wide Open Teacher's Toolbox http://cct.education/ http://cct.education/cct-crunches-5-6/ Thinking Journal Rainbow Thinking BLM page from *Minds Wide Open Blackline Masters Book*	

Project Phase (What the students will do)	Capabilities Learning Goals (eg CCT, P&SC, ICT)	Learning Areas Learning Goals (eg Design Thinking))	Thinking & Learning Activities	Resources	Main Teaching Points
JUDGING IDEAS *Select your best idea* The students will select their best idea, reject their worst ideas, and give reasons to justify their choices.	*Contributes to and predicts the consequences of group decisions in a range of situations.* *Predicts possible outcomes when putting ideas into action.*	*Evaluates their ideas on the basis of personal preferences and care for the environment.* *Explains how their products are designed to best meet needs of communities and their environments.*	**View:** The Coloured Thinking Caps tutorial by Sofia – Red & Green Cap **Whole class discussion** (teacher-directed)**:** Answer questions from the Red & Green Thinking Cap poster. **Warm-up activity.** CCT Crunches – *The Ads vs The Bads* or *Scissors Paper Think* **Small group discussion** (student-directed)**:** Answer the Red & Green Thinking Cap questions in your *Thinking Journal.* (Students refer to the *Green & Red Thinking Cap* page in their thinking journal. Answering the questions in the journal will help 'steer' them through this phase of the design thinking / problem solving process.)	Minds Wide Open Teacher's Toolbox http://cct.education/ http://cct.education/cct-crunches-5-6/ Thinking Journal Green & Red BLM page from *Minds Wide Open Blackline Masters Book*	

Project Phase (What the students will do)	Capabilities Learning Goals (eg CCT, P&SC, ICT))	Learning Areas Learning Goals (eg Design Thinking)	Thinking & Learning Activities	Resources	Main Teaching Points
PLANNING *Design a course of action* The students will describe the process they will follow to produce their product or implement their solution. The students will compose a detailed procedural text or create an Action Plan.	*Devises strategies and formulates plans to assist in the completion of challenging tasks.* *Outlines the details and sequence in a whole task and separates it into workable parts.* *Identifies the value and role of ICT use at home and school.*	*Designs solutions to simple problems using a sequence of steps and decisions.* *Records design ideas using techniques including labelled drawings, lists and sequenced instructions.* *Selects the technologies needed to realise designed solutions.*	**View:** The Coloured Thinking Caps tutorial by Sofia – Pink Cap **Whole class discussion** (teacher-directed)**:** Answer questions from the Pink Thinking Cap poster. **Warm-up activity.** CCT Crunches - *Mother of Invention* or *Posing the Question.* **Small group discussions and activities** (student-directed)**:** Answer the Pink Cap questions in your *Design Thinking Journal.* (Students refer to the *Pink Thinking Cap* page in their thinking journal. Answering the questions in the journal will help 'steer' them through this phase of the design thinking / problem solving process.)	Minds Wide Open Teacher's Toolbox http://cct.education/ http://cct.education/cct-crunches-5-6/ Thinking Journal Pink Cap BLM page from *Minds Wide Open Blackline Masters Book*	

Project Phase (What the students will do)	Capabilities Learning Goals (eg CCT, P&SC, ICT)	Learning Areas Learning Goals (eg Design Thinking)	Thinking & Learning Activities	Resources	Main Teaching Points
PRODUCING *Put your idea into action* The students will create a prototype or compose a draft. The students will test their prototype and make improvements. The students will plan how they will promote, pitch or present their product/ solution.	*Contributes to groups and teams, suggesting improvements in methods used for group projects.* *Experiments with a range of options when putting ideas into action.* *Persists with tasks when faced with challenges and adapts their approach where first attempts are not successful.*	*Follows sequenced steps and demonstrates safe use of materials, tools and equipment when producing designed solutions.* *Tests and modifies solutions to meet intended purposes.*	**View:** The Coloured Thinking Caps tutorial by Sofia – Purple Cap **Whole class discussion** (teacher-directed)**:** Answer questions from the Purple Thinking Cap poster. **Warm-up activity.** CCT Crunches - *Mother of Invention* or *Raising the BAR* **Small group discussions and activities** (student-directed)**:** Answer the Purple Cap questions in your *Thinking Journal.* (Students refer to the *Purple Thinking Cap* page in their thinking journal. Answering the questions in the journal will help 'steer' them through this phase of the design thinking / problem solving process.) Students test prototype/draft using the 'Product Testing: Gathering Perspectives' BLM.	Minds Wide Open Teacher's Toolbox http://cct.education/ http://cct.education/cct-crunches-5-6/ Thinking Journal Purple Cap BLM page from *Minds Wide Open Blackline Masters Book* BLM page from *Minds Wide Open Blackline Masters Book*	
EXIT EVENT The students will exhibit, launch or pitch their product / solution.	*Delivers presentations incorporating appropriate visual and multimodal elements.*				

Project Phase (What the students will do)	Capabilities Learning Goals (eg CCT, P&SC, ICT)	Learning Goals (Learning Areas)	Thinking & Learning Activities	Resources	Main Teaching Points
REFLECTING *Think about what you've learned and achieved* The students will evaluate their product/solution. The students will reflect on the processes they used by identifying successes and failures. The students will seek out, and think about, feedback from others (including reflecting on their teacher's feedback and assessment). The students will articulate what they have learned from participating in this project.	*Evaluates whether they have accomplished what they set out to achieve.* *Seeks and responds to feedback from teachers to assist them in consolidating strengths, addressing weaknesses and fulfilling their potential.* *Reflects on personal strengths and achievements, based on self-assessment strategies and teacher feedback.*	*Uses identified criteria for success, including sustainability considerations, to judge the suitability of their solutions and processes.*	**View:** The Coloured Thinking Caps tutorial by Sofia – Orange Cap **Warm-up activity.** CCT Crunches - *That's Good That's Bad* or *Quote Unquote* or *The Ads vs The Bads* **Whole class discussion** (teacher-directed)**:** Answer questions from the Orange Thinking Cap poster **Small group discussion** (student-directed)**:** Answer the questions from the Orange Cap page in your *Thinking Journal.* (Students refer to the *Orange Thinking Cap* page in their thinking journal. Answering the questions in the journal will help 'steer' them through this phase of the design thinking / problem solving process.)	Minds Wide Open Teacher's Toolbox http://cct.education/cct-crunches-5-6/ http://cct.education/ Thinking Journal Orange Cap BLM page from *Minds Wide Open Blackline Masters Book*	

EVALUATION OF UNIT

To what extent did the students take 'ownership' of their work/project? (Who did the majority of the decision making: students/parents or the teacher?)

To what extent were learning goals observable/observed in the learning activities, design processes and students' solutions?

Identify which learning activities require modification to be more effective in the future.

Recommendations for future teaching/learning?