



# Caught in a Jam!

**Grade Level/s:**  
5, 6

**Subject/s:**  
Technologies, English

**Type:**  
Unit Plan

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## Caught in a Jam!

Students will design a device that will assist Mrs. Laister to pour jam efficiently and effectively into jars to sell at Farm Day, with minimal wastage.

### Single Lesson Plan

#### Familiarity with Makers Empire Software

**Task:**

Task 1 (20 mins)

**Activity:**

Students will work independently using Makers Empire software. They will work through the 'Shapes Challenge' to become familiar with the features of the software.

**Resources:**

Makers Empire Posters 1 x device per student

Task 2 (20 mins)

Once students have completed the challenge, they will need to design a name tag, using the shaper feature.

Makers Empire Posters 1 x device per student

Task 3 (10 mins)

Students will then view the youtube clip "20 things to make with a 3D printer" and discuss.

Projector/board YouTube link:  
<https://youtu.be/FSu19nz7NIE>  
(<https://youtu.be/FSu19nz7NIE>)

#### Introduction of 'Caught in a Jam' problem

**Task:**

Task 1 (10 mins)

**Activity:**

Students will be introduced to the real world problem - 'Caught in a Jam'. General discussion as a whole class to seek clarification on any wonderings.

**Resources:**

Projector/board Electronic copy of 'Caught in a Jam' sheet projected on board.

Task 2 (80 mins)

Students will then have a 'think tank', working independently, to come up with a variety of possible solutions to the problem.

'Caught in a Jam' sheet (1 per student) Pencils, erasers, rulers. A3 paper to expand designs if needed.

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Task 3 (10 mins) Wrap up the lesson by having students share their ideas as a whole group.

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### Developing a Timeline and Success Criteria

<b>Task:</b> Task 1 (40 mins)	<b>Activity:</b> Work with the students to decide on an achievable timeline to work to. What needs to be completed? By when? Is this achievable? Record decisions along a timeline and leave on display in the classroom for future reference.	<b>Resources:</b> Frieze tape Pieces of cardboard to write on Stapler (to attach card to frieze) Texta
Task 2 (40 mins)	Pose the question "how will we decide whose design is printed?". Students work in small groups to decide on possible success criteria and record on butcher's paper.	Feedback Summary Sheet (1 per group) Butcher's paper (1 per group) Textas (1 per group)
Task 3 (20 mins)	Students share their success criteria to the whole class. Decide as a class the top 6 criteria, taking into account designs (initial sketch and Makers Empire), prototype and presentation.	Record 6 criteria onto Feedback Summary Sheet that the students will use to assess and give feedback to each other.

### Complete Design with a Partner

<b>Task:</b> Task 1 (50 mins)	<b>Activity:</b> Students will be placed into a pair by the teacher. They will each share their designs, then come up with a new design together, negotiating the best features.	<b>Resources:</b> A3 paper Pencils, rulers, erasers.
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### Build a Prototype

<b>Task:</b> Task 1 (60 mins)	<b>Activity:</b> Students will use junk materials to build a prototype of their design. During construction, they will continually refer back to their design and make changes to their design if required.	<b>Resources:</b> A wide variety of junk materials.
Task 2 (40 mins)	Each pair will	
Task 2 (40 mins)	Students will test their prototype using jam and make any changes to their design.	Jam Pot Funnel Jar Ladle

### Presentation and Refining Design

<b>Task:</b> Task 1 (10 mins each - 20 mins total)	<b>Activity:</b> Each pair will present their design, prototype and findings to another pair. They will use the Feedback Summary Sheet and criteria to give constructive and positive written feedback to each other.	<b>Resources:</b> Feedback Summary Sheet
Task 2 (30 mins)	After receiving written feedback from their peers, students will make final changes to their original designs.	Original designs Paper, pencils, erasers

### Using Makers Empire

<b>Task:</b> Task 1 (2 x 50 min lessons)	<b>Activity:</b> Students will work with their partner to complete a final design using Makers Empire software.	<b>Resources:</b> 1 x device per pair
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### Whole Class Presentation

<b>Task:</b> Task 1 (50 mins)	<b>Activity:</b> Each pair will present their final product to the class in a 2 minute presentation. The class will use the Feedback Summary Sheet to provide written feedback to each pair and make their final assessment on which design will be printed.	<b>Resources:</b> Feedback Summary Sheet Original designs Prototypes Makers Empire designs
Side Note...	At the completion of this lesson, it should be clear which design will be printed. Prior to the final lesson, make sure the design has been printed.	Print selected design.

### Evaluation

**Task:**  
Task 1 (50 mins)

**Activity:**  
Evaluate the final design, using the Feedback Summary Sheet.  
What worked well/needs rethinking?

**Resources:**  
Feedback Summary Sheet

#### Downloadable files



Feedback\_Summary.docx

(/download/lesson\_plan\_attachments/files/000/000/107/original/Feedback\_Summary.docx?1494812798)



3D\_Plan.docx (/download/lesson\_plan\_attachments/files/000/000/108/original/3D\_Plan.docx?1494812804)



The\_Problem.docx (/download/lesson\_plan\_attachments/files/000/000/109/original/The\_Problem.docx?1494812822)



Makers\_Empire\_Posters.pdf

(/download/lesson\_plan\_attachments/files/000/000/110/original/Makers\_Empire\_Posters.pdf?1494812989)

## Curriculum

### South Australian TfEL:

2.3 negotiate learning

3.4 promote dialogue as a means of learning

4.1 build on learners' understandings

4.2 connect learning to students' lives and aspirations

4.3 apply and assess learning in authentic contexts

### Australian Curriculum:

Exploring The Steps Involved In The Process To Satisfy A Design Brief, Need Or Opportunity (ELBT34)  
link (<http://rdf.australiancurriculum.edu.au/elements/2014/09/3ca02564-9519-46fc-b438-ee11c74fc9c>)

Representing And Communicating Design Ideas Using Modelling And Drawing Standards Including The Use Of Digital Technologies, For Example Scale; Symbols And Codes In Diagrams; Pictorial Maps And Aerial Views Using Web Mapping Service Applications (ELBT364)  
link (<http://rdf.australiancurriculum.edu.au/elements/2014/09/b45f775a-3a31-4e00-80e6-4876549184f2>)

Experimenting With Materials, Tools And Equipment To Refine Design Ideas, For Example Considering The Selection Of Materials And Joining Techniques To Suit The Purpose Of A Product (ELBT267)  
link (<http://rdf.australiancurriculum.edu.au/elements/2014/09/6b897f57-6cba-4870-93e0-78ef6a957b77>)

Independently And Collaboratively Identifying Criteria For Success, Processes And Planning, For Example Using Visual Representations Such As A Flowchart (ELBT297)  
link (<http://rdf.australiancurriculum.edu.au/elements/2014/09/67e1cd1d-cb6d-447a-9275-67af6fa70de8>)

Years 5 And 6 Achievement Standard  
link (<http://rdf.australiancurriculum.edu.au/elements/2014/09/9f5b49a0-54cd-4872-be6d-839ba272b9b2>)

Using Technologies To Collaboratively Prepare A Humorous, Dynamic Group View On A Debatable Topic, Such As 'Kids Should Be Allowed To Read And View What They Like', To Be Presented To Teachers And Parents (ELBE1044)  
link (<http://rdf.australiancurriculum.edu.au/elements/2014/09/2a9a9344-b895-4436-a909-9e4600a2a3cf>)

Plan, rehearse and deliver presentations, selecting and sequencing appropriate content and multimodal elements for defined audiences and purposes, making appropriate choices for modality and emphasis (ACELY1710)  
link (<http://rdf.australiancurriculum.edu.au/elements/2014/09/d9463649-ebf7-4575-85af-9e4600a2a3cf>)

Plan, rehearse and deliver presentations for defined audiences and purposes incorporating accurate and sequenced content and multimodal elements (ACELY1700)  
link (<http://rdf.australiancurriculum.edu.au/elements/2014/09/628c0609-1624-424d-9e7e-9e4600a2a3ca>)

Planning A Report On A Topic, Sequencing Ideas Logically And Providing Supporting Detail, Including Graphics, Sound And Visuals To Enhance Audience Engagement And Understanding (ELBE984)  
link (<http://rdf.australiancurriculum.edu.au/elements/2014/09/5c8ba9f2-e47d-4c55-b479-9e4600a2a3ca>)