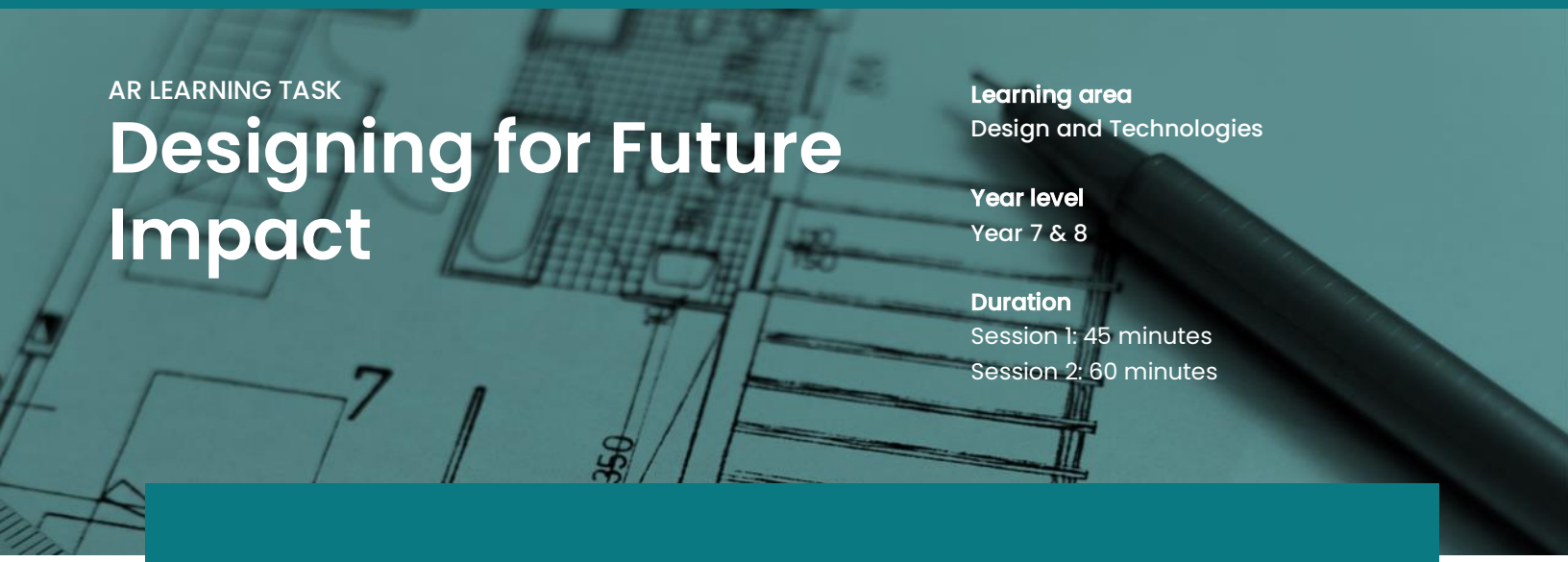

AR LEARNING TASK

# Designing for Future Impact

**Learning area**
Design and Technologies

**Year level**
Year 7 & 8

**Duration**
Session 1: 45 minutes
Session 2: 60 minutes

## Task summary

This task aims to equip students with the skills to turn their completed designs using traditional methods into a digital 3D representation with 3D modelling software, as well as to analyse the advantages and disadvantages of using traditional and digital methods when designing for impact.

## Session overview

**Session 1:** Students can identify community needs and design a solution using traditional methods (e.g. pen/pencil and paper sketch).

**Session 2**: Students can develop and create a 3D model of their design idea from session 1 and analyse the advantages and disadvantages of using both methods of design.

## Digital technologies

- ☐ VR
- ✓ AR
- ☐ Robotics
- ☐ Drones
- Other: Digital 3D Modelling

## Required resources

**Hardware:**

- Laptop / iPad / Tablet
- Devices

**Apps:**

- **Tinkercad** OR **Microsoft Paint 3D** - For 3D modelling designs.
  - *NOTE: Tinkercad may be used either on the laptop, tablet, or device. For schools using iPads, there is a built-in function to view creations in AR. If using other systems, you will need apps like **CoSpaces** to view in AR.*
  - *NOTE: Paint 3D is only available on computers running the Windows operating system.*

**Teaching resources**:

- Teaching deck
- Student digital notebook

**Materials**:

- Sketch paper
- Pen / pencil

## Other resources to try (optional)

**App:**

- **CoSpaces** - For viewing 3D models in AR and/or for putting 3D creations within a context digitally.

## Planning and preparation

**Assumptions**

For **session 1**:

- Students should have a basic understanding of the needs of communities and potential opportunities for designing solutions.

For **session 2**:

- Basic background in 3D modelling software like Tinkercad and/or Microsoft Paint 3D. If students have not used 3D modelling software before, it is recommended to conduct a lesson or two to practise these skills.

**Additional preparations for teachers**

- Teachers will need to create a teacher's account on Tinkercad and set-up individual accounts for the students.
- Make sure all devices are fully charged and set-up appropriately before the lesson, with all apps installed and working.
- Download and distribute copies of the student digital notebook to students via email or a learning management system.

## Task Sequence: Session 1

**1**

**Introductory activity / Provocation / Prior knowledge check**
(5 - 10 mins)

Ask students to go to page 2 of their digital notebook and brainstorm as many different aspects of their community as they can (e.g. parks, schools, safety, water, roads etc.).

Ask some students to share their ideas with the class and discuss the following questions on slide 3 of the teaching deck.

- What parts of your community could be improved?
- How could you improve your community?
- If you could invent anything to make your community better, what would it be?

Explain to the class that during this lesson, they will be creating a designed solution to a community need of their choice.

## 2

**Activities**
(25 - 30 mins)

Instruct students to decide which community need they would like to design a solution for, and complete their planning on page 3 of their digital notebook.

Once students have finished planning their design, they can then begin their sketch using a pen / pencil and paper. Slide 5 of the Teaching Deck asks students to include the following in their sketch:

- Detailed labels of each part
- Identify the materials that are used
- An appropriate scale (e.g. 1cm = 1m)
- A written explanation of how their solution solves their chosen community need.

If time permits, students can take a photo of their completed design and include it on page 5 of their digital notebook.

## 3

**Check for understanding**
(5 - 10 mins)

Slide 6 of the teaching deck - Ask students to discuss with a partner or a small group:

- What are the advantages of designing solutions using this traditional method?
- What are the disadvantages?

Explain to students that in the next session, they will be re-creating their design using a 3D modelling tool.

## Task Sequence: Session 2

## 1

**Introductory activity / Provocation / Prior knowledge check**
(5 - 10 mins)

Invite students to do a gallery walk around the classroom to view the different designs created for an identified community need.

Tell the students that they are now going to create and present a 3D model of their designs using Tinkercad OR Microsoft Paint 3D.

## 2

**Activities**
(40 mins)

Model to students how they can begin creating a 3D model of their design from the previous lesson using Tinkercad or Microsoft Paint 3D.

Give students time to work on their 3D models. If student designs are intricate or detailed, ask them to capture the essence of their designs first (create the big shapes and overall look) and add the details later if there is time, or if they wish to extend their work.

When student 3D models are completed, ask students to export their files as .OBJ if using Tinkercad. If students are using Paint 3D, they may opt to view their designs in Mixed Reality mode.

Ask students to take a video, photo, or screenshot of their 3D models. They can share their creation on page 6 of their digital notebook.

## 3

**Check for understanding**
(5 - 10 mins)

Ask students to complete page 7 in their digital notebook. They need to identify the advantages and disadvantages of using 3D modelling software and traditional pencil / paper to design solutions, and decide which method of design they prefer.

| Differentiation for students with additional needs | Extension ideas | Video tips |
|---|---|---|
| Provide visual prompts, such as pictures or symbols, to help convey the concept of community needs and potential solutions.<br><br>Break down the task into smaller steps, clearly illustrated with visual cues. For example, show step-by-step instructions using pictures or written prompts. | Students can use an additional 3D modelling tool to create their design, and compare with the tool they used during this lesson.<br><br>Students can create a community environment in CoSpaces to showcase their designed solution in its intended place. | The video is a quick introduction to Paint 3D. |

## Curriculum Connections

### Australian Curriculum Version 9.0

**Year 7 and 8 - Design Technologies**
**Generating and Designing**
Generate, test, iterate and communicate design ideas, processes and solutions using technical terms and graphical representation techniques, including using digital tools (AC9TDE8P02).

**Producing and Implementing**
Select, justify and use suitable materials, components, tools, equipment, skills and processes to safely make designed solutions (AC9TDE8P03).

### Cross-curriculum priorities

- ☐ Aboriginal and Torres Strait Islander Histories and Cultures
- ☐ Asia and Australia's Engagement with Asia
- ☐ Sustainability

### General capabilities

- ☐ Literacy
- ✓ Numeracy
- ✓ Information and communication technology (ICT) capability
- ✓ Critical and creative thinking
- ✓ Personal and social capability
- ☐ Ethical understanding
- ☐ Intercultural understanding



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