

VR & AR LEARNING TASK

Design a Future Gadget

Learning area

Technologies – Design and Technologies

Year level

Year 7/8

Duration

90 minutes

Task summary

Students will dive into the exciting world of design thinking as they become inventors of the future! In this project, students unleash their creativity by crafting a revolutionary gadget to solve a real-world problem then bring it to life in 3D by using Tinkercad and stepping into the immersive realm of virtual reality (VR).

Session overview

Students will be able to practise using the design thinking framework when prototyping a future gadget solution to a problem in 3D format. Students will design using both a digital 3D application (Tinkercad) and in Virtual Reality (VR).

Digital technologies

- VR
- AR
- Robotics
- Drones
- Other: _____

Required resources

Hardware:

- Whiteboard / Smartboard screen
- Laptops / tablets

IMVR apps:

- [Blocks by Google](#) (Free) - This is a 3D poly design application where students can prototype their designs using this app. Creations may be downloaded and 3D printed or viewed on AR or VR.

Apps:

- [Tinkercad](#) - This is a 3D modelling application that may be used with a laptop or iPad. Teachers would need to set up a teacher account and enable students to have individual log-ins to join the class.

Learning task

Videos:

- [INVENTIONS OF THE FUTURE THAT WILL SOON BE AVAILABLE TO EVERYONE\(12:37\)](#) - This video highlights various inventions that are designed to solve various real-world problems and are set to be available for consumers.

Teaching resources:

- [Teaching deck](#) – this is a slide deck template teachers can download and use for this learning task.
- [Student digital workbook](#) - to be distributed either in printed format or digitally via email or the school learning management system.

Other resources to try (optional)

Apps/software tutorials:

- [Google Blocks Tutorials](#) - This is a series of videos by Google that may be shown to students before this lesson so they have an idea of how to use Google Blocks.
- [Tinkercad Tutorials](#) to be linked when available.
- [CoSpaces EDU](#) - An AR/VR creation app that students can use to create their own AR/VR experience based on the tasks (Download via [Google Play](#) OR [Apple App Store](#)).
- [CoSpaces EDU teacher tutorial](#) - Teachers learn how to use and implement CoSpaces EDU in the classroom.
- [CoSpaces EDU student tutorial](#) - Students learn the basics of using CoSpaces EDU for the first time.

Miscellaneous:

- [VR/AR Safety Poster](#) (PDF)
- [How McLaren Automotive uses virtual reality to design its sportscars and supercars\(2:11\)](#) - This video shows how the famous car company, McLaren Automotive, designs its cars using VR technologies.

Planning and preparation

NOTE: This learning task may be introduced in the middle or at the end of the unit.

Assumptions

Students should:

- View [Google Blocks Tutorials](#) and go through the basic hands-on tutorial on Google Blocks IMVR. As such, it would be good to organise a 'Fun with Google Blocks' session prior to this lesson where students will take turns learning how to use Google Blocks using the built-in tutorial (see video on how to access the tutorial).
- Have individual accounts on [Tinkercad](#), as well as some background skills in using this app.
- Have basic background in using Design Thinking Framework. If not, the teacher may need to allocate extra time to explain the framework.

- Have individual accounts and some background knowledge on how to create and view the AR/VR experiences, if using CoSpaces EDU.

Additional preparation for teachers

- Make sure that all devices are fully charged and are in working order.
- Check that all apps have been installed, updated, and are working properly on devices.
- Make sure to set up a teacher account on [Tinkercad](#) (if not set up yet).
- Create a copy of the Design A Future Gadget: Design Thinking student digital notebook and distribute it to all students. Make sure all students are able to access their copies.
- Assign students to small working groups. Each group will depend on the number of IMVR headsets available per class. For example, if the school has 3 available IMVR headsets, each group may have 6 students each (2 students working together per headset).
- If downloading Google Blocks creations, teachers should make sure their IT department has set up a folder on their systems where creations may be saved as either .OBJ or .MTL files. OBJ files may be imported to CoSpaces EDU. Depending on the machines and systems used in specific sites, these files may also be used for 3D printing. Students may just take a photo of their creations to add to their digital notebooks.
- If using CoSpaces EDU, teachers should have a teacher account and set up a class for students

Task Sequence

1

Introductory activity / Provocation (15 mins)

Show students the video on slide 2 of the teaching deck [INVENTIONS OF THE FUTURE THAT WILL SOON BE AVAILABLE TO EVERYONE](#) (12:37) as inspiration for different gadgets for the future. Teachers may choose to select different sections for students to view if they choose to not watch the entire video.

2

Prior knowledge check (10 mins)

After viewing the video, discuss as a class:

- Which invention excited them the most? Why?
- What problems or issues do those inventions solve?
- Who would benefit from those inventions? Why?

3

Activities (40–60 mins)

1. Tell students that they are going to come up with their gadget of the future design using the design thinking framework.
2. Show students the following and relevant slides from the student digital notebook that they need to fill out.
On slide 6-7, allow students time to reflect on the video they saw. Brainstorm how they feel, and what they saw and thought about the potential of future inventions. Students then brainstorm a problem or issue that they would create a gadget to assist in solving it.
3. Once they complete the Ideate page on slide 9, students can start designing their future gadgets on [Tinkercad](#).
4. In small groups, some students take part in the stations listed on slide 4 of the teaching deck and student digital notebook. Assign two students per IMVR station. The student who is not wearing the IMVR headset can assist the student who is wearing it, and then switch after 5 minutes.
5. Ensure students are aware that they are only creating a basic version of their future gadget idea. Ask them to save the file, if you would like to be able to access their creations in the future. Also, ask students to take a photo of their creation to add to their digital notebook.
6. Once the first group of students on the IMVR headsets are done, ask for the next group of students to go on the IMVR stations. For ease of transitions, it would be helpful to put a visual and audible timer in the Lab (refer to slide 9 on the teaching deck). Make sure students know to complete their turn once their time is up.
7. If completing this task in one lesson, remind students that they are only creating a basic version of their future gadget. If you wish for a more detailed version of their designs, you may allocate another 1 to 2 lessons for students to work on their designs.

4

Check for understanding
(5 – 10 minutes)

Class discussion/sharing: Ask students to share some of their experiences and/or designs they created. Allow students time to share what makes their gadget unique.

If time permits, enable students to view their designs in AR or VR, get students to save their files on Tinkercad and/or Blocks by Google in .OBJ format and import the file to CoSpaces EDU.

If the task is used as part of an assessment, mark the student's digital notebook responses.

Differentiation for students with additional needs	Extension ideas	Video tips
Some students may want to work in pairs to complete their digital notebooks.	Teachers may give students another opportunity to keep working on their Blocks by Google and Tinkercad designs if allocating extra lessons. During this lesson they can implement the feedback they received to improve their gadgets.	The video for this learning task explains how to access the Blocks by Google tutorial.

Curriculum Connections

Australian Curriculum Version 9.0

Year 7/8 - Design and Technologies

Generate, test, iterate, and communicate design ideas, processes and solutions using technical terms and graphical representation techniques, including using digital tools. (AC9TDE8P02)

Cross-curriculum priorities

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

General capabilities

- Literacy
- Numeracy
- ✓ Digital Literacy
- ✓ Critical and creative thinking
- ✓ Personal and social capability
- Ethical understanding
- Intercultural understanding