Lumination

Lesson Plan

AR & VR LESSON PLAN

The Future of Food

Subject	Science, Digital Technologies, Design and Technologies	Kit	VR/AR Creation Kit
Year Level	Years 5-10	Duration	1x 90 minute Lesson

Task Summary   Based on their understanding of the changing nature of food production and consumption, students will design a 'Farm of the Future' to be viewed in AR or VR.

Preparation
- Review the suggested videos in the resource section (below) to make sure that they are working on your devices and that they are suitable for your class.

- If viewing VR videos, make sure all VR devices are fully charged and a YouTube video viewer app is downloaded and activated on your devices.

- Make sure students have at least basic CoSpaces accounts set-up. Please note that CoSpaces Basic accounts have limitations.

- Students should have a basic understanding of how to use CoSpaces, including coding. If not, please add 1 x 60 minutes for learning CoSpaces.

- If you haven't had a chance to discuss VR and AR safety with your class, please make sure to do so.

                    Developed by Shai Coggins, MTeach

Activity Sequence

1 Discuss what the students know about how food is currently produced. Get students to think about food consumption: 14 Surprising stats about Global Food Consumption. Discuss the issue of how much food people would need in 2030 and 2050. Why does this matter? How will this affect them?

2 As a class, watch 'The Future of Farming'. You may also opt to show other videos/VR videos from the Additional Notes and Resources section.

3 Discuss what you've watched as a class. Get students to share what they've learnt and what ideas came to mind while watching the videos. Talk about how sustainability and climate change can affect the future of farming.

4 Brainstorm one or two food production issues that they would be interested in focusing on (e.g., sustainability, waste management, climate change, etc). Discuss how they can come up with potential solutions to the issues.

5 Using CoSpaces, design a 'Farm of the Future' based on their potential solution to a food production issue. What would their farm look like? What types of technologies would they be using (e.g., robots, AI, drones, etc)? What would their farm produce – how and why? Get students to consider adaptations and other scientific factors in their designs.

6 To give students some ideas or guidance, the teacher may wish to show this example Farm of the Future on CoSpaces – https://edu.cospaces.io/GFZ-FBQ (view on VR headsets or the laptop).

7 Depending on your learning goals, you can also get students to consider measurement, scale, perimeter, area, volume, etc. In their designed solutions.

8 Share and provide feedback for student designs and creations.

Extension Ideas

Get students to add interactive elements to their designs, such as quizzes, games, interactive tours, and other possible iterations with user input.

Resources and Notes

Resources and Notes Videos: [The Future of Farming](#) - [Robotic Farming of the Future](#) - [The Futuristic Farms that will feed the World](#)

VR Videos: [How Ancient Mayans produce so much Food](#) - [Why Chicken may be the Food of the Future](#) - [New Zealand's Orchard of the Future](#)

Some related IMVR Activities: [Tiny Town VR](#) - [Harvest Simulator VR](#)

CoSpaces Tutorials: [Getting Started](#) - [Game Creation](#) - [Quiz Game Creation](#) - [Simulations](#)

Other Resources: [National Science Week Website](#) - [Food demand in Australia](#) - [The Future of Food](#)

Curriculum Connections (ACARA)

Science

Year 5

Living things have structural features and adaptations that help them to survive in their environment (ACSSU043)
Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE083)

Year 6

The growth and survival of living things are affected by physical conditions of their environment (ACSSU094)

Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE100)

Year 7

Interactions between organisms, including the effects of human activities can be represented by food chains and food webs (ACSSU112)
Solutions to contemporary issues that are found using science and technology, may impact on other areas of society and may involve ethical considerations (ACSHE120)

Year 8

Solutions to contemporary issues that are found using science and technology, may impact on other areas of society and may involve ethical considerations (ACSHE135)

Year 9

Advances in scientific understanding often rely on technological advances and are often linked to scientific discoveries (ACSHE158)

Year 10

Advances in scientific understanding often rely on technological advances and are often linked to scientific discoveries (ACSHE192)

Digital Technologies

Year 5 & 6

Design a user interface for a digital system (ACTDIP018)

Design, modify and follow simple algorithms involving sequences of steps, branching, and iteration (repetition) (ACTDIP019)

Implement digital solutions as simple visual programs involving branching, iteration (repetition), and user input (ACTDIP020)

Year 7 & 8

Design the user experience of a digital system, generating, evaluating and communicating alternative designs (ACTDIP028)

Implement and modify programs with user interfaces involving branching, iteration and functions in a general-purpose programming language (ACTDIP030)

Year 9 & 10

Design the user experience of a digital system by evaluating alternative designs against criteria including functionality, accessibility, usability, and aesthetics (ACTDIP039)

Create interactive solutions for sharing ideas and information online, taking into account safety, social contexts and legal responsibilities (ACTDIP043)

Design and Technologies

Year 5 & 6

Investigate how and why food and fibre are produced in managed environments and prepared to enable people to grow and be healthy (ACTDEK021)

Examine how people in design and technologies occupations address competing considerations, including sustainability in the design of products, services, and environments for current and future use (ACTDEK019)

Year 7 & 8

Analyse how food and fibre are produced when designing managed environments and how these can become more sustainable (ACTDEK032)

Investigate the ways in which products, services and environments evolve locally, regionally and globally and how competing factors including social, ethical and sustainability considerations are prioritised in the development of technologies and designed solutions for preferred futures (ACTDEK029)

Year 9 & 10

Explain how products, services and environments evolve with consideration of preferred futures and the impact of emerging technologies on design decisions (ACTDEK041)

Investigate and make judgements, within a range of technologies specialisations, on how technologies can be combined to create designed solutions (ACTDEK047)

Investigate and make judgements on how the principles of food safety, preservation, preparation, presentation and sensory perceptions influence the creation of food solutions for healthy eating (ACTDEK045)

Curriculum Connections (NSW Syllabus)

Science

Stage 3
examines how the environment affects the growth, survival and adaptation of living things **ST3-4LW-S**

explains how food and fibre are produced sustainably in managed environments for health and nutrition **ST3-5LW-T**

Stage 4
relates the structure and function of living things to their classification, survival and reproduction **SC4-14LW**

discusses how scientific understanding and technological developments have contributed to finding solutions to problems **SC4-11PW**

explains how new biological evidence changes people's understanding of the world **SC4-15LW**

Stage 5
explains how biological understanding has advanced through scientific discoveries, technological developments and the needs of society **SC5-15LW**

Design and Technologies

Stage 3

explains how digital systems represent data, connect together to form networks and transmit data **ST3-11DI-T**

Stage 4

describes designed solutions that consider preferred futures, the principles of appropriate technology, and ethical and responsible design **DT4-5**

identifies creative, innovative, and enterprising design ideas and solutions **DT4-6**

Stage 5

evaluates designed solutions that consider preferred futures, the principles of appropriate technology, and ethical and responsible design **DT5-5**

develops and evaluates creative, innovative and enterprising design ideas and solutions **DT5-6**

Food Technology

Stage 5

examines the relationship between food, technology and society **FT5-12**

evaluates the impact of activities related to food on the individual, society and the environment **FT5-13**

Curriculum Connections (VIC)

Science

Levels 5 & 6

Living things have structural features and adaptations that help them to survive in their environment (VCSSU074)

Scientific understandings, discoveries and inventions are used to inform personal and community decisions and to solve problems that directly affect people's lives (VCSSU073)

Levels 9 & 10

Advances in scientific understanding often rely on developments in technology and technological advances are often linked to scientific discoveries (VCSSU115)

Levels 7 & 8

Interactions between organisms can be described in terms of food chains and food webs and can be affected by human activity (VCSSU093)

Science and technology contribute to finding solutions to a range of contemporary issues; these solutions may impact on other areas of society and involve ethical considerations (VCSSU090)

Digital Technologies

Levels 5 & 6

Design a user interface for a digital system, generating and considering alternative design ideas (VCDTCD031)

Design, modify and follow simple algorithms represented diagrammatically and in English, involving sequences of steps, branching, and iteration (VCDTCD032)

Levels 9 & 10

Design the user experience of a digital system, evaluating alternative designs against criteria including functionality, accessibility, usability and aesthetics (VCDTCD051)

Analyse and visualise data to create information and address complex problems, and model processes, entities and their relationships using structured data (VCDTDI048)

Levels 7 & 8

Design the user experience of a digital system, generating, evaluating and communicating alternative designs (VCDTCD041)

Manage, create and communicate interactive ideas, information and projects collaboratively online, taking safety and social contexts into account (VCDTDI039)

Design and Technologies

Levels 5 & 6

Investigate how and why food and fibre are produced in managed environments (VCDSTC035)

Investigate how people in design and technologies occupations address competing considerations, including sustainability, in the design of solutions for current and future use (VCDSTS033)

Levels 9 & 10

Investigate the ways in which designed solutions evolve locally, nationally, regionally and globally through the creativity, innovation and enterprise of individuals and groups (VCDSTS044)

Explain how designed solutions evolve with consideration of preferred futures and the impact of emerging technologies on design decisions (VCDSTS055)

Levels 7 & 8

Analyse how food and fibre are produced when creating managed environments and how these can become more sustainable (VCDSTC046)

Investigate the ways in which designed solutions evolve locally, nationally, regionally and globally through the creativity, innovation and enterprise of individuals and groups (VCDSTS044)