



national science week 2021

National Science Week 2021, Bundaberg AgTech, Years 5-6

Overview Students investigate Farmer needs a robot and the use of drones in agriculture

Resources Tobbie robot, sphero minis, mini drones, makey makey, rover robot or other devices. Scratch software

Learning intentions

- "Investigate how electrical energy can control movement, sound or light in a designed product or system." (ACTDEK020)
- "Select appropriate materials, components, tools, equipment and techniques and apply safe procedures to make designed solutions." (ACTDEP026)
- "Explain how products, services and environments evolve with consideration of preferred futures and the impact of emerging technologies on design decisions." (ACTDEK041)

Success criteria

For students to understand that technology can be used to improve systems and processes in agriculture and that technological advancements do not mean loss of jobs but a change in jobs and skills required for the future.

Introduction

<https://www.cqu.edu.au/research/research-excellence/impact/case-studies/drone-surveillance-a-big-brother-for-crop-pests> CQUniversity use of drones for monitoring crops

<https://www.cqu.edu.au/research/organisations/institute-for-future-farming-systems/precision-horticulture> CQUniversity precision horticulture

<https://www.cqu.edu.au/cquninews/stories/general-category/2019/smart-irrigation-system-for-cairns-park-management> CQUniversity researchers have implemented ways to irrigate cairns parks.



national science week 2021

National Science Week 2021, Bundaberg AgTech, Years 5-6

Introduction cont..

<https://www.abc.net.au/gardening/factsheets/native-rooftop-farm/12295938>

Rooftop farm in Sydney

<https://greenbronxmachine.org/generation-growth/>

Food video of project from the Bronx, New York

<https://youtu.be/dyFlcsVYZyw>

Student design.

Talk about artificial intelligence (AI) and machine learning. Explain to the students that, hypothetically, it is possible for machines to learn to solve any problem relating to the physical interaction of things within a defined or contained environment by using AI and machine learning

Explain that the principle of artificial intelligence is one where a machine can perceive its environment, and through a certain capacity of flexible rationality, take action to address a specified goal related to that environment. Machine learning is when the machine receives large quantities of similar sets of data that can be categorised into specified protocols, whereby its ability to rationalise increases, allowing it to better “predict” on a range of outcomes.

Lesson steps

- Allow students to develop skills in coding using scratch software.
- Allow students to explore different technology tools such as sphero mini, mini drone, makey makey, Tobbie robot, or robot rover.

Conclusion



Discuss with the students the ways in which different technologies could be used in agriculture.

Explain that a fair test involves changing one thing (type of salt), measuring one thing (height of grape), and keeping everything else the same (controls – same amount of each salt, same size grape)