Australia Post

Full STEAM ahead!

Stamp Collecting Month

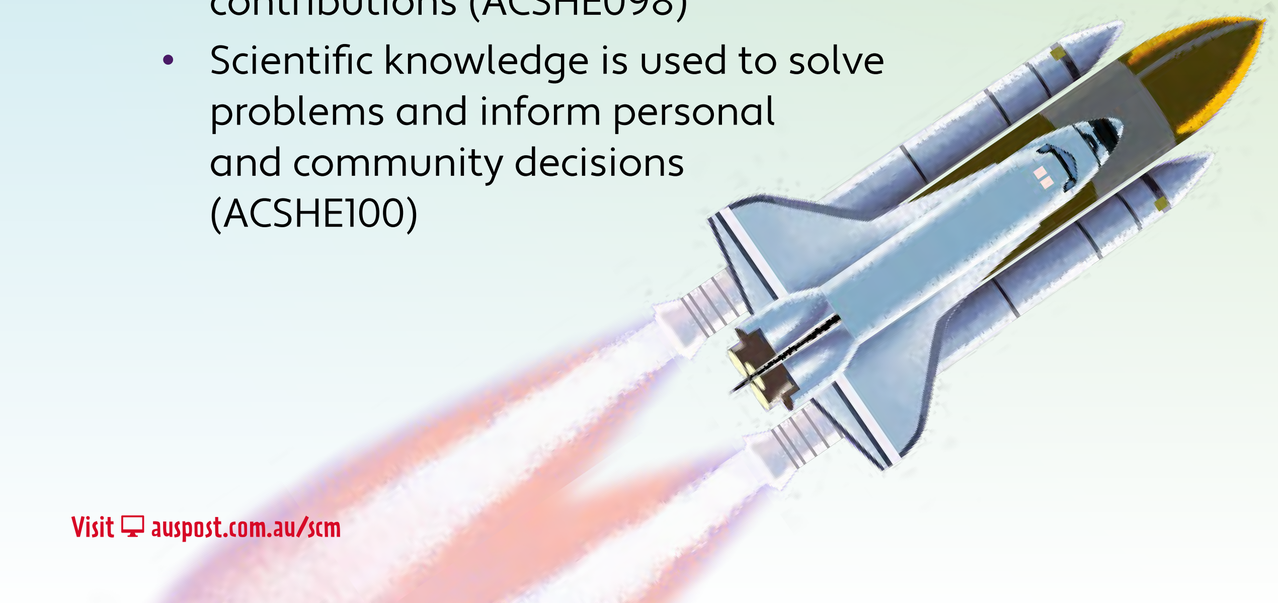
Age of the Machine

Classroom Activity Guide

Curriculum Links

Science

- Science involves making predictions and describing patterns and relationships (ACSHE061)
- Science knowledge helps people to understand the effect of their actions (ACSHE062)
- The Earth is part of a system of planets orbiting around a star (the sun) (ACSSU078)
- Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena and reflects historical and cultural contributions (ACSHE098)
- Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE100)



Design and Technologies

- 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)
- Critique needs or opportunities for designing, and investigate materials, components, tools, equipment and processes to achieve intended designed solutions (ACTDEP024)
- Select appropriate materials, components, tools, equipment and techniques and apply safe procedures to make designed solutions (ACTDEP026)
- Negotiate criteria for success that include sustainability to evaluate design ideas, processes and solutions (ACTDEP027)

Curriculum Links

The Arts

- Use and experiment with different materials, techniques, technologies and processes to make artworks (ACAVAM107)
- Develop and apply techniques and processes when making their artworks (ACAVAM115)
- Plan the display of artworks to enhance their meaning for an audience (ACAVAM116)

Cross-Curriculum Priorities – Sustainability

- The biosphere is a dynamic system providing conditions that sustain life on Earth (OI.1)
- World views that recognise the dependence of living things on healthy ecosystems, and value diversity and social justice, are essential for achieving sustainability. (OI.4)
- World views are formed by experiences at personal, local, national and global levels, and are linked to individual and community actions for sustainability. (OI.5)
- Actions for a more sustainable future reflect values of care, respect and responsibility, and require us to explore and understand environments. (OI.7)

General Capabilities

- Literacy & Numeracy
- ICT Capability
- Critical & Creative Thinking
- Personal & Social Capability
- Ethical Understanding
- Intercultural Understanding

How to use this guide:

This Age of the Machine Classroom Activity Guide is for Foundation to Year 6 teachers taking part in Australia Post Stamp Collecting Month 2021.

This guide contains activities of varying difficulty, including an extension task. Students can attempt one or all of the activities. Teachers should select activities that match the capabilities and interests of their students. All content is linked to the Australian Curriculum.

It is best to work through the read aloud interactive slideshow before your class commences the activities in this guide. The interactive slideshows contain introductory information about each Stamp Collecting Month topic and thought-provoking discussion questions intended to inspire deeper conversation around technology and STEAM-learning.

Learning Intentions

Students will:

- Create artworks and models representing and developing their understanding of robots and other smart machines.
- Consider how people in design and technologies occupations solve design challenges, including challenges related to sustainability.
- Discuss the ethical considerations around integrating robots and smart machines into society.

Activity 1
Robot Fun!

Create robots from recycled materials.

Use scrap materials left lying around at home and school. These might include cardboard boxes, buttons, foil, rubber bands, and more.

Challenge your students to explain the purpose of all the cool features they include on their robots.

Invite another group to visit your classroom to see the robot creations.

Activity 2
Animal Robots!

Research your favourite animals.

What makes each of these animals cool?
What are their "super abilities"?
What are their most effective features?

Design and draw a robot based on the characteristics of your favourite animal. Display the artworks as a class.

Consider each of the robots' amazing features and abilities.

Has this design challenge enhanced your understanding and appreciation of "design" in the natural world?

Activity 3

Create a working robot hand out of cardboard!

Create a working model of a robot hand. When finished, the fingers on the model will be controlled by pulling on the strings. The mechanism of this robot hand mimics the pulley system used in many robots in factories today!

Resources required:

- cardboard
- straws
- string
- tape
- scissors
- a big, blunt weaving needle or bodkin to thread the string through the straws

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Follow the steps below to make your robot hand:

1. Trace your hand onto a piece of cardboard, before cutting out the outline of your hand and marking the location of the finger joints.
2. Firmly tape small pieces of straw onto each finger in between the joints.
3. Thread the string through the straws on each finger and tape each string to the tip of each finger.
4. Control each finger by pulling on each of the strings from the bottom of the hand.
5. Experiment with the design of your hand so that it can pick up small objects.

Activity 4
Class Debate: Robots. Friend or Foe?

Should we have robot teachers in schools?
What about robot babysitters, so mum and dad can take a break?
Are robots going to take all the adults' jobs?
Will robot soldiers become a reality?
Is that a scary thought?!

Hold a class debate investigating the topic above.

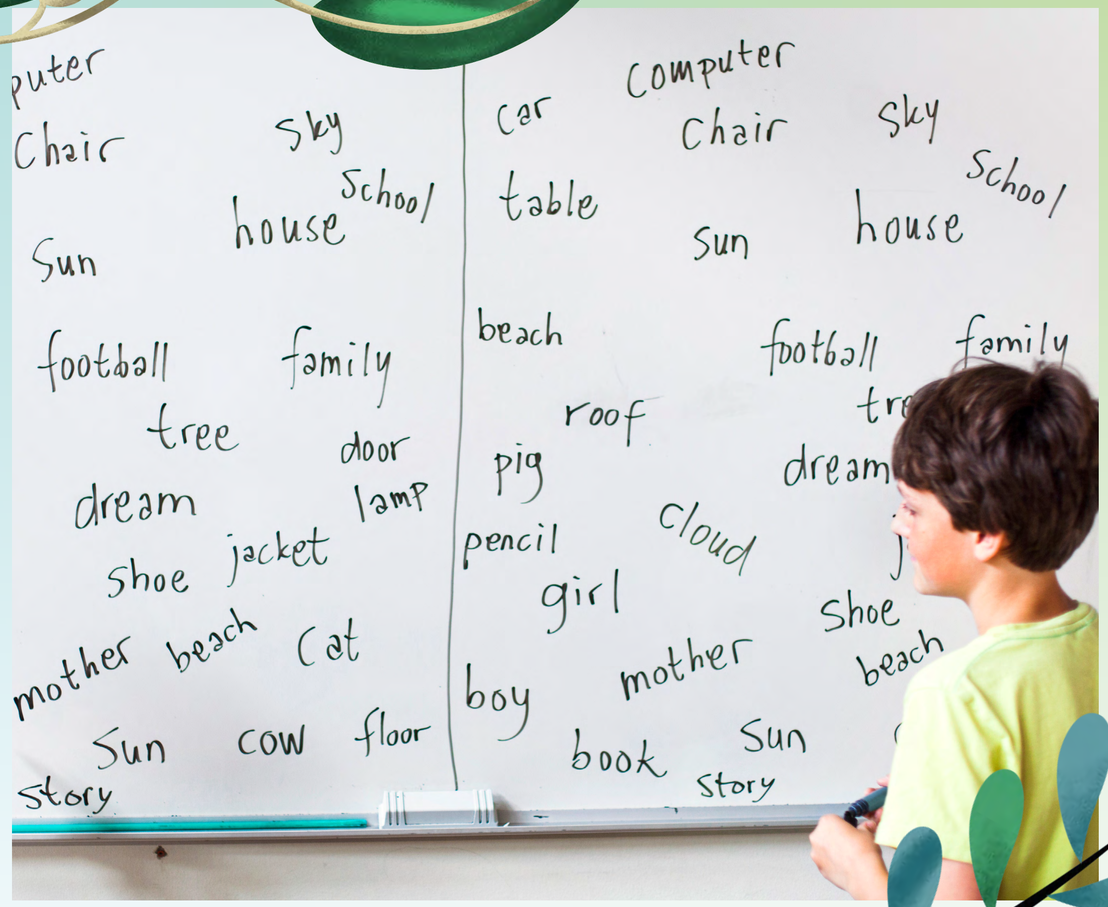
Teams will need time to brainstorm, organise their ideas, structure and write their speeches, and practise.

Find lots of other issues to debate in the interactive slideshows. Hold multiple debates to ensure every student gets an opportunity to express themselves.

Teacher Tip:

If you are unfamiliar with how to structure a debate, research this in advance.

- There should be two teams, the "affirmative" and the "negative".
- Each team should have 3 or 4 speakers.
- The teacher and the class can decide the winner!



Activity 5

Word Busters! Hold a Spelling Bee!

Look through the interactive slideshow for this unit to find new and hard-to-spell words. Depending on the age and capabilities of your students, some of the words your students may find difficult include:

robot, brain, machine, android, design, sustainability, technology, artificial, cyborg, innovation, inventor, mechanical.

How many of your students understand all the challenging new words and phrases?

Extension Task

Build a Scribble-Bot!

Extension students and fast finishers create a Scribble-Bot! A Scribble-Bot is a simple machine that draws crazy pictures by itself. This activity requires some forward planning.

Resources required:

- Big piece of paper
- Blu Tack or plasticine
- Battery
- Coloured textas
- Tape Strong plastic cup or similar container
- 1.5-3V motor (parents and teachers can easily to purchase these online)
- Decorations

Follow the steps below to make your Scribble-Bot:

1. Turn your plastic cup or container upside down.
2. Tape four or five textas to the outside of the container. These are the legs and they should point downwards.
3. Firmly tape the motor and battery to the top of the container. Attach a piece of Blu Tack or plasticine to the motor to unbalance it.
4. Take the lids off your textas and place the Scribble-Bot on a large piece of paper. Turn on the motor and let your bot scribble!
5. Experiment with the placement of your motor to change the way your bot scribbles. Attach blue tack counterweights if required.

Congratulations

for completing the Age of the Machine! activities for Australia Post Stamp Collecting Month 2021.

Please place the giant collectable sticker underneath the Age of the Machine! heading on your A3 Classroom Poster!

We hope you and your students have enjoyed this year's program and look forward to you joining us for Stamp Collecting Month 2022!