

Full
STEAM ahead!
Stamp Collecting Month

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Smart Solutions!

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 Smart Solutions 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 designs and models representing and developing their understanding of cutting edge technologies, sustainable urban design and sustainable energy sources.
- Create and experiment with a small productive garden to develop their understanding of flora and its requirements for sustainable growth.
- Discuss the ethical considerations around new methods of food production.

Activity 1

Miniature Wind Farm!

Create a wind farm from spinning pinwheels. Test your wind farm using a small fan or a hairdryer. Record and analyse the results.

Resources required:

- paper
- cardboard
- straws
- pins
- scissors
- small fan or hairdryer
- cardboard box



Follow the steps below to make your wind farm:

1. Make five spinning pinwheels using the paper, pins and straws. Instructions for making pinwheels are on the next page. The pinwheels will be the wind turbines for your wind farm.
2. Fix the pinwheels to the cardboard box by poking the straws through small holes and using tape to firmly hold the pinwheels in place.
3. Aim the small fan or hairdryer at the pinwheels using the least powerful setting. Gradually increase the power of the hairdryer or fan. Record how many pinwheels spin on each setting.



Activity 1

Miniature Wind Farm!

How to make your pinwheels

1. Begin with a square of paper approximately 20cm x 20cm.
2. Carefully fold the square from corner-to-corner in both directions, then unfold it.
3. Make a small pencil mark on each fold line about $\frac{1}{4}$ of the way from the centre.
4. Cut along each fold to your pencil mark.
5. Curl every second point to the centre and carefully pierce through all four points and the centre with your pin. (Teachers should very closely supervise the use of the pins).
6. Pin the pinwheel to a cardboard straw. Spin!

Reference: [How to make a pinwheel](#)



Activity 2

Experiment with a “Kitchen Garden”!

Create and care for a small, productive garden in groups. Plant herbs, vegetables and fruit in pots or small beds inside or outside the classroom. Carefully consider:

- plant placement
- sunlight
- water
- soil or potting mix
- protection from pests without using chemical pesticides.

Report back to the class to describe how each of the plants is getting on. Are the plants thriving? Why or why not?

*What season will you plant in? Will this influence your growth?
What happens if a plant is intentionally placed in a dark cupboard?
What will happen if a plant is intentionally over or under-watered?
What conditions will be most conducive to success?*

Activity 3

Future Cities!

Cities must be planned many years in advance. It's a huge and very difficult task. There are countless factors for city planners to consider. Most importantly, they must try to predict how people will live in the future.

Design a city to suit the citizens of the future. Draw and colour your designs or use an online drawing tool such as Google SketchUp. Showcase the designs by having an exhibition in your classroom.

Consider:

- air pollution
- living conditions
- parks and other green spaces
- workplaces and leisure activities
- safety
- new technologies such as renewable energy or high speed internet
- noise
- transport, including both public transport and private vehicles

Research the city of Neom, which is planned for Saudi Arabia, or the city of Nüwa, which is planned for Mars! How are the planners of these cities making sure their designs are future-proof?

How will you make sure your city provides quality of life for everyone that lives there?

Activity 4

Class Debate: “Should we eat lab-grown meat?”

Across the world, scientists are developing new ways to produce real animal meat. They have been able to grow chicken and beef from cells in a lab without harming any animals.

Do you like this idea or is it just too “weird”?

Is this a good way to provide protein for hungry people?

Do you think this is better for animal welfare than traditional farming methods?

Hold a class debate investigating the topic above. Teams will need time to brainstorm, organise their ideas, structure and write their speeches, and practise.

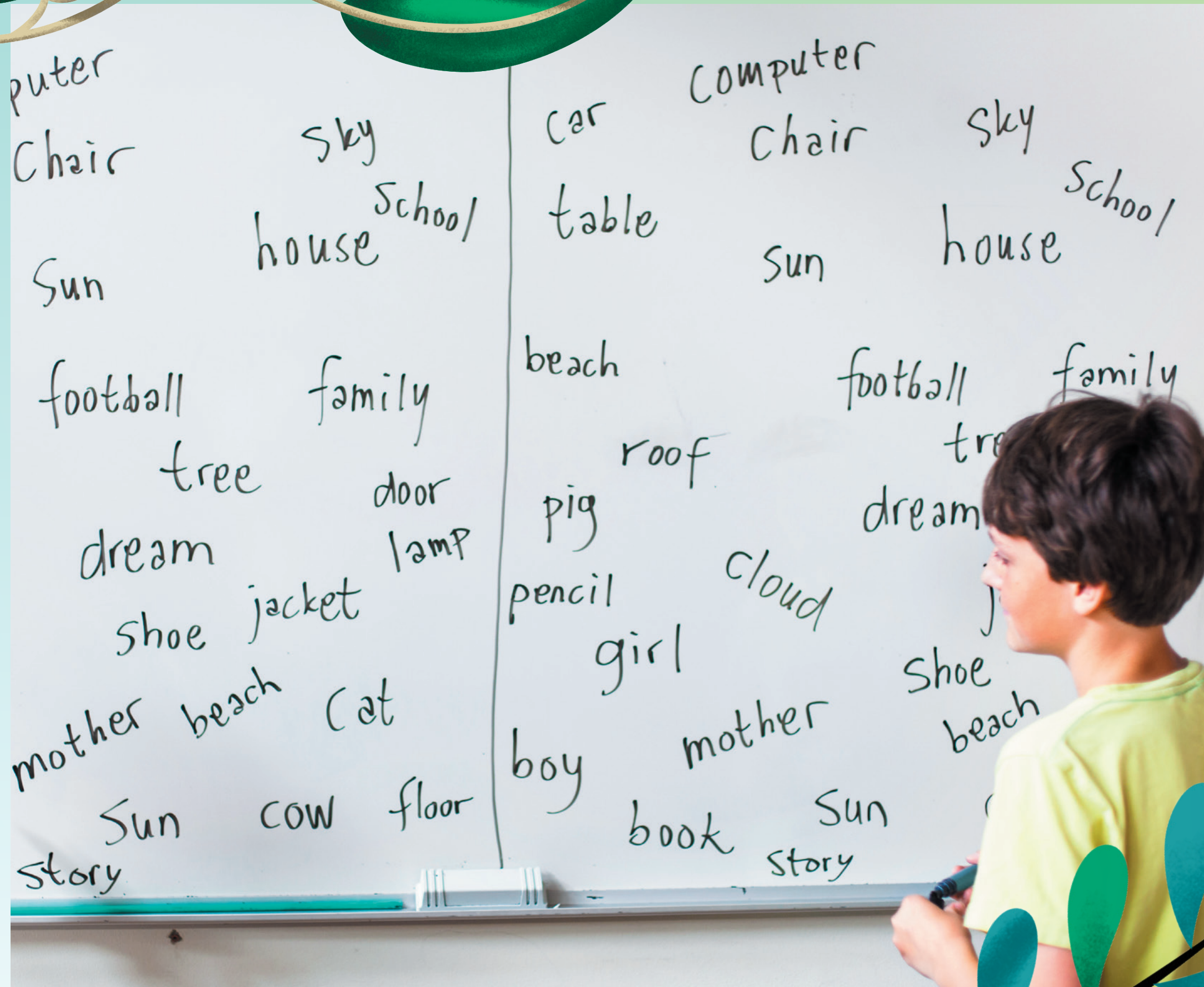
Find lots of other issues to debate in the interactive slideshows. Hold multiple debates to ensure every student gets an opportunity to express themselves.

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:

energy, wifi, cities, vegetables, transport, technology, traditional, turbines, volcano, design, solution, geothermal, wearable.

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

Extension Task

A New You?

Many of us carry small, very powerful computers in our pockets everywhere we go. Our phones! But what if we could make this technology part of our bodies, by adding new parts to make us stronger or quicker, to give us better balance, or to improve our senses?

Extension students and fast finishers research and design a new piece of technology to add to their body. Draw and label your invention or use an online design program such as Google SketchUp. Record and explain your design decisions.

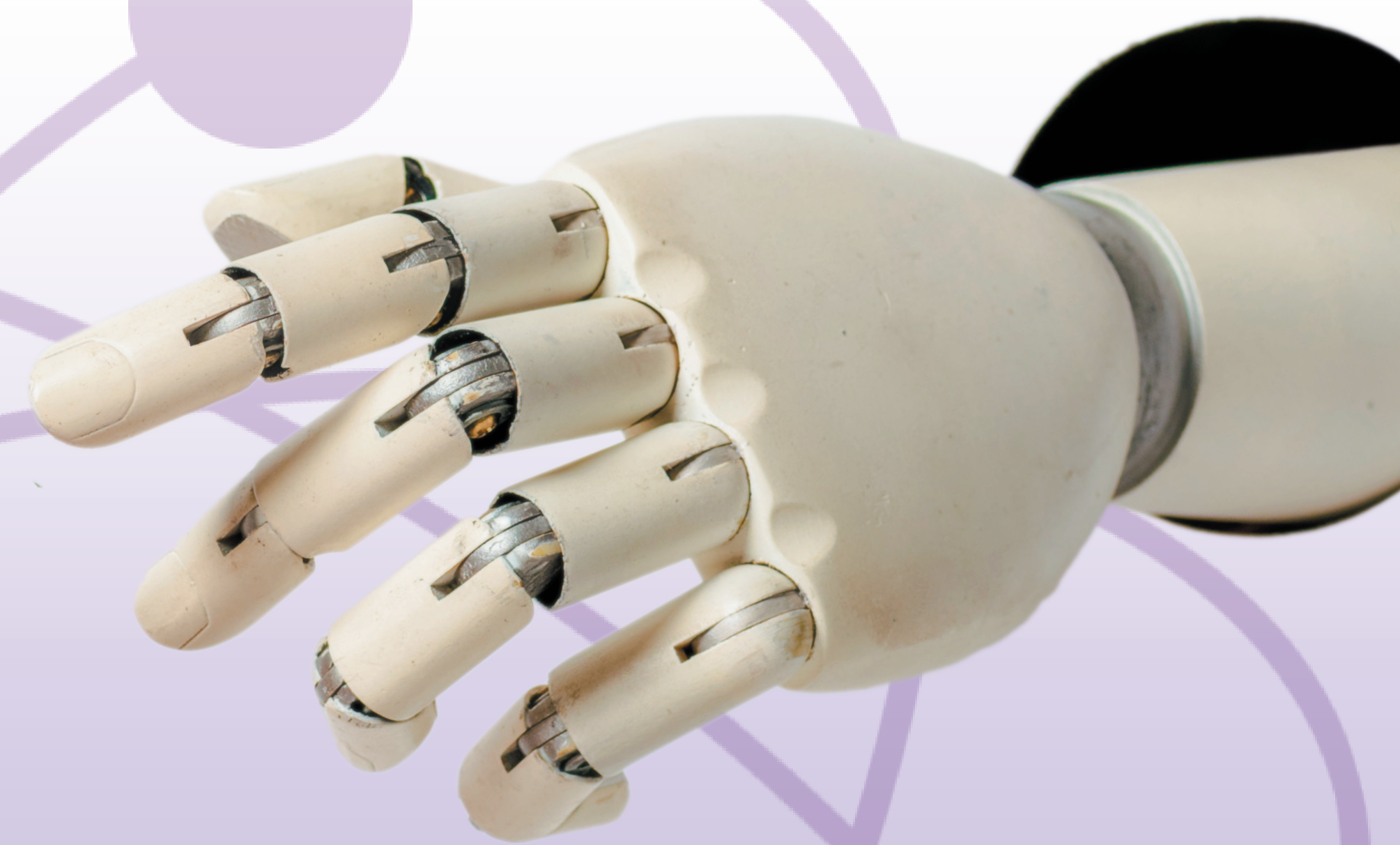
What is the purpose of your invention? How will it help you?

Will it help perform dangerous tasks or help to visit dangerous places?

Will it help you with boring, repetitive tasks?

Will your invention help the elderly or a person with a disability?

Many of our public and private spaces are not designed with differently abled people in mind!



Congratulations

for completing the Smart Solutions! activities
for Australia Post Stamp Collecting Month 2021.

Please place the giant collectable sticker underneath the Smart Solutions!
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!

