Northern Territory Preschool
Technology Games

Lucinda Stewart, Georgina Hill and Caroline Cohrssen

THE UNIVERSITY OF MELBOURNE
GRADUATE SCHOOLS
MELBOURNE GRADUATE SCHOOL OF EDUCATION
Shaping minds, shaping the world

NORTHERN TERRITORY GOVERNMENT

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Northern Territory Preschool

Technology Games

These games have been developed by The University of Melbourne to support the implementation of the Northern Territory Preschool Curriculum. They also align with skills described in the Australian Curriculum. The games take the form of playful challenges and are designed to encourage children to be inventive in identifying and using tools to make work easier, and to explore coding. In the Technology Games engineering design skills are *applied*. Technology includes but is not limited to computer technology: we encourage children to recognise technology in the world around us and the ways in which technology improves efficiency.

In these games we suggest challenges that are authentic to children. However, teachers should adapt the games to suit their preschool contexts. It is important for teachers to focus on the skills (the learning objectives) rather than the end product.

You will notice that the Northern Territory Science, Technology, Engineering and Mathematics (STEM) resources are inter-related. STEM takes an integrated, interdisciplinary approach. In these resources however, we have taken the approach that it is helpful for preschool teachers and assistant teachers to understand the parts in order to see and understand the whole. Like engineering, technology draws on creativity and innovation to find ways to improve people's lives. By applying engineering thinking, technology draws on materials to invent ways to make things work. Engineering and technology are thus both context-specific.

The games are intended to be fun for children and easy to facilitate for teachers. Open-ended play suggestions will help you introduce new concepts. They focus on encouraging active participation, innovative thinking and reasoning, and back-and-forth conversations. Games are designed for individuals, small and large groups, acknowledging that play expands thinking. Games use everyday materials.

Important words to model are provided. You may wish to print each word (and its meaning) on a card and laminate it. The word cards can be placed near the games. If children use gestures instead of words to explain their ideas, assist them by providing the new words.

Explicit learning objectives assist educators to assess child learning, recognising that children demonstrate understanding in different ways. Extension, drop-back and open-ended play ideas are provided for each game. If you have assistant teachers in your room be sure to discuss the games together prior to using them.

The games strengthen opportunities for preschool teachers to respond to the knowledge, reasoning and language that children demonstrate in Preschool, to plan for current and future learning, and to enact the planning cycle. The games also provide opportunities to apply mathematical, scientific and engineering thinking and to support communication and language skills. Allow plenty of time for discussion. Resist the urge to solve the children's problems for them. Instead, allow time and provide support to help them to work out the solution for themselves.

Finally, observe what the children say and do, as well as whether they work individually, in pairs or in small groups. Noticing this will help you plan further learning experiences for each child. Have fun!

Department of Education (2020). Northern Territory Learning Games®. Department of Education, Darwin NT.

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Grouped by technology process skills

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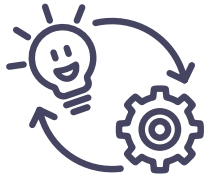

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Investigating and Defining Technology around us

Technology hunt

You will need:

- writing materials or an interactive whiteboard.

Learning objectives

For the children to:

- share what they know about technology
- explore our everyday environment to identify technology
- review what they know about technology.

Important words to use

- Technology, tools, efficient (easier and faster)

The investigation

The focus of this game is to find examples of technology in the world around us. What do we use it for?

Big ideas

Technology is the name used to describe objects and systems that draw on mathematical, scientific and engineering thinking to improve the way we work. Technology is more than just computers, smartphones and tablets. This learning experience encourages children to identify other forms of technology. By providing opportunities to explore and identify technology in the world around us, children will recognise how technology in our everyday lives helps us work more efficiently (that is, easier and faster).

Investigating and Defining

Technology hunt

New words

- ***Efficient/efficiency*** *- Making tasks easier and faster to complete.*
- ***Equipment*** *- Objects designed to carry out a particular function.*
- ***Technology*** *- Tools and machines that help us solve problems and do new things.*
- ***Tools*** *- Objects designed to carry out a particular function.*

What the educator does

1. Have a look around your indoor and outdoor environments to identify examples of technology before you introduce the technology hunt. Remind children that scissors, measuring tapes, rulers, soap dispensing bottles, tablets, see-saws, bicycles and gates are all forms of technology. You may need to give the children hints at group time to help them get started.
2. At group time, ask the children to tell you what they know about technology. Ask them to point out examples of technology. Make a list of their ideas.
3. Then, invite the children to go on a technology hunt to look for tools or equipment that they use every day. Once the children have had an opportunity to explore, gather the group together again. Encourage the children to talk about the tools they found. How do they help us to work? Do we need to change our understanding of technology?

Drop-back ideas

1. *During any activity, encourage children to brainstorm to create a list of tools they need. For example, cooking may need measuring tools, an oven and cooking utensils. Highlight how using these forms of technology makes the activity more efficient.*
2. *Prepare ahead by printing photographs of examples of technology in the environment. Give each child a few photographs. Encourage them to find the objects. Afterwards, at group time, discuss the objects they found. Were any unfamiliar? Talk about what they are used for.*

Extension ideas

1. *Encourage children to think about how they could improve the efficiency of a particular tool. For example, how could we make an everyday tool like a stapler even more efficient? Could we make it staple through cardboard or work faster? Or, if you didn't have a stapler, what technology could you use instead?*
2. *Create a poster including some objects frequently used in the classroom (for example, sticky tape and glue). Ask the children to keep a record of how many times the objects are used in one day. At the end of the day discuss which objects were used the most. Encourage the children to discuss how these objects made the work more efficient.*

Links with NT Preschool Maths Games 'Data Collection, Representation and Analysis: My favourite book'.

Open-ended activity

Invite children to suggest examples of technology to be added to play areas in the room. For example, they could add mobile telephones, clipboards, pens and scissors to the home corner. This allows children to use the technology during open-ended play.

Generating and Developing Technology around us

Shadow stories

You will need:

- a light coloured wall
- a torch or lamp.

Learning objectives

For the children to:

- experiment with technology, specifically artificial light
- explore how this technology can be used to create a story
- use multiple forms of artificial light.

Important words to use

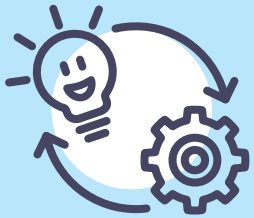
- Shadow, light, artificial light, torch/lamp, electric and electricity.

The investigation

The focus of this game is to experiment with using artificial light (not sunlight) to create shadows. By extending on this, children can explore using the technology of torches, lamps and light bulbs to create images.

Big ideas

We use different technologies in our everyday lives. Technology may be a tool used to find information or a tool used to explore and capture creativity. This learning experience encourages children to use technology to produce something new and to tell a story. By exploring technology in this way, children see how technology can be used as a tool for developing and sharing our creations.



Generating and Developing

Shadow stories

New words

- ***Light*** *- Light can come from a natural source (like the sun) or an artificial source (like an electric lamp plugged into a power point).*
- ***Shadow*** *- A dark area created by an object placed between a light source and another surface.*

What the educator does

1. Find an area inside a room that can be made darker, such as a corner where blinds block light from windows.
2. At group time, explain to the children that they are going to make some shadow animals using artificial light. Instead of using sunlight outside, they will use the technology of artificial light in the room.
3. Start with a simple demonstration. Ask one child to hold the torch so that it shines on a wall while you hold your hand in between the torch and the wall to create an image. This could be a duck—use your fingers and thumb to show a duck's bill 'quacking'.
4. Invite children to draw and cut out shapes of animals. Then, invite the children to use their animals to tell shadow stories. (refer to the illustration on p. 8.)

Drop-back idea

1. *Provide some ready-made puppet characters on sticks. When shining the torch on a wall, invite children to place the puppet characters in front of the torch to explore what happens.*
2. *Encourage children to choose toys in the classroom to make shadows on the wall.*

Extension ideas

1. *Provide children with materials to create more complex shadow puppets. This might include cardboard to cut out shapes and sticks on which to attach them. Encourage children to create a story using the puppets and act it out while you shine a torch or lamp against a wall.*
2. *Use a school tablet or mobile telephone to record children's shadow puppet play. This is an example of how technology can be used to record children's ideas to then be shown to others.*

Open-ended activity

Invite children to explore an area set up with the materials needed to create a puppet show. Provide equipment such as prepared puppets (or materials to make them), torches and a cardboard box to make a stage. Encourage the children to tell stories using the puppets and the stage.

Investigating and Defining Technology to improve efficiency

Garden gadgets

The investigation

How do different garden tools and technologies help us work more efficiently? Children are invited to explore, test and compare how different garden technologies can be used. They will decide if they really do make our work easier.

Big ideas

Some technology in the garden is simple and has been around for a long time, such as a shovel. Some Aboriginal cultures developed traditional tools such as digging sticks. Digging sticks are made of wood and are sharpened at one end. These can be used to dig for edible bush tucker. A timer that controls a sprinkler system is a much more recent invention. Both types of technology help people to be more efficient.

You will need:

- a variety of garden tools and equipment – whatever you have! This could include some, any or all of the following:
  - Hose, hose trigger/nozzle
  - Buckets
  - Sprinklers/timer system
  - Shovel, trowel
  - Retractable hose reel
  - Wheelbarrow
  - Rake
  - Broom
  - Water tap
  - Watering can
  - Pruning shears/secateurs
  - Stop watch
  - An outdoor area with dirt, leaves and a tap

Learning objectives

For the children to:

- share their ideas and knowledge about how technology can help us in the garden
- investigate and compare how technologies are used
- ask questions and volunteer ideas about how these technologies work
- explore and gain understanding about how technology can help make people work more efficiently.

Important words to use

Technology, tools, efficient, efficiency, systems, equipment, design and invention.

Investigating and Defining

Garden gadgets

New words

- ***Efficient/efficiency*** *- Making tasks easier and faster to complete.*
- ***Equipment*** *- Objects designed to carry out a particular function.*
- ***Technology*** *- Tools and machines that help us solve problems and do new things.*
- ***Tools*** *- Objects designed to carry out a particular function.*

What the educator does

During mat time, introduce the idea of garden tools and technology to the children. What do they already know? What is their understanding of the word 'technology'?

1. Begin by asking questions that encourage children to think about technology and its uses in the garden. Write down children's ideas. Examples of questions you could ask are:

   How do tools help us in the garden? Are tools a type of technology? Can something be technology if it doesn't use electricity?

2. With the children's help, plan an experiment to compare how gardening tools and equipment can make jobs easier and faster. Some ideas for challenges are provided. In each challenge, you could have groups take turns using different methods. Compare the difference in time taken with and without technology.

3. After each challenge, discuss how technologies affected the children's work. How did the tools help them?

Challenges

Carrying water from one point to another – What is the easiest way to fill up a clear plastic container with water?
A group of children first fill a container using their hands to carry the water, and then using buckets and/or watering cans.

Tidying the yard – What is the quickest way to tidy up leaves or dirt on the ground?
Children work together to clean up an area of yard with leaves (or dirt/sand), first using their hands and then using a rake or a broom. Which was quicker? Which was easier? (Educator uses a stop watch or a mobile telephone to time the children).

Digging a hole – Is it quicker to dig with our hands or with a spade?
Children dig a hole in the sandpit/dirt, first using their hands and then using a shovel or trowel. Find a stick or leaf to measure how deep the hole should be. Which is easier?

Drop-back ideas

1. *Children name all the different tools and types of equipment that help us in the garden. Invite children to draw a tool or design their own.*
2. *Plant some seeds, highlighting the technologies used in this process (such as trowels and watering cans).*
3. *Choose one type of garden tool or technology. Use books and/or tablets with the children to find out how it works, and how it helps people work more efficiently.*

Extension ideas

1. *Explore more complex garden technologies, such as a lawn mower, a leaf blower or a hedge trimmer. What did people do before these tools were invented? How do they help people do garden jobs, such as cutting the grass?*
2. *Take a walk around the local community. What garden tools and equipment are used in your local community? What are they used for, and where?*
3. *Research tools and equipment used by Aboriginal communities throughout history that made jobs more efficient. Are any still used today?*

Open-ended activity

Provide tools and equipment for children to use during outdoor play such as small shovels, rakes and brooms. Give children opportunities to use the tools to undertake meaningful and authentic jobs. Collect loose natural parts, such as pebbles, seedpods and twigs, and provide different tools to transport these objects from one place to another, such as buckets, a wheelbarrow or a wagon.

Links with NT Preschool Engineering Games 'Water, water, here to there'.

Producing and Implementing Technology to improve efficiency

‘Wheelie’ heavy blocks

The investigation

The educators are rearranging the indoor and outdoor areas. They need the children’s help to move all the wooden building blocks outside. What is the most efficient way to transport these heavy blocks? How can technology help us?

Big ideas

Wheels are a form of technology. When a strong rod goes through the centre of two wheels it is called an axle. We can put heavy things on an axle because the wheels turn around the axle. Wheels help us move heavy loads.

Links with NT Preschool Engineering Games ‘You’ve got to move it, move it’.

You will need:

- wheeled transport, such as wagon, toy truck, dolly trolley, small wheelbarrow, or anything else with wheels that could carry blocks
- wooden blocks.

Learning objectives

For the children to:

- share ideas about how to transport the blocks from inside to outside using wheels
- explore the design and function of a wheel as a form of technology
- work together and communicate with the other children
- discuss what worked, what didn’t work and what was challenging.

Important words to use

Technology, efficient, efficiency, transport, design, heavy, axle, movement, teamwork, research, plan and wheel.

Producing and Implementing ‘Wheelie’ heavy blocks

New words

- ***Efficiency*** *- Making tasks easier and faster to complete.*
- ***Technology*** *- Tools and machines that help us solve problems and do new things.*

What the educator does

1. During group time, explain to the children that you need their help to move all the wooden blocks from the indoor area to the outdoor area. Say, “I need your help to work out the most efficient way to move the heavy blocks!” Ask children who are interested in this challenge to gather in the block area for a planning meeting after group time.
2. At the planning meeting, discuss how technology could help make this job easier.
3. Invite the children to think of all the different things they know of that have wheels. Record their ideas.
4. Focus on moving the wooden blocks outside. Ask the children to share their ideas about how we could use the technology of wheels to help us complete this task. Do we have anything at preschool with wheels?
5. Invite the children to consider different aspects of the job, such as how many blocks there are to move, the easiest pathway to move from indoor to outdoor, how big the blocks are and how many will fit on the wagon/wheelbarrow/other wheeled transport.
6. Encourage the children to work together as a team to move the blocks using a form of wheeled technology (whatever you have available). If you have a variety of options, experiment with all of them, and compare the effectiveness of each. Examples of questions you could ask are:

   How is technology helping us with this problem? Is it making our work more efficient?

   Encourage the children to observe how the wheel is working.
7. Once all the blocks have been transported, reflect with the children on the process. Ask questions such as:

   What worked really well? How did the wheels help us move a heavy load of blocks? What did you find out about how wheels work?

   Share some of your observations of what the children said/did during the process and how you observed them overcoming and solving challenges.

Drop-back ideas

1. *Introduce songs and rhymes such as ‘Wheels on the bus’. Children can act out the movement of a wheel going ‘round and round’.*
2. *Explore the shape of a wheel. Can it be a triangle, or a square? Why not? Brainstorm examples of circular objects.*

Extension ideas

1. *Research the wheel in more detail. When was it first invented? Has the design of the wheel changed over time? If so, how?*
2. *Create a list of all the wheeled technology used in the local community, such as bicycles, trikes, scooters and cars.*
3. *Invite children to look around their homes and see how many wheels they can find. Which is the biggest wheel in their home? Which is the biggest wheel in your community? What are these wheels used for?*

Open-ended activity

Provide as many wheeled items in the indoor and outdoor areas as possible. Encourage children to explore and experiment with these, observing how the wheels work. For example, a trike helps to move a person more quickly than walking. Include construction materials with wheels such as Duplo®, Lego® and Mobilo® (if available), allowing children to explore how wheels function in more detail, or to construct wheels themselves.

Evaluating and Discussing Technology to improve efficiency

Exploring technology, now and then

The investigation

How has technology changed over time? Did technology exist thousands of years ago? How does technology help us in our everyday life?

This experience invites children to compare new and old technology, using the example of making damper. Children will be encouraged to notice how technology has made this process easier and more efficient.

Big ideas

People around the world have been using technology for tens of thousands of years. Technology helps us do things more easily or more quickly. Some technology has changed over time. Some technology has stayed the same.

You will need:

- any grain or seeds that can be used to demonstrate the grinding process and are safe for people to eat
- a hard, large rock to grind and a hard, flat surface to grind against
- a coffee grinder, blender and food processor (if available).

Learning objectives

For the children to:

- observe that technology is much more than computers, tablets and smartphones
- explore how technology is used to help us complete daily tasks more efficiently
- investigate how technology was used by people in the past compared with how technology is used today to complete a similar task.

Important words to use

- History, technology, efficient, efficiency, modern, traditional, tools, past, present, future and compare.

Note: Making damper is only one example of a learning experience that achieves these learning objectives. Educators may choose a more relevant example that better suits their setting. Use the same learning objectives. Other examples may include comparing technology used to make a fish net/trap, to carry water or to record information.

Evaluating and Discussing

Exploring technology, now and then

New words

- ***Efficient/Efficiency*** *- Making tasks easier and faster to complete.*

What the educator does

These learning experiences may take a number of days or even weeks to complete. Go at your own pace and follow the interests of the children. This is a guide only!

1. Set up a learning space (indoors or outdoors) where the children can try grinding seeds using rocks. Encourage them to notice and describe the process.
2. Sit alongside the children, providing feedback and information, and asking questions. Explain to the children that many thousands of years ago Aboriginal people used to do this to grind wheat seeds into flour. They used the flour to make damper. As questions like these:

   Is it difficult to grind the seeds? What is happening to the grains/seeds? Is the rock a type of technology? Why do you think this? How do you think we make flour today? What technology could we use to grind grains into flour?
3. At group time, show a video about how wheat is turned into flour. (YouTube has many videos to choose from.) Compare the technology of a rock with modern technology. How does it make a difference to how easy and quick the work is?
4. If you have a small coffee grinder, a blender or food processor, show the children an example of how new technology makes the job of grinding much easier and quicker. With the appliance unplugged, look at the moving parts of the grinder.
5. Reflect with the children on their new understandings about technology and record their knowledge, ideas and new questions. Hopefully they will guide you towards the next area of technology to explore!

Drop-back idea

1. *Use rocks to grind pastels or crayons, then use these to create art. Add water to the crushed pastels/crayons – what happens?*

Extension ideas

1. *Invite the children to think about the future and imagine how we might grind wheat and bake bread in 50 years' time? What technology could make this process even easier than it is now?*
2. *Brainstorm other examples of technology that make jobs easier and quicker. Record these on a large poster. Encourage children to add ideas to the poster over the coming days.*
3. *What other technology do Aboriginal people still use that has been around for a long time? How can we find out more about this? Who can we ask?*

Open-ended activity

Include bread baking utensils (bread tins, rolling pins, mortar and pestle) and playdough in the home corner. Decorate the home corner with pictures of grains being ground using old and new technologies.

Investigating and Defining Social and cultural technology

Connected communities

The investigation

How does technology help us to communicate with others? Different types of communication technology have different benefits. Children will investigate the most efficient way to communicate with people who live far away.

The focus is on how technology helps us communicate, and how we use different types of technology for different purposes. This learning experience is likely to run for a number of weeks.

Big ideas

Technology helps people in communities to stay connected and share information. Landline telephones, mobile phones, email and the internet allow people to communicate across their communities, across Australia and around the world. Technology makes it possible to connect with friends and family. The Northern Territory has specially-designed technology that supports connected communities, for example Community Access Phones and mobile hotspots.

You will need:

- a computer or tablet
- a mobile phone
- a landline telephone
- paper, pens, envelopes and stamps.

Learning objectives

For the children to:

- share their knowledge about different types of communication technology
- investigate and discuss how communities use technology to connect and communicate
- investigate the suitability of technology for specific purposes
- test and compare different types of technology.

Important words to use

Communicate, communication, connect, technology, efficient, efficiency, modern, traditional, systems and components.

Investigating and Defining

Connected communities

New words

- ***Communication technology*** - *Tools and machines that help us communicate more quickly.*
- ***Communicate/Communication*** – *Exchanging (sending or receiving) information by speaking, writing or another medium*
- ***Components*** - *Parts of a larger whole.*
- ***Systems*** - *Sets of things working together.*
- ***Technology*** - *Tools and machines that help us solve problems and do new things.*

What the educator does

First explain to families what you intend to do. Or, contact another preschool to see if they are interested in collaborating with you.

1. Invite the children to suggest how technology helps people to communicate with each other. Ask them to name different types of communication technology. Discuss the use of Community Access Phones and Mobile Hotspots, if relevant to your community.
2. During group time, think of a simple 'story' the children can tell, or some information they can share. This could be favourite activities at preschool, what a normal day at preschool is like, or retelling a familiar story or book.
3. Encourage the children to suggest how the story could be shared. You don't need to do all of these – pick two or more that can then be compared.
   - ***In person*** – *invite family members/community members to preschool to hear the story being told.*
   - ***By writing a letter****, and posting it at the nearest post office.*
   - ***Over the telephone*** *- on 'speaker' if possible, with all children able to hear and contribute.*
   - ***Using online videoconferencing applications.***
   - ***By email as text****.*
   - ***By attaching a video-recording*** *to an email of the children telling the story.*
4. Share the story using each of the different technologies. Involve the children in each step of these processes as much as possible.
5. On a calendar, mark the date that you send the stories using different types of technology. When you receive replies, mark those dates too.
6. From time to time, discuss whether you have received replies. Talk about which was the most enjoyable way to share the story and why.
7. Which form of communication technology was the most efficient? Which was the quickest? Which was the slowest?

Drop-back idea

1. *Add technology to imaginative play areas. This will encourage children to explore and discuss how computers, keyboards and telephones can be used to communicate.*

Extension ideas

1. *Find out more about the technologies introduced and installed by the Centre for Appropriate Technology, such as mobile hotspots and Community Access Phones. Why are these important for our community? How do they work?*
2. *Encourage children to ask family or community members how people share information. How did they connect with other communities in the past? Communication technologies are developing very quickly. Invite children to invent, design, draw or build their own idea for a new communication technology.*
3. *Invite members of the local community to visit the class and share stories that have been passed down over many generations.*

Open-ended activity

Introduce technology across the program for children to use. Add non-fiction books to the book corner about how computers, the internet, telephones and mobile phones work. Add old telephones to the home corner, the shop corner or the book corner.

Generating and Developing Social and cultural technology

Emoji storytelling

The investigation

This game focuses on the social and communication benefits of technology. Emojis are a way to share feelings and humour, particularly in messages that are communicated digitally. Children will explore what different emojis tell us and how we know what different emojis mean.

Big ideas

Technology has become part of our social lives. We use it to communicate with each other. It also provides us with different ways to communicate and different symbols to use in our communication.

You will need:

- circle-shaped pieces of paper (size depends on children's fine motor skills)
- markers
- print-outs of emojis to use and/or copy.

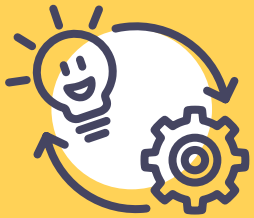
Learning objectives

For the children to:

- discuss the meaning of different symbols
- explain their thinking and decision-making
- use emojis to create their own symbols and messages.

Important words to use

Emoji, messages, text and symbols.



Generating and Developing Emoji storytelling

What the educator does

1. Set up an area with paper circles, markers and examples of existing emojis.
2. Ask children to share what they think some of the emojis mean. You could start with a smiling emoji or a crying emoji.
3. Put a sequence of emojis together and ask the children to explain the story the emojis are telling.
   (Note that each child is likely to offer a different story!)

   For example, 😀 😦 👻 😂

   The person was happy, then they were frightened because they saw a ghost. Then they realised it was a funny ghost and started laughing!

4. Encourage children to create their own messages using the example emojis or emojis that they have drawn themselves. Encourage them to read their emoji stories to each other.

New words

- ***Communicate/Communication*** - *Exchanging (sending or receiving) information by speaking, writing or another medium.*
- ***Emoji*** – *A small image used to represent an emotion or idea.*
- ***Message*** - *Verbal, written or recorded communication sent to another person.*

Drop-back ideas

1. *Provide children with example emojis. As children enter the classroom, they choose the emoji that reflects how they are feeling that day.*
2. *Play, 'Guess the feeling!' Children play in a small group. Each child takes a turn to choose an emoji and to act out the feeling/action.*

Extension ideas

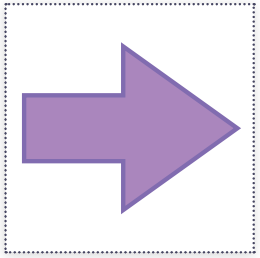
1. *Encourage children to share their emoji stories with their peers. You could record the story using the classroom tablet.*
2. *Place emojis in the centre of a circle. Each child chooses an emoji and adds an element to the story. This is a memory game too! Use a digital device such as a smart board or laptop to record the story.*
3. *Support children to digitise their emoji stories using a computer or tablet. A voice recording could be made by children to tell the story that goes with the emojis.*

Open-ended activity

Provide access to the materials in the art area for children to play with independently.

Generating and Developing Digital technology

Crazy codes



The investigation

How do we use code to give instructions to others?

Big ideas

Coding is like a language. It provides instructions that are recognised by other people. We use coding in everyday activities such as following patterns. Computers use code to follow instructions. This experience encourages children to use code to create their own instructions.

You will need:

- a set of symbols:
  - coloured arrows including left, right, up and down
  - red square (stop)
  - green circle (go)
  - yellow triangle (jump).

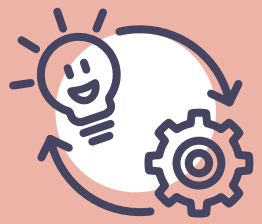
Learning objectives

For the children to:

- follow simple code
- create new codes for others to follow.

Important words to use

Code, symbols, instructions, forward, stop and start.



Generating and Developing

Crazy codes

New words

- ***Code*** *- A system of symbols used to represent a message or instruction.*
- ***Symbol*** *- A thing that represents something else or represents a message.*

What the educator does

1. Make large copies of the symbols discussed on the previous page and cut them out.
2. At group time, ask the children what they think each symbol means. For example, the left arrow tells you to go left - it points in the direction the child needs to go. If there are three left arrows, you take three steps to the left.
3. Demonstrate this activity by laying out the symbol cards. Then, lead the children to follow the symbols in the space.
4. Invite the children to create their own code for others to follow, using the code symbols.

Drop-back ideas

1. *Reduce the number and types of symbols used. For example, only use left and right symbols.*
2. *Children place cards for the educator to follow. The educator follows the code, explaining how the symbols tell us what to do.*
3. *Children use a toy to follow smaller symbols.*

Extension ideas

1. *Children create their own symbols. Incorporate them in teacher-guided and child-led play.*
2. *Use a tablet to take a photograph of the code so that it can be repeated at a later time.*
3. *Create symbols for more complex movements such as turn around, hop and crouch. The symbols can be laid out for children to follow. Play music so that the code represents dance moves!*

Open-ended activity

Provide the children with card symbols and blank cards to draw their own symbols. Encourage children to explore different ways they might use these cards in the environment.

Links with NT Preschool Maths Games 'Shapes and Spatial Thinking: A fun path'.

Producing and Implementing Digital technology

Make your own computer

The investigation

Do all computers look the same? What is inside a computer? What are the differences/similarities between desktop computers and laptop computers? What do we use computers for?

Big ideas

One of the most recognisable forms of digital technology is a computer. A computer is a machine for working with information. The information can be numbers, words, sounds and pictures. People use computers for processing, storing, sending and receiving information. This learning experience encourages children to think about the features of computers and make one of their own that can be used in their play.

You will need:

- boxes/construction materials*
- cardboard
- scissors
- sticky tape.

Learning objectives

For the children to:

- explore the features of a computer
- use boxes/cardboard to create a computer
- use language to describe computer technology.

Important words to use

Technology, computer, desktop computer, laptop, keyboard, mouse (or trackpad for a laptop), screen, monitor, smart phone and tablet.

* *Note: You will need to ask families to start saving cardboard boxes a few weeks before you plan to offer this learning experience*

Producing and Implementing

Make your own computer

New words

- ***Computer*** *– An electronic device for storing and processing information.*
- ***Keyboard*** *– A set of labelled keys for operating a computer (keyboards are also in-built features of electronic devices such as smart phones and tablets).*
- ***Monitor*** *– A screen connected to a computer that displays the image and information generated by the computer.*
- ***Screen*** *– A flat area on an electronic device that shows images and information.*

What the educator does

This game may be helpful to support other activities in which you use a computer, such as searching for information on the internet or watching a video.

1. At group time, explain to the children that they are going to build their own computers. This could be as simple as a folded piece of cardboard that the children make into a laptop computer.
2. Talk about the features of computers (monitor, keyboard, mouse, trackpad, charger) and the materials the children will need to build one in the classroom.
3. Look at a desktop computer, a laptop, a tablet and a mobile phone. What do all these devices have in common?
4. Provide children with box construction materials, textas, paper, sticky tape and other items. Invite them to make their own computers.

Drop-back ideas

1. *When using a computer or tablet in the classroom, talk about the different features of the device.*

Extension ideas

1. *Ask children to imagine how turning an everyday object into a computer might change it. For example, if their lunchbox was a computer – what else could it do? It might keep their food cool, or it might play a sound if they don't close the lid properly!*
2. *What is **inside** a computer? Ask the children what they think the inside might look like. Prompt the children by asking questions such as, How does a computer remember things? Be prepared to use computer technology to research answers to these questions with the children.*
3. *Have a discussion about the internet. Prompt children's thinking with questions such as, what does the internet look like? Is the internet a place? What kinds of information do we find there?*

Open-ended activity

Provide construction materials and pictures of different types of computers in the art/construction area.

Evaluating and Discussing Digital technology

Recording history!

The investigation

How does technology help us to record important information? Children will be encouraged to think about how technology can help us learn about our past and to record information for future generations.

Big ideas

Digital technology can be used to record things we do such as songs, dances, special occasions or everyday life. If we record children performing a dance on a digital camera, we can share this recording with other people. It can be shared and watched again in a week, a month, or ten years from now. The technology has preserved this moment in time so that future generations can watch it and learn about their past.

When considering this game, it is important for teachers to check with the culture of the local community. For example, it may be important to include a warning before images of people are shown to future viewers.

You will need:

- the class mobile phone, tablet or digital camera.

Learning objectives

For the children to:

- explore how technology helps us make a record of events
- discuss why it is important to understand our own history, and how recording information for future generations will help them to learn about how we live now
- investigate how technology helps us to find out more about our own history
- compare how information was recorded in the past and how technology has changed how we do this today.

Important words to use

History, technology, preserve, modern, traditional, compare, past, present, future, digital and technology.

Evaluating and Discussing

Recording history!

New words

- ***Compare*** *– To look at differences and similarities.*
- ***Digital technology*** *- Tools and machines related to computers.*
- ***History*** *– Past events.*
- ***Modern*** *– Something that relates to present or recent times.*
- ***Preserve*** *- To protect or maintain something for the future.*
- ***Technology*** *– Tools and machines that help us solve problems and do new things.*
- ***Traditional*** *– Something that is part of a tradition or has been practiced/used for a long time.*

What the educator does

This may take a number of days, or even weeks, to complete. Let the children's interest guide what you choose to do.

1. During group time, ask the children to share their understanding of what the word 'history' means. Write down their ideas and questions.
2. If possible, share some online videos of historical events. This could be local community history, videos of important cultural celebrations, or world events such as the first person to walk on the moon. Talk about what it feels like to be able to watch something that happened many years ago.
3. Explain to the children that the class is going to make a video about life at preschool and record our own history. Ask the children what technology will help us to do this. Ask the chldren to volunteer ideas.
4. Invite the children to share their ideas about what to include in the video. Some ideas might include a favourite song the children sing together, a movement or dance performance, a Welcome to Country or a traditional story. It is also important to include footage of the children eating lunch and playing outside – the ordinary parts of a preschool day. Write up all ideas, and begin to make a plan for the video.
5. Make the video! Encourage the children to do the recording. Support them to understand which buttons to press and how to start and stop recording.
6. Watch the video (or videos) together as a group. How do you feel watching yourselves on video? Who do you imagine will watch this in the future? What will people in the future learn about the class from watching our video?

Drop-back ideas

1. *Try to find pictures of your preschool from a long time ago. Display them in the classroom. What might it look like in the future? Will the toys be the same? Encourage children to draw pictures of what the preschool may look like in the future. Encourage them to talk about their drawings.*
2. *Play Musical Statues, listening to music from different times throughout history. If possible include music from your local community as well as other Australian communities and from around the world.*

Extension ideas

1. *Create a time capsule. Place a USB stick containing the recording into the time capsule. Invite children to choose other items of interest to put in the time capsule. (They may prefer to draw pictures of these items.) Decide with the children when the capsule should be opened. Why is a time capsule an interesting thing to do? What might a time capsule from 2000 years ago have contained?*
2. *How do we know about how Aboriginal people lived thousands of years ago? How do Aboriginal people share their histories?*

Open-ended activity

Add non-fiction books to the library about different times in history, both in Australia and around the world. Add old cameras, video cameras, computers and keyboards to the dramatic play area. Play songs from different eras in history on headphones for children to listen to. Include songs from as many different styles and cultures as possible.

New words

Code *– A system of symbols used to represent a message or instruction.*

Communicate/communication *- Exchanging (sending or receiving) information by speaking, writing or another medium*

Communication technology *- Tools and machines that help us communicate more quickly.*

Compare *– To look at differences and similarities.*

Components *– Parts of a larger whole.*

Computer *– An electronic device for storing and processing information.*

Digital technology *– Tools and machines related to computers.*

Efficient/efficiency *– Making tasks easier and faster to complete.*

Emoji *– A small image used to represent an emotion or idea.*

Equipment *– Objects designed to carry out a particular function.*

History *– Past events.*

Keyboard *– A set of labelled keys for operating a computer (keyboards are also in-built features of electronic devices such as smart phones and tablets).*

Light/artificial light *– Light can come from a natural source (like the sun) or an artificial source (like an electric lamp plugged into a power point).*

Message *– Verbal, written or recorded communication sent to another person.*

Modern *– Something that relates to present or recent times.*

Monitor *– A screen connected to a computer that displays the image and information generated by the computer.*

Preserve *– To protect or maintain something for the future.*

Screen *– A flat area on an electronic device that shows images and information.*

Shadow *– A dark area created by an object placed between a light source and another surface.*

Symbol *– A thing that represents something else or represents a message.*

Systems *– Sets of things working together.*

Technology *– Tools and machines that help us solve problems and do new things.*

Tools *– Objects designed to carry out a particular function.*

Traditional *– Something that is part of a tradition or has been practiced/used for a long time.*

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