scitech

Roadshow

Early Childhood

Parent Activity Resource Book

scitech RioTinto

taking science education across the state

www.scitech.org.au

Forward

The first five years of a child's life are the most important. Many thinking, social and emotional skills are developed during these years which children carry through to adulthood. The role an adult plays in assisting this foundation is pivotal to learning, as children learn best when accompanied by a supportive adult.

Science is all around us – and young children know this! Watch a child building sandcastles at the beach. Do you see a future engineer? Play with a child as they run in the rain and jump in puddles. Perhaps this is a future meteorologist. Children continually question their world as they try to make sense of it. Why do ants follow a certain trail? Why do bubbles pop? Their inquisitive nature and questioning minds provide the initial steps of scientific discovery and exploration.

Scitech has developed many excellent educational programs that have been delivered to children and parents throughout Western Australia. The Early Childhood Outreach program is their first program that is aimed specifically at 0-4 year old children. This program has been developed to take into account many of the principles of early childhood education. Specifically, the program aims to engage young children in everyday science experiences, and to provide an avenue for scientific discovery through play. Play has been recognised as an essential part of young children's science learning as it develops their curiosity, engages them in scientific discovery, and encourages inquisitive interactions with their world and with others.

This book should be considered a natural extension of the Early Childhood Outreach program. Each of the sections in the book represents a different activity centre within the program. Photographs at the start of each section remind children of the activities from the program. Each section then presents a range of ideas to support children's ongoing exploration of science. In this manner, children can make connections between the Early Childhood Outreach program and the science activities they are performing at home.

I encourage you to actively support your child as you work through the activities in this book. Model curiosity and enthusiasm, listen and value your child's explanations of the world, and talk about what you and your child are doing. But most importantly – have fun with your child as you both discover the everyday nature of science.

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Contents

Philosophy of learning

Parents and teachers of young children will be aware that small children love to play – but why is it so important?

Play is motivated by children's curiosity, a desire to explore the world around them. It also helps to connect their learning and ideas with their experiences.

Play is a child's form of work. It helps them to develop their intellectual, social, aesthetic, emotional and physical growth whilst using their senses to manipulate, investigate and discover for themselves. Through play, children learn what no one else can teach them.

For children of any age to get the most out of play, it is important to allow them to:

- Be actively involved
- Feel free to explore for themselves
- Ask and answer questions
- Interact with adults on a one-to-one basis
- Learn at their own pace
- Have time to thoroughly investigate the potential of an activity
- Engage in a variety of play learning formats
- Imitate adults and other children.

Children need to engage in activities which will enhance *curiosity* and *creativity*.

Light

Playing with light is not only fun, it also builds an understanding of the concepts of light from an early age such as shadows, colours and reflections.

Shadows

Light travels in straight lines. When we block light with an object it is prevented from reaching the area behind the object and so a shadow is formed.

Colours

The light which comes from the sun and light globes is called 'white light' and includes all the colours of the rainbow. When white light hits things like glass, water or a bubble, it splits up making these rainbow colours visible. This is how we see rainbows on a rainy day or colours on the surface of a bubble.

Reflections

Reflections occur when light bounces off a surface, such as a mirror.
Children can have hours of fun with curvy mirrors as they change the appearance of reflections.

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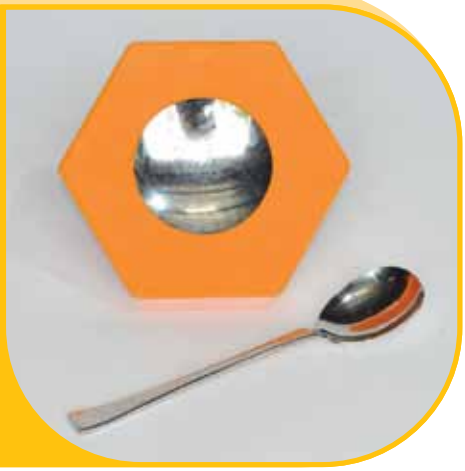
- **Do you remember this toy?**
- **How did you make it work?**
- **Do you remember anything else?**



sight

Mirror play

What are we exploring?

Explore different ways to get reflections and find out what items around your house can reflect.

Where's the science?

Mirrors are made from a highly reflective metal covered in protective glass. Light bouncing around a room reflects off the metal surface of a mirror and back into our eyes. A reflection from a flat surface will produce an image that looks exactly the same only reversed left to right.
Curvy mirrors will distort the image. A convex mirror curves out like a ball and so covers a wider field of view. It makes the image smaller and allows you to see more of your surroundings in the reflection. A concave mirror curves in like a bowl. When the light hits the curve it bounces off at different angles which makes the reflection appear upside-down. A spoon is concave on one side and convex on the other.

What you need

- A large mirror
- A hand-held mirror
- A torch
- Household objects that reflect such as spoons, CDs, a bowl of water, unwrinkled aluminium foil

What to do

- Explore your reflections with your child. Have a look in the hand-held mirror and ask your child; What can you see? Can you see your eyes, ears, nose and mouth? Can you pull a face? What happens when you make a sad face? What about a happy face? Who can pull the funniest face?
- Get your child to look in the bigger mirror. Ask them; What can you see now? Can you see more of yourself in the big mirror? What else can you see?
- Try putting the two mirrors together to form a corner. Can you see yourself? What do you look like?
- Try shining a torch at one of the mirrors. Where does the beam of light go?

Experimenting with your child

- Is it only mirrors that reflect your image? What else in your house creates a reflection? Hunt around and see what else you can find. Spoons are fun because you can see yourself on one side and on the other you are upside-down!
- Even though babies won't recognise themselves until they are about 12-15 months, they still love to look in the mirror. Play peek-a-boo by putting a towel over their reflection and pulling it away.

Making shadows

What are we exploring?

When we block light we create a shadow. In this activity, children will investigate shadows using puppets.

Where's the science?

Shadows will always be similar in shape to whatever obstructs the light. The closer an object is to a light source, the larger the shadow will be. As the object is moved further away from the light source, less light is blocked, making the shadow smaller. Outside, the length of shadows will vary due to the position of the sun – the lower the angle of the sun (closer to the horizon), the longer the shadow. When the sun is directly overhead shadows will be short and fat.

What you need

- A dark room
- Pop sticks
- Sticky tape
- Scissors
- Card to make shapes
- A light source – a dolphin torch or a lamp

What to do

1. Cut out shapes from the card – simple shapes like stars or animal outlines work best.
2. Sticky tape the end of the pop stick to the back of the shape to make a handle.
3. In a dark room, hold the shapes in front of the light source to make the shadows.
4. You can use your own hands to make some great shapes as well!

Experimenting with your child

- Investigate how to make the shadows bigger or smaller.
- What is creating the shadows? What would happen if the light was switched off?
- Go outside with your child and have a look at your shadows at different times of the day. Do they look different? Try tracing them with chalk on the driveway to monitor the changes throughout the day.

Mixing colours

What are we exploring?

Children love mixing colours and there are so many easy ways to experiment using things from around your home – some are even mess-free!

Science explained

White light is made up of different colours. We see certain colours depending on which colours are being absorbed and reflected. If an apple is red, this is because the red part of white light is being reflected into our eyes, while the other colours are being absorbed by the apple.
However, if we hold a coloured filter up to our eyes, for example a yellow piece of cellophane, then everything will appear to be coloured yellow because we are only allowing our eyes to see the yellow part of the white light being reflected.

Edible paint

What you need

- ½ cup of cornflour
- Food colouring – red, green, blue and yellow
- 3 cups of cold water
- 4 tablespoons of sugar
- Paper

What to do

1. Combine sugar and flour
2. Warm over a medium heat and slowly add the water while stirring
3. Remove from the heat once it has thickened and allow to cool
4. Separate into 4 containers and add a few drops of the food colouring

Experimenting with your child

Let your child have fun painting and finding out what happens when you mix the different colours!

Mixing food colouring in water

What you need

- 4 large glasses of water each ¾ full
- Food colouring – red, blue, yellow and green

What to do

- Place a few drops of one colour in a glass, then repeat for the other colours in the remaining glasses.

Experimenting with your child

This is a simple, hands-on way for children to experiment with mixing colours.
There will be interesting patterns in the water when the colours are first added.
Put your cups next to a sunny window and see how the light changes the colour.

- What does it look like if there is only a little bit of food colouring?
  If we add more, does it change?
- Ask your child if they can figure out how to make the colour even throughout

Cellophane fun

This is an easy, mess-free way to investigate colours. Pieces of different coloured cellophane can be held to the light to give your children a new perspective!

What you need

- Cellophane in various colours

What to do

- Simply hold the cellophane up to the light and ask your child to look through and explain what they are seeing.

Experimenting with your child

You could try building cardboard frames with your child for each coloured piece of cellophane and decorating them.

Experiment with mixing different colours together

- Do you get new colours?
- What happens when you try and look through all the colours at once?
- Cover a torch with cellophane. What happens?
- Ask your child what colour they can see.
- What do we need to do to mix the colours together using the torch?
- What happens when 2 or 3 colours are mixed together?
- How can we make orange?

Sound

Sounds are vibrations. When energy is applied to an object, for example by hitting or shaking it, this can cause it to vibrate. As an object vibrates it passes energy to the surrounding air particles by bumping into them, causing them to vibrate as well. The sound travels out in ever-increasing circles, similar to when a stone is thrown into a pond. Our ears catch these vibrations when they travel through the air and convert them into electrical signals which our brain interprets.

How an object vibrates will determine the volume and pitch of the sound produced. Big vibrations make loud sounds and small vibrations, quiet sounds. An instrument which creates short sound waves will make a higher pitched sound, for example a short guitar string or a flute. An instrument which allows long sound waves to be made will have a low pitched sound, for example a long guitar string or a tuba. Sound can be amplified by reverberation, which uses echoes to increase the sound volume.

The science behind sound is relatively simple, but as it happens on such a small scale that it is invisible to the naked eye, your child might have trouble visualising the concept. However, if they are curious, explaining what a vibration is in basic words (the wood is wiggling very fast) and describing that the sound moves through the air to our ears is a good start.

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- **Do you remember this toy?**
- **How did you make it work?**
- **Do you remember anything else?**

hearing

Musical instruments

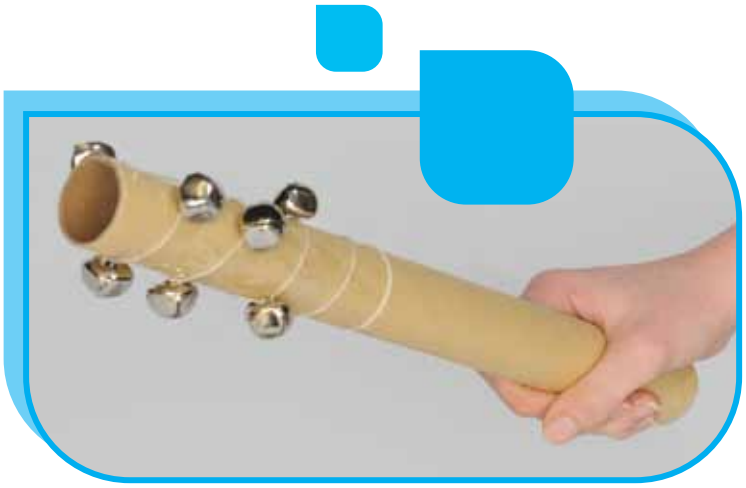
Xylophone

What you need

- 6 glasses or bottles
- A spoon

What to do

1. Pour different levels of water into each of the glasses. This will create different pitches.
2. Hit each glass in turn and ask your child what they sound like and if they all sound the same or different?
3. To make the experiment more exciting try adding a couple of drops of food colouring in each glass.



Jingle stick

What you need

- A packet of bells which are at least 1cm in size
- A thick stick or a cardboard tube
- String
- Masking tape

What to do

1. Help your child to thread the string through the hooks on the bells, leaving a space between each bell (you may need to thread the string through the bell hooks twice).
2. Wind the bell string around the stick and tape into place.
3. Alternatively, you can attach stacks of bottle tops to the sticks for something different.
4. Experiment together to find out how to make sounds with this instrument. Encourage your child to explain how it works.

hearing

Maracas

What you need

- Small containers with lids (i.e. film canisters, plastic storage containers, two cups taped together)
- Uncooked pasta
- Uncooked rice
- Uncooked popcorn
- Rice bubbles

What to do

1. Place a handful of pasta in one of the containers and seal the lid.
2. Repeat with the other ingredients to create four different shakers.

Experimenting with your child

Here are some questions to ask your child about their maracas:

- How can you make a noise with these instruments? Is there another way you can make a noise?
- Do all the shakers sound the same? How are they different?
- Which shaker is the loudest? Which is the quietest?
- What happens if you add more of the ingredients?
- Do the sounds remind you of anything?

Drum kits

What you need

- Small plastic containers
- Balloons
- Scissors

What to do

1. Cut off the neck of the balloon.
2. Stretch the balloon over a container so the rubber is nice and tight.
3. Repeat with a variety of containers to make different sounding drums.

Experimenting with your child

- How can you make a sound with this instrument?
- Do all the drums sound the same? What is different about each drum?
- How can you make a loud sound? How about a soft sound?

Guess that sound

What are we exploring?

Children identify objects based on the sounds they make.

Where's the science?

Children use their senses to explore and investigate. In this simple game, we can emphasise their sense of hearing by describing the different sounds made by objects.
This will help develop their understanding of sound and how sounds are made (i.e. hard objects make loud sounds, soft objects make quiet sounds and metallic objects make a tinging sound).

What you need

- A small dark container or a box with a lid (so that your child cannot see what is inside)
- A handful of each from the following three categories:

  Hard (i.e. rocks, marbles, rice, pasta)

  Soft (feathers, corks, cotton wool balls)

  Metallic (coins, nails, paper clips)

What to do

1. Lay the objects out in front of your child so they can see them.
   Working with your child, pick up each object in turn, name it, and describe how it feels.
2. Ask your child to close their eyes as you place one type of object (i.e. six coins) into a container.
3. Allow them to shake the container and listen to the sound made by the objects inside.
4. Encourage your child to describe the sound, using the questions below as a guide.
5. Can they predict what objects are inside the container?
   Let them open the container to see if they are correct.
6. Now swap roles, so that your child places objects inside the box and you have to predict what they are, based on the sound they make.
7. As an extension, look for different objects inside or outside the house and listen to the different sounds they make in the container.

Experimenting with your child

- What can you hear? What does it sound like?
- Is it a loud sound or a quiet sound?
- Do you think the sound is made by something hard or soft?
- Do you remember what objects were hard/soft?
- What do you think the objects in the container are?

hearing

Clucking cups

What are we exploring?

Your child will investigate the different types of sounds produced by 'playing' a clucking cup.

Where's the science?

Reverberation occurs when a sound bounces around inside an enclosed space (i.e. tube or container) causing echoes and making the sound seem louder. Guitars and drums use reverberation to amplify their sound.

What you need

- A plastic cup or small container
- String
- A sponge
- Scissors
- Sticky tape

What to do

1. Carefully make a small hole in the centre of the base of the cup.
2. Thread the string through the hole and make a knot at the end of the string on the outside of the cup. Tape it down.
3. Tie a small piece of sponge to the other end of the string for a handle.
4. To play your instrument, dampen the piece of sponge then hold the plastic cup upside down in one hand. With your other hand, hold the sponge between two fingers, place it around the string under the base of the cup and pull down along the string.

Experimenting with your child

- Encourage your child to describe the sound made by the clucking cup (soft, short pulls sound like chickens)!
- Ask your child why we hear a sound when the sponge moves along the string? (As the sponge moves along the string it creates vibrations which we hear as sounds. These sounds are then amplified by the cup).
- What can you change so that the instrument makes a different sound? (They may suggest a different sized container, different length of string, different type of string etc).
- Investigate different lengths of string and the sounds they make. Do you find that there is a pattern?
- Can you make the instrument sound louder? What would you need to modify?

sight

Living Things

Young children have an innate curiosity about the world and how it works which offers endless learning and play opportunities for you and your child. The following activities will encourage your child to explore the natural world and the concept that all living things need air, food and water to survive. Discuss this with your child – ask them what they think they need to live? Then explain that plants and animals need those things too. Ask them to think about their garden or pets – what do they need to survive?

If you're out in the backyard or walking through the park together, encourage your child to observe the similarities and differences in the things they see around them. Ask your child how many legs they have and then compare with different animals and insects. Ask them to observe other aspects of nature such as comparing a green leaf with a brown one.

Take it a step further and explore the differences between bodies (number of legs, shapes, coverings, wings and antennae). Then look at the different habitats each animal lives in, what food they eat and their life cycles. Compare the differences between your child and these animals.

By encouraging such curiosity, you are helping them understand that living things grow and change, that there are many forms of life and that they are all around us.

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- **Do you remember this toy?**
- **How did you make it work?**
- **Do you remember anything else?**

Animal bodies

What are we exploring?

Children will match up the pictures of different body parts to make real animals or invent their own!

Where's the science?

Young children are still finding out all about their bodies and how they work.
The bodies of all animals are generally divided into three sections; a head, a thorax (chest) and an abdomen (stomach). Most vertebrates (everything with a backbone, so mammals, birds, reptiles, amphibians and some fish) have limbs (arms/legs/fins/wings) as well.
Children will understand that all animals have these three sections by matching the pictures together to create animals.

What you need

- Animal pictures to cut out (included at the end of this book)
- Card
- Scissors
- Glue

What to do

1. Glue the animal pictures onto card and cut them out.
2. Ask your child to match up the animal parts.

Experimenting with your child

- What are these animals? Where do they live?
- What parts do all the animals need one of? What parts do they need more than one of?
- Can you invent some new animals? How would they move? Where would they live?
- Encourage your child to observe the similarities and differences between themselves and the animals.

Optional extras

1. Attach magnets to the back of the animals, and they become a fun fridge game!
2. Ask your child to draw a scene for their animals to live in.
   Where would the imaginary animals live?

Nature hunt

What are we exploring?

Children will observe, collect and sort objects they see every day in their local environment.

Where's the science?

Children are constantly learning about the world around them. Collecting different items allows them to see where they came from (i.e. a leaf comes from a tree) and helps them to understand whether it is alive or not.

Sorting items is a natural habit of young children as they try to make sense of the world. You can encourage this in a scientific context by allowing children to sort the items you collect together according to certain sets of rules; for example by categories (i.e. flowers in one pile, leaves in another, rocks to the side) or you could sort via colours (i.e. green/yellow/brown).

What you need

- A basket
- A big sheet of paper to turn into a discovery board
- Coloured pencils and other things to draw and write with

HINT

Try collecting interesting objects such as shells and gumnuts and hide them in advance around your backyard to add variety.

Nature hunt *...continued*

What to do

1. Grab your basket and start collecting! You'll be surprised how many things you and your child notice when you are actually looking.
2. When you have finished collecting, find somewhere nice to sit and encourage your child to begin sorting the items.

Experimenting with your child

Firstly ask your child to sort everything according to how they think it should be sorted, then ask why they did it that way.

Then you can suggest categories for your child to sort them into, such as:

- Living and non-living (e.g. leaves vs rocks)
- Leaves, flowers, seeds etc.
- Sizes
- Colours

Try asking

- How are these objects the same? How are they different?
- Discuss where each object came from (i.e. leaves from trees, feathers from birds). Ask how they think it got in the backyard?
- What makes it living or non-living?
- How are these things the same? How are they different?
- Can you tell me why you sorted them like this?

Create a discovery board. Ask your child to write, draw or glue the things they found onto the discovery board in the categories they decided on.

Optional

- If you have access to a laminator, you can laminate leaves, pressed flowers or feathers.
- For older children, you can also try to identify the species that your objects came from (i.e. the feather came from a Galah, the flower from a Bottlebrush).

Surprise seeds!

What are we exploring?

How do seeds grow? This investigation observes the changes in plants as they germinate and grow.

Where's the science?

Many plants use seeds to reproduce. Germination is the process where a plant converts food stored inside the seed into energy to grow. Two very important things are needed to start germination - water and oxygen. When a seed germinates the young plant grows towards the surface of the soil to reach sunlight. Once its leaves unfold, the seedling will source energy from the sun and no longer relies on food from the seed.

What you need

- 2 or 3 packets of different seeds (we recommend beans, peas, watercress and grasses)
- 1 ice-cream container lid
- 2 sheets of paper towel
- 1 cup of water

What to do

1. Place two sheets of paper towel on the ice-cream lid.
2. Pour water onto the paper towel. The paper towel should be wet, but without puddles.
3. Select 10-15 seeds from each of the packets and scatter them across the wet paper towel.
4. Watch the seeds germinate and grow over the next week or so. Record how many have germinated each day.
5. Make sure the paper towel stays damp while on the lid.
6. After a week or two, when the plants are bigger, plant them in the ground or a pot and watch them grow to maturity.

Experimenting with your child

- Are all the seeds the same size and colour?
- When did the first shoots appear? Did they all emerge at once? What colour are they?
- Do the seedlings have one or two leaves to start with? How big are the seedlings?
- What do they look like now that you have transferred them to soil? Do they produce flowers? How big are they? Ask your child if they can identify which plant they are or what their seed looked like?
- You can also do this activity by planting seeds directly into the soil. Some easy seeds to grow straight from the soil include marigolds, sunflowers, cosmos and pumpkin seeds.
- For the added novelty you could also try bird seed and see what grows!

touch

Push and pull

Young children are constantly exploring the world around them, learning how things work and what they can and can't do. The activities in this section help your child to learn that their physical actions affect the world around them. By exploring how things move, children are learning that there are forces at work around us that we cannot see, such as magnetic fields, gravity and air.

You can also help your child to explore what various materials are made of and how this can affect the way they behave (i.e. does an object's weight cause it to sink or float? How much effort is required to lift something? How do different materials affect how fast something travels)? By encouraging your child to share, show and vocalise their experiences with you about their observations and findings, you are helping them cement their learning as they build new knowledge and understanding.

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- Do you remember anything else?

Sink or float?

What are we exploring?

Children will investigate the properties of materials by testing if they sink or float.
This encourages them to make and test predictions, form observations and classify objects.

Where's the science?

There are two forces acting on an object when it's placed in water. Gravity pulls down whilst buoyancy pushes up. The strength of the downward pull depends on the object's weight. The upward push is determined by the amount of water displaced by the object when it's in the water. If the downward pull is less than the upward push, the object floats. If the downward pull is greater than the upward push, the object sinks. So an object floats if it weighs less than the volume of water it displaces.

What you need

- Large clear bucket or container full of water
- Large sheet of paper and a marker
- Various small objects of different materials to test such as:

  Metal – spoons, alfoil, paper clips, coins

  Wood – pencils, twigs, toothpicks

  Plastic – toy blocks, bath toys, straws

  Glass – marbles
- Paper or card
- Sponges
- Shells, leaves, stones, feathers, fruit
- Empty and full plastic containers

What to do

1. Draw a line down the middle of the sheet of paper and write 'floats' on one side and 'sinks' on the other.
2. Ask your child to predict which objects will sink and which will float and then test their predictions.
3. Have your child dry the objects and place them on the correct section of the paper.

Experimenting with your child

Ask your child:

- What's the same about all the objects that sink?
- What's the same about all the objects that float?

  Encourage them to look at and touch the different objects.
- Can they think of anything else that sinks or floats (perhaps a rubber duck in the bath, or a boat in the water)?

Optional extras

- If you have a swimming pool you may like to try this activity in there, you could ask your child whether they sink or float.

Using air

What are we exploring?
Children will experiment using air to try and move various objects.

Where's the science?
Although we cannot see it, air is all around us. One way that we know air exists is because it can move things.

What you need
1. A small, empty plastic sauce bottle
2. Various objects, for example:

- Feathers
- Paperclips
- Ping pong balls
- Pencils
- Spoons

What to do
1. Lay out the objects on the table and try to move them without touching them.
   Try to let your child work this out for themselves but they might need some hints (i.e. what if they squeeze the bottle)? Explain that the force of the air coming out of the bottle can push the objects! Can they squeeze the bottle hard enough to move the paperclip?
2. Investigate moving things along a smooth table and then something rougher like carpet or the seat of a couch.

Experimenting with your child
Try asking some of these questions:

1. What is inside the bottle? What is making the object move?
   How do you make the air come out of the bottle?
2. Which things move the easiest? Do you know why?
   Ask them to pick them up to figure it out – do they all feel the same?
3. Do the objects move more easily on the table or the carpet? Why?
4. Try putting the bottom of the feather in the spout of the sauce bottle and then squeezing. What happens?

Optional extras
For older children, try playing soccer – draw a pitch on a large piece of paper and lay it on a table. Using a small, light ball (i.e. a ping pong ball) and two bottles; see who can score more goals.

sight

Ball run

What are we exploring?

Children will experiment with angles in order to use ramps to get a ball into a tub.

Where's the science?

In this activity children will learn about the effects of gravity. They will explore how ramps, and the angle of the ramps, can be manipulated to direct a ball along a pathway and into a tub. This will help them investigate the effects of gravity on the ball.

What you need

- Cardboard (i.e. empty cereal boxes)
- Masking tape
- Adhesive magnets or magnets and glue
- A ball small enough to fit through the ramps (i.e. a ping pong ball)

What to do

1. Cut the cereal box so that you have a ramp with walls.
2. Repeat so that you have at least three ramps (more for older children).
3. If you are having trouble keeping the sides up, try putting a couple of pieces of masking tape over the top.
4. Attach the magnets to the back of your ramps.
5. Place your ramps on the fridge at different angles. Roll the ball down and try and land it in the tub.

HINT

- **Don't collapse the box, rather use the existing structures - the two long sides of the box work best. The ramp needs to be wide enough to allow the ball to roll.**

Experimenting with your child

- Did the ball land in the tub?
- How can you make the ball go faster/slower? Try angling the ramps and see what changes.
- Try moving the tub to different places. Did the ball land in the tub? What needs to be done to the ramps to get the ball in?

Magnetic fishing

What are we exploring?

Children will investigate which materials are magnetic and which are not, while designing and making their own fishing game.

Where's the science?

Magnets will only stick to certain types of metal. Magnets have an invisible magnetic field around them that force electrons (tiny particles) inside the metal to line up and stick to the magnet.
This activity will allow children to explore the properties of magnets on a basic level, for example; that magnets only stick to certain metals and not to things like wood and plastic.
They will also learn that a magnet does not use glue to stick to things and that two magnets can either attract or repel each other depending on their orientation.

What you need

- String
- Magnets (square or ring-shaped work best)
- A selection of materials such as:

  Metal: paper clips, coins, alfoil, old fridge magnets

  Plastic: lids from cream or dip containers, buttons, lolly wrappers

  Wood: match sticks, pop sticks, twigs

  Other: rubber bands, string, twist ties
- Fish templates to cut out (found at the end of this book)
- Sticky tape
- A large bowl or box
- Sheet of paper and pens

sight

Magnetic fishing *...continued*

What to do

1. Tie a magnet to the end of some string to make a fishing line.
2. Cut out the fish pictures and colour them in.
3. Cut the materials up into small pieces and use the sticky tape to attach one to each fish.
4. Put all the fish into the bowl.
5. Use the fishing line to 'catch' the fish.
6. Using the paper and pens, draw a line down the centre of the page and have 'magnetic' written on one side and 'not magnetic' on the other.
   Ask your child to place the items in the corresponding side depending on whether they can pick them up with their fishing rod.

Experimenting with your child

- How many fish did they catch?
- What items do the magnets stick/not stick to? What is the same about them?
- How are the two groups different?
- What else can you find that is magnetic?

Optional

- Find out where magnets are used every day.
- Ask your child to predict whether objects around the home are magnetic or not.
  Do they stick to the magnet on your fishing line?
  (Note: do not hold the magnet near your credit cards)!
- Instead of using the fish templates provided, design and create your own sea creatures.

HINT

- **Photocopy the originals to create more fish.**

Maths

For young children, maths simply means exploring concepts such as space, volume, patterns, matching, and sorting items such as shapes and numbers. You can help your child start developing mathematical skills and problem solving by providing them with household objects and opportunities to explore in a hands-on manner. When you engage in a maths activity with your child, ensure that you use the words that are associated with it so that they begin to learn how to express their observations.

Where possible, ask your child to predict outcomes before they begin to play to get them thinking about what they are doing. This also teaches them to ask questions and be inquisitive.

Do you remember the Scitech workshop?

Before you begin these activities show the images below to your child and ask them if they remember playing with these toys when they took part in the Scitech incursion. Try asking them:

- **Do you remember this toy?**
- **How did you make it work?**
- **Do you remember anything else?**

Measuring

Volume

Your child will have endless hours of fun with just a bucket of water and containers of various shapes and sizes but this basic activity also helps them explore the concept of volume.
Simply by encouraging them to pour water from one container into another you are encouraging them to identify that vessels of different shapes and sizes can have the same or different volumes.

Weight

Start to bring your child's attention to the weight of various objects as you go about your regular daily activities. For example, perhaps while your child is having a bath, helping you with some cooking or playing with their toys, try bringing their attention to the weight of objects.
Try putting something heavy like an orange in one of their hands and something light like a piece of fabric, feather or small ball of aluminium foil in their other hand and asking "which one feels heavier?"

Division

If your child is helping you with some cooking, try showing them a whole piece of fruit or vegetable and ask them how many pieces there are. Then cut it in half and ask them again. Repeat this activity as you cut it smaller. Ask them to try it for themselves by breaking up a bread roll or cutting a piece of fruit with a toy knife.

Sorting

Sorting teaches children from an early age about the mathematical concepts of patterns and classification. Give your child a collection of plastic containers and their lids and ask them to match the right lids to the right containers. They will also discover that some containers are the same size and others can fit inside larger containers. Bottles with screw-on lids such as soft drink bottles can help develop fine motor skills as well.

Babies

Object permanence

Object permanence refers to the understanding that objects continue to exist even if we can no longer see, hear or touch them. Babies develop an understanding of this concept around eight to 12 months of age. Peek-a-boo is not only a fun game to play with your baby; it's also teaching them that even though they cannot see when you are hiding behind your hands, you continue to exist!

Textures

Babies learn about the world around through their senses. Touching through exploratory play helps them develop this sense and teaches them that different materials have different properties.

An easy activity to do with your baby is give them lots of different textures to feel, you could use:

- Towel
- Satin
- Toggley bath mat
- Sequined material
- Fake fur
- Corrugated card
- Feathers

HINT

- **Even if your baby isn't talking yet, use descriptive words such as smooth/soft/rough/ bumpy as they feel each material to help them identify the words that correlate with what they're experiencing.**

Mirrors

You and your baby can have lots of fun with mirrors. Even though they may not understand what it is they are looking at, mirrors will help develop their self-recognition and they will enjoy observing the reflections. Get them to look at themselves or you in a hand-held mirror, make different faces and see what else they can notice in the mirror.

Better Beginnings recommended booklist

Better Beginnings is a universal family literacy program aimed at children from birth to five years. The program reaches out to families through public libraries, community health agencies and schools.

Better Beginnings is coordinated by the State Library of Western Australia and supported by the State Government of Western Australia, Department of Regional Development and Lands, Royalties for Regions, Rio Tinto WA Future Fund and Western Australian Local Governments.

For further information, telephone: (+61 8) 9427 3130 or visit their website: www.better-beginnings.com.au

Animals			
Title	**Author**	**Publisher**	**Age**
Duck in the truck	Alborough, Jez	HarperCollins	Birth–2 years
Giraffe's can't dance	Andreae, Giles	Orchard Books	2-5 years
Dear zoo	Campbell, Rod	Puffin	Birth–2 years
The very hungry caterpillar	Carle, Erik	Hamish Hamilton	Birth–2 years
Hooray for fish	Cousins, Lucy	Walker	Birth–2 years
The snail and the whale	Donaldson, Julia	Macmillan	2–5 years
Where is the green sheep	Fox, Mem	Puffin	Birth–2 years
Monkey and me	Gravett, Emily	Macmillan	Birth–2 years
Rosie's walk	Hutchins, Pat	Macmillan	2–5 years
Doing the animal bop	Ormerod, Jan	Oxford University Press	2–5 years

Light			
Title	**Author**	**Publisher**	**Age**
Goodnight moon	Brown, Margaret Wise	Campbell	Birth–3 years
A dark, dark tale	Brown, Ruth	Andersen Press	2–5 years
Brown bear, brown bear, what do you see?	Carle, Eric	Puffin	2–5 years
Eliza and the moonchild	Clark, Emma Chichester	Andersen Press	2–5 years
Maisie's rainbow dream	Cousins, Lucy	Walker	Birth–3 years
How to catch a star	Jeffers, Oliver	HarperCollins	2–5 years
Sunshine	Ormerod, Jan	Puffin	2–5 years
Lemons are not red	Seeger, Laura Vaccaro	Frances Lincoln	Birth–3 years
Red rockets and rainbow jelly	Sharratt, Nick	Puffin	Birth–3 years
Pink lemon	Tullet, Hervé	Milet Publishing	Birth–3 years
Doing the animal bop	Ormerod, Jan	Oxford University Press	2–5 years

Better Beginnings recommended booklist *...continued*

Movement			
Title	**Author**	**Publisher**	**Age**
Who sank the boat?	Allen, Pamela	Puffin	Birth–2 years
Mr Mcgee and the biting flea	Allen, Pamela	Puffin	2–5 years
Can't catch me!	Foreman, Michael	Hinkler	2–5 years
I went walking	Machin, Sue	Omnibus Books	Birth–2 years
We're going on a bear hunt	Rosen, Michael	Walker	2–5 years
Cars, trucks and things that go	Scarry, Richard	HarperCollins	2–5 years
Where the wild things are	Sendak, Maurice	Red Fox	2–5 years
Faster, faster! Nice and slow	Sharatt, Nick	Puffin	Birth–2 years
Boing!	Taylor, Sean	Walker	2–5 years
Can you choo choo too?	Wojtowycz, David	Orchard	Birth–2 years
The wheels on the bus	Zelinsky, Paul	Orchard	2–5 years

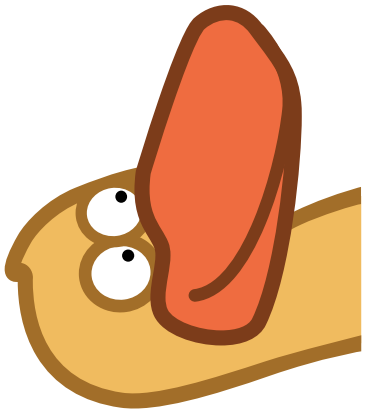
Senses			
Title	**Author**	**Publisher**	**Age**
Rumble in the jungle	Andreae, Giles	Orchard Books	2–5 years
Commotion in the ocean	Andreae, Giles	Orchard Books	2–5 years
Cows in the kitchen	Crebbin, June	Walker	Birth–3 years
Can you hear the sea?	Cumberbatch, Judy	Bloomsbury	2–5 years
Bing makes music	Dewan, Ted	David Fickling	2–5 years
Hello Tilly	Dunbar, Polly	Walker	2–5 years
Who's making that smell	Hawthorn, Philip	Usbourne	5 years+
Simply delicious!	Mahy, Margaret	Orchard	2–5 years
I stink!	McMullan, Kate	Frances Lincoln	5 years+
Dinosaur roar!	Strickland, Henrietta	Puffin	2–5 years
Doing the animal bop	Ormerod, Jan	Oxford University Press	2–5 years

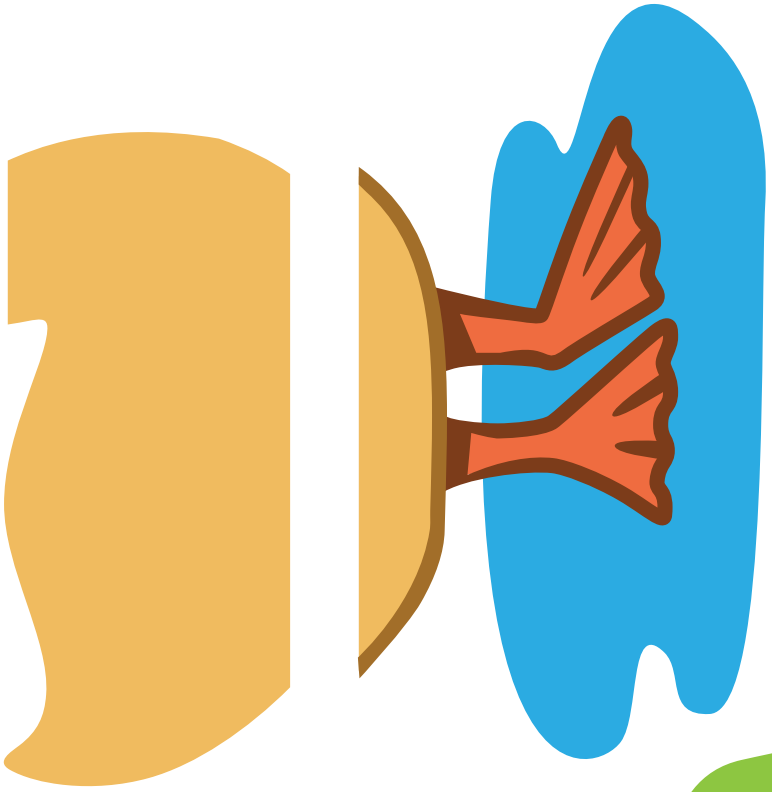
Some recommended places to take your child

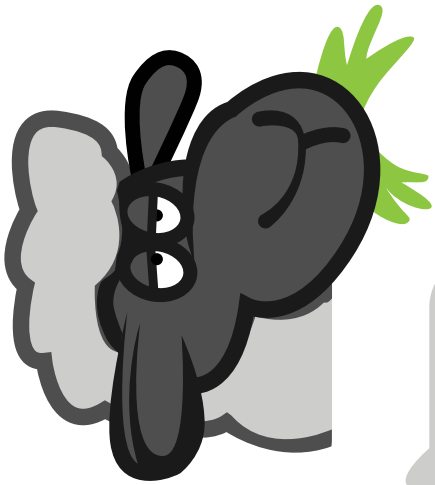
- AQWA
- Armadale Reptile Park
- Caversham Wildlife Park
- Herdsman Lake Wildlife Centre
- Kings Park
- Landsdale Farm
- Local libraries
- Museum of WA
- National parks
- Perth Zoo
- Recreational parks
- Regional museums
- Scitech
- State Library of Western Australia
- Whiteman Park

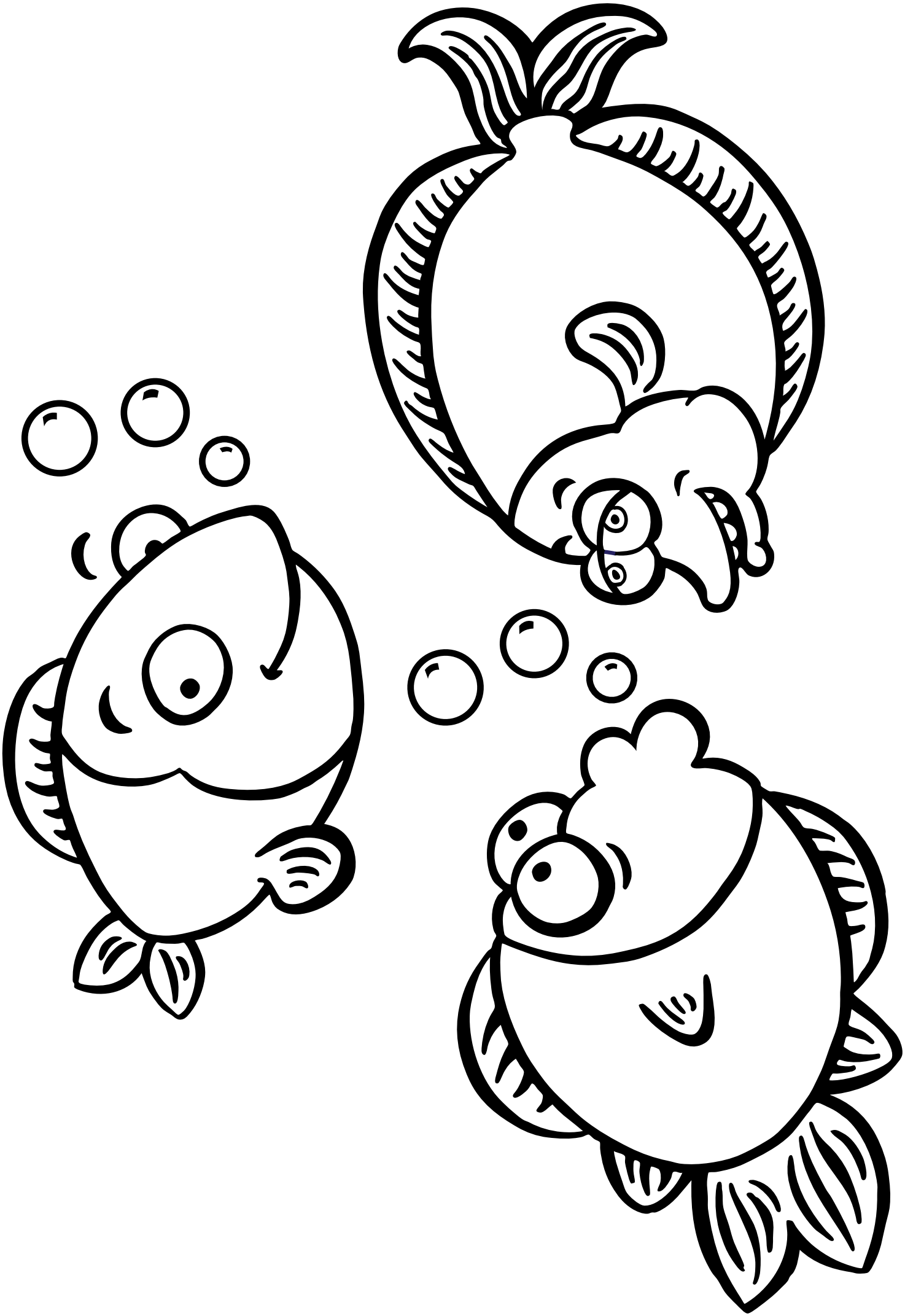
Recommended websites

- **Australian Early Development Index:** www.rch.org.au/aedi
- **AQWA:** www.aqwa.com.au
- **Better Beginnings:** www.better-beginnings.com.au
- **Caversham Wildlife Park:** www.cavershamwildlife.com.au
- **Early Childhood Australia:** www.earlychildhoodaustralia.org.au
- **Perth Zoo:** www.perthzoo.wa.gov.au
- **Kings Park:** www.bgpa.wa.gov.au
- **Landsdale Farm:** www.landsdale-farm-school.com.au/
- **Local Council websites:** www.walga.asn.au
- **Nature Play WW:** www.natureplaywa.org.au
- **Our Little Treasure:** www.ourlittletreasure.com.au
- **Playgroup WA:** www.playgroupwa.com.au
- **Playschool:** www.abc.net.au
- **Questacon:** www.questacon.edu.au
- **The Raising Children Network:** www.raisingchildren.net.au
- **Secretariat of National Aboriginal and Islander Childcare**
- **Scitech:** www.scitech.org.au
- **WA Museum:** www.museum.wa.gov.au
- **Whiteman Park:** www.whitemanpark.com.au
- **Zero to Three:** www.zerotothree.org









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