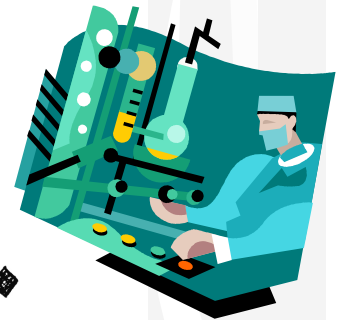


HOME GROWN KIDS



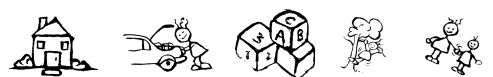
◆ Childcare from Home ◆

SCIENCE

RESOURCES

AND

ACTIVITIES



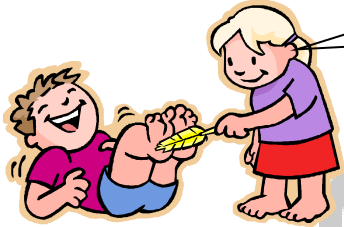
With their developing senses and motor skills, young children are **B.U.S.Y** exploring texture, colour, sound, size, shape, smell, taste, weight-forming concepts & solving problems.



Chasing Bubbles

Science

for Infants & Toddlers

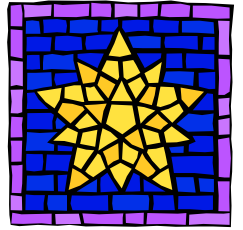


One step, two step, tickle you under there!

Play tactile games. Also blow puffs of air on the skin!



Strings of feathers or bottle tops to walk through



Stained glass effects. Cut patterns on black paper & cover with cellophane. Stick over a window

Encourage children to try new experiences, to watch, question and talk about them

I don't understand the theory of relativity or evolution,



but I do want to experiment.



Dance with baby in your arms

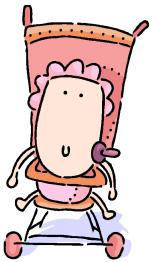


Make a finger puppet



Balls for kicking & throwing

I can't pour exact measures in to tiny tubes,



but let me explore. I need to handle sand, water, dough etc and control my own actions.



Record different sounds. Ask the children to guess what makes them?



Playing in Autumn leaves - colour, texture, adventure



Containers for putting things into or taking things out of. Boxes for hopping into and hiding in.

Don't expect equations on the black board,



but help me with words—describe what is happening around me.

Most important of all,



share my curiosity and enthusiasm.



Show children shadow and light!



What's under the rock?



Play games

D
e
a
r
A
d
u
l
t
s

Questions to Encourage scientific thinking in young children

Science process

Types of focusing questions

- Observing
Have you seen...?
Have you tried...?
How does it feel/ look/ smell/ sound/ taste?
- Comparing
How are they alike/ different?
Which things go together?
- Quantifying
How many?
How long?
- Organising
How could you group them?
- Classifying
Which things go together?
- Relating
What can you do to make it happen?
What happens when...?
What happens if you do...?
When does it happen...?
- Inferring
What else works like this/ does this?
- Applying
How else could you use this?
- Communicating
How can you show/ remember/ share what you did/ learned?
What other questions/ ideas did you think of?



Experimenting

Experiment with seeds in different conditions

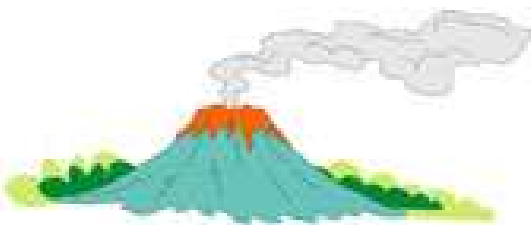
Adapted from: Reaching Potentials. Transforming early childhood curriculum and assessment, Bredekamp and Rosegrant (1995)

Levers

Take a shallow box and fill the bottom with sand. Put a rock or a stone on the sand and say “heres a task for you. You’ve got to move the rock out of the box without touching it with your hands. You can use any or all of these tools”. Then you show them a magnet, some string, a ruler, a block of wood, some sticky tape and some pencils. See how many ways you can invent to get the rock out and which works best.



Make a volcano



Have your child mould a volcano out of Plasticine or paper maché (or anything else that will work as well) with a small jar set inside for the crater.

Get some vinegar and baking soda and a small amount of dish washing liquid. Experiment by putting the baking soda in, then adding a mixture of vinegar and detergent. What makes the most impressive volcanic explosion? What happens if you add food colouring?

What happens if you add other liquids to the baking soda? What happens if you put old 1-2 cent pieces in cola or vinegar? Then add salt. What’s an acid. What’s an alkaline? Don’t know yourself? Great! Having children is the best excuse to learn .

Dancing Popcorn Number 1

- **Objective** To observe popcorn float up and down inside a glass.
- **You will need** A glass of lemonade, and a small handful of un-popped popcorn.
- **Method** Drop a few of the popcorns into the glass of lemonade, watch what happens.
- **Outcome** The popcorn will rise to the surface of the lemonade and then fall to the bottom again. This will happen many times.
- **Why** This is because the bubbles in the lemonade are carbon dioxide and they attach themselves to the popcorn, causing them to rise. When they reach the surface, some of the bubbles pop and disappear, so the popcorn sinks again. They will go on rising and sinking until all the bubbles have gone.
- **Extensions** Make popcorn to eat with the children. Be dancing popcorn; put on some music as well. Do this same experiment using raisins or something similar.



Dancing Popcorn Number 2

- **Objective** Same principles as the above experiment
- **You will need** A glass of water, 2 Tbs. vinegar (white is best), 1 tsp baking soda, popcorn
- **Method** Add the vinegar to the glass of water. Drop the popcorn into the glass and watch them drop to the bottom of the glass. Add the baking soda – don't stir. Wait and see what happens.
- **Outcome** The vinegar and baking soda create carbon dioxide bubbles, which attach themselves to the popcorn and bring them to the surface (as in the first experiment). As they pop and let go of the popcorn, it falls back to the bottom of the glass. This process will repeat itself until there are no more bubbles.

Balloon Rocket...an experiment to demonstrate Air Power!

You will need

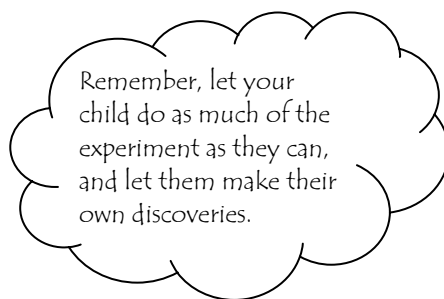
- A balloon
- A short length of plastic straw,
- 3-4 metres of string,
- Sticky tape

What to do

- Thread the string through the straw.
- Tie the string tight between two points, such as two veranda posts or two chair backs.
- Blow up the balloon and hold the neck closed.
- Tape the balloon to the straw lengthways.
- Ask your child what they think may happen when you let the balloon go.
- Let the balloon go!

What happened

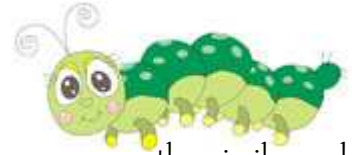
What did your child discover? Talk about what happened – listen to your child's ideas about what happened and why. Tell us about it! If you can, write down exactly what your child said.



Extensions

- Think of ways to make the rocket travel faster or further. Try out your child's ideas if possible
- Try taping a balloon to a stick, like a sky rocket. What happens when it is let go?
- Tape a paper plane or rocket onto the straw – for fun.
- Talk about jet propulsion or rocket propulsion. Look at books about it together (visit the library or ask your coordinator etc)

Science & Nature Activities



Caterpillars

Use old egg cartons (trays). Cut into lengths and attach a drawn face. Plant cress or some other similar seed etc down the back. Keep moist and place in the sun, but make sure they don't dry out, especially in summer.

Bird feeding

Spread peanut butter or lard/dripping over a pine cone. Sprinkle with birdseed and hang from a tree or similar place. Watch the birds come around.

Candle Experiment

Light a candle and place



a clear glass jar over it. Watch as the candle burns up the oxygen and goes out

Colour experiment

Put a blob of food colouring onto a strip of paper. Place the end of the paper in a glass of water. After some time, the colour will move to the top of the paper strip.

Wheat men & caterpillars

Use some pantyhose and fill with cotton wool and seed. Tie into segments using rubber bands and place in the sun, keeping moist especially in summer.

Egg shell men

Place some cotton wool and seed in half an empty egg shell. Draw a face on the shell and wet the seed. Place in the sun and keep moist.



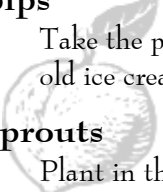
Potato men

Plant your seed in the top of a scooped out potato. Draw a face on the front. Keep moist and place in the sun.



Fruit pips

Take the pips from various fruits that have been eaten. You can use peach, grapes, apples etc. Place in an old ice cream container on cotton wool and keep moist.



Bean sprouts

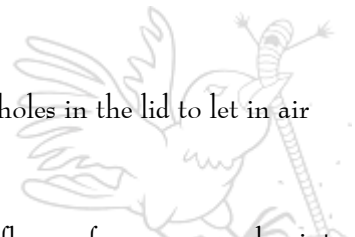
Plant in the same fashion as above and then eat them!

Plant cuttings

Take various cuttings from the plants in your garden. Plant them somewhere else and see which ones grow. You can also plant them in old ice cream containers if the garden isn't suitable (use constant supervision for the children, especially with the cutting etc).

Wormery

Dig for worms in the garden and put them in a clear glass jar full of dirt. Cut holes in the lid to let in air and leave it on the jar. Peep in occasionally.

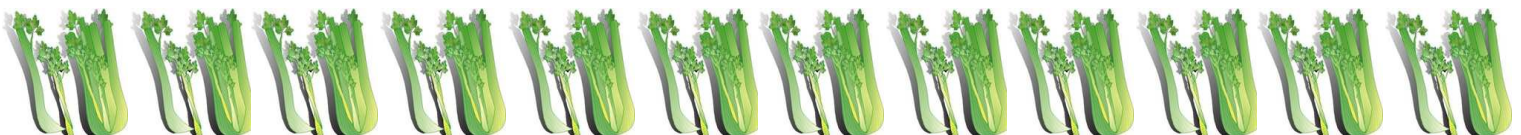


Marine garden

Put a blob of plasticine on the inside lid of a water proof glass jar. Push some flowers from your garden into the plasticine and fill the jar up with coloured water eg Red/blue/green, even yellow! Screw the lid back on and turn upside down.

Coloured celery

Stand a stick of celery in a glass of coloured water. Watch as the water will slowly move up the stem.

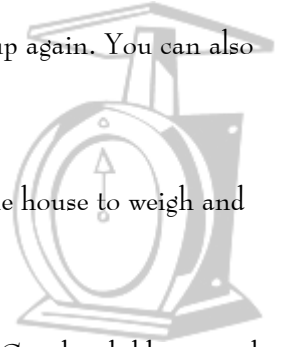


Colour paper match

Cut the coloured paper into strips and mix up, then get your child to match them up again. You can also cut plain paper into shapes and match them, then coloured shapes etc.

Weighing on scales

Weight the child on a set of scales, then yourself. Then find other things around the house to weigh and match up



Rock or shell collection

Visit the beach and them up with different



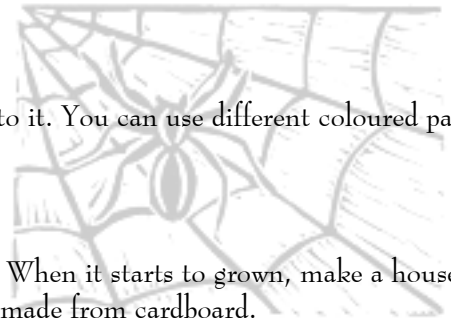
collect different textured and shaped shells. Get the child to match sizes of the same shell. Do the same with rocks and stones.

Leaf & flower collection

Collect leaves and flowers of different sizes and shapes. Make sure you involve your child as much as they can take part. You can use them for cards, pressings etc

Spiderweb painting

Lightly spray paint a spiders web, then press a sheet of paper on to it. You can use different coloured paper for different effects.



Jack & the Beanstalk

Germinate a bean seed in a jar with cotton wool and keep moist. When it starts to grown, make a house around it from cardboard and train it up a string to a castle also made from cardboard.

Onion & bulb growing

Sit a bulb or an onion in a jar, suspended off the water at the bottom, watch it send out shoots.

Carrot growing



Cut the top off a carrot and hollow out the middle. Then fill with water and hang up. Watch all the new leaves grow out like a fern. Also place the cut off top in a saucer of water and watch it grow as well. You can also use a kumera.

Yoghurt garden

Grow seeds in a yoghurt container, eg beans, sunflowers, mung beans which can be eaten etc

Bulb tray

Line tray with stones. Place bulbs, seeds, potato eyes on top and keep moist.



Water dissolving

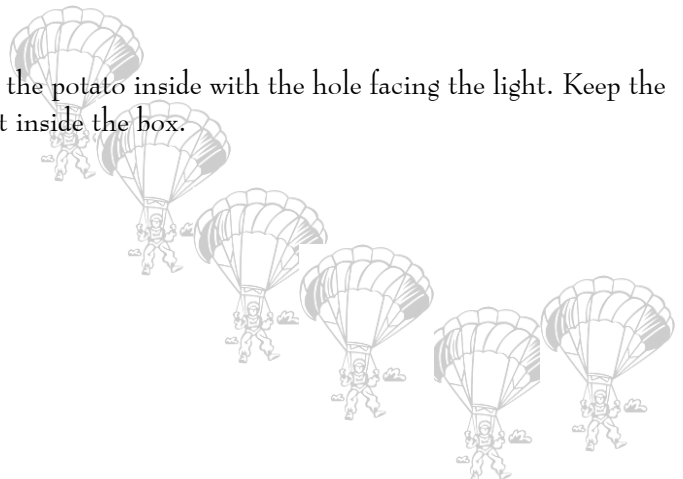
Find out what dissolves in water, what discolours and what floats and why.

Shoe box potato

cut a hole in one end of the shoe box and place the potato inside with the hole facing the light. Keep the lid on and the potato will grow towards the light inside the box.

Handkerchief parachutes

Throw from trees, ladders, tables, decks etc



What is Air like?



Snake activity

Cut out a paper snake from paper in a spiral like the picture on the right and tape it to a cotton thread. What will happen when you hold the snake over a lamp or something warm? It shows that the paper snake moves - warm air moves upwards, turning the snake and it is also invisible.

Can you make a shadow?



Try to find your shadow on a sunny day. Is it always the same size and shape? Make shadows with your hands.

Make a paper fish with a straw handle. Shine a torch on the fish in a darker part of the house. What happens when you move the fish or move the torch closer?

Put a sheet of paper on the wall. Get someone to hold the torch, someone else to make a head shadow, and someone to draw the head shadow on the paper. Use different objects and see how well your child draws the shadows.

Bubbles & Water Drops

For this you will need dishwashing liquid, some straws and pipe cleaners.

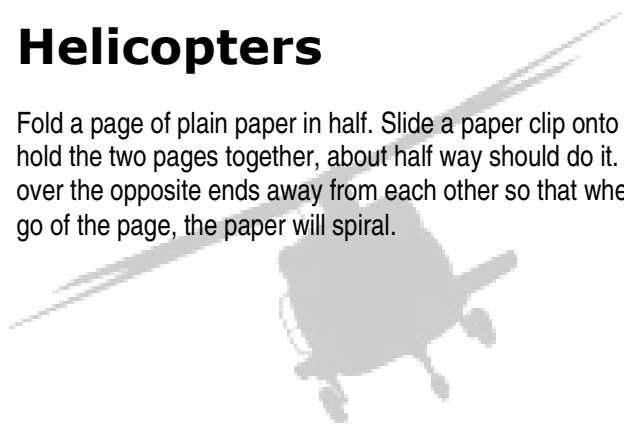
- Make up a soapy solution in a plastic jar. Use the straw to blow bubbles and get your child to catch them, and to blow them. Use dry hands to catch the bubbles, then use hands wet with the bubble mixture. What's the difference?
- How could you poke your finger into a bubble without breaking it? Clue: Wet a table with the mixture and blow a bubble onto the surface. Try a dry finger and then a wet finger.
- Can you find a way to blow a bubble inside another bubble?
- Shape the pipe cleaners into squares, triangles etc. Use them like wands to blow bubbles. What shape is the bubble and why?
- Now drop plain water onto a shiny surface, like aluminium foil. How big can you make a drop? Can you pull it along? How? What shape? What happens if you drop water on wool? A kitchen towel or paper? Which ones absorb water and which ones don't?



What happens if you add washing up liquid to the water? Now add some cooking oil. Also try using just cooking oil, syrup, and anything else that you can think of including food colouring.

Helicopters

Fold a page of plain paper in half. Slide a paper clip onto the fold to hold the two pages together, about half way should do it. Then fold over the opposite ends away from each other so that when you let go of the page, the paper will spiral.



Thinking Through Science

The following activity is typical of many you can invent yourself. All you need are the following:

4 ping pong balls, 2 paper plates, String, Sticky tape, A straw, A pencil, A paper cup, A small plastic bag, and some Plasticine.

The challenge is to transfer the balls from one plate to the other without touching them with your hands. You must use a new method for each ball. After each successful transfer, ask questions like "what was the easiest, the most successful etc".

Bird Seed Feeder

You will need: (you can add or remove according to what you have available, try different recipes and see what is the most popular)

1 empty yoghurt container, scissors, saucepan, spoon, string (about 45cm), lard (Fat), bowl, bread crumbs, bacon rind, chopped apple, currants, cake or biscuit crumbs, and some peanuts.

Directions:

Make a large knot on the end of the piece of string. Make a small hole in the bottom of the yoghurt container and thread the string through until the knot is inside the pot with the long end of the string coming out the bottom of the yoghurt container which will be upside down. Turn the container over.

Put all the ingredients except the lard into the bowl and mix up thoroughly. Melt the lard in the saucepan and mix into the ingredients in the bowl. Stir thoroughly and spoon into the yoghurt container, pressing down firmly. When the mixture has set hard, slide or cut the yoghurt container off. Take the feed outside and hang from a tree or other suitable place and watch how long it takes for the birds to come around.

Outdoor Science - Choose your Spot



Let your child choose a spot in the garden or nearby park. Explain that you are going to visit this spot every month for a whole year. Each visit you will write down all the differences you can see. Your child will tell you what they see and you can write it down; take samples as well to put in the child's profile book.

Try to pick a place that has many different substrates i.e. has a tree, rocks, dirt etc. Discuss what would make a good spot with your child, what size should it be etc. Start off your page and look for as many different features as possible. What differences will you see on your next visit? Did you dig up any earth, see any different insects, what was the weather like, was season was it?

At first your child will probably only make general observations, so ask leading questions on each visit to extend their powers of observation. Heres a starter check list to show how observation can get really detailed.

- What is smooth, hard, sharp, soft, crumbly, wet, rotten, young, old, smelly, coloured red, green, black etc?
- What is round, square, rectangle, oval, cylindrical, circular etc?
- What is one centimetre across, 1 metre, the size of your foot, your finger, fingernail, toe, waist high etc?
- Can we see...a worm, an ant, a spider, a bird, an animal hole, water, a flower, something you can use as a decoration?

Ask if they would like to draw any of the things they see, magnify them if you can. This is a very powerful activity to develop a spirit of enquiry, but it's important to finish the whole project. You may also like to take some specimens from your spot and look them up.

Which food contains fats?

Take 10 ordinary sheets of paper and foods like cheese, butter, mayonnaise, a cut apple, bread, a vegetable leaf, a cut carrot, peanuts, chocolate, breakfast cereal, etc

Ask your child to experiment by rubbing each food onto a separate piece of paper, then hold it up to the light. Divide another piece of paper into very fatty/quite fatty/not fatty etc. Rubbing the food against the paper will leave a smear, the thicker the smear, the more fat in general. Discuss how this works and that too much fat isn't a good thing, but everything in moderation is ok. Your child is learning by observing and concluding.



Science is asking Questions

Science is basically an inquiring mind supported by an urge to explain things.

- I wonder if we could grow seeds in just water, do they need earth?
- When the kettle boils, where does the steam go? (look at the window for a clue)
- If we breathe on a mirror, it fogs up. Does this mean we have water inside us?
- How much does Teddy weigh? How many Lego blocks etc weigh the same as Teddy, or your child?
- Does the sun always rise in the same part of the sky?
- Do all bees look alike?
- Which will float - a comb or a cork (or anything else) Is its size or something else that makes things float?
- How much water does a teapot hold?
- What happens to the petrol we put into the car?

Be an Air Current Detective

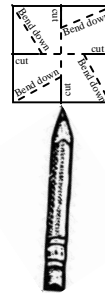
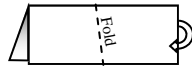
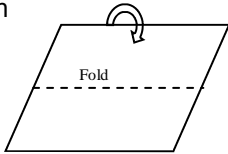
The air in your room is always moving. Left and right and up and down, the air keeps moving gently. These movements are called air currents. You can find the up and down currents. First you need to make an air wheel.

You will need:

Paper, scissors, a pencil

Directions:

Cut the paper into a square and then fold twice. Unfold the paper and cut halfway along each fold from the outside. Bend down one corner of each piece. Put the whole thing on the sharp point of the pencil so that it can spin in the air currents.



Lets look for an up current!

Hold your air wheel over a lamp or similar. The air over the light is warm

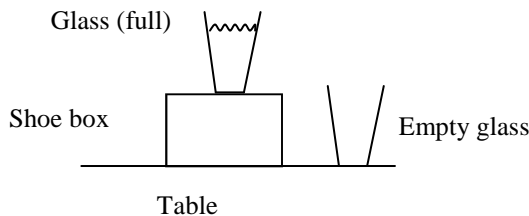
and the warm air rises and will turn the wheel. Which way does it turn?

Lets look for a down current!

Hold the wheel under the bottom of the refrigerator door, or the freezer if you have a top freezer. Open the door. The cold air will come out and move down. Now which way does the air wheel turn?

Can you do it?

Place a glass of water on a shoe box on a table. Then place an empty glass next to the shoe box on the table so that it is lower than the glass of water. Can you get the water into the empty glass without touching anything?



You can do it, but it will take a while, in fact you can sleep while it is happening! Take a handkerchief and roll it up. Place one end in the full glass and one in the empty one. Watch what is happening. The water soaks into the handkerchief, soaks up to the top of the glass and keeps going. It will finally end up in the other glass. When will the water stop? Guess, and then find out.

Suppose you use muddy water? Will the mud come up and over into the other glass or will just the water?

Playing with water and containers is always popular but you can extend it into purposeful play through ideas such as these.

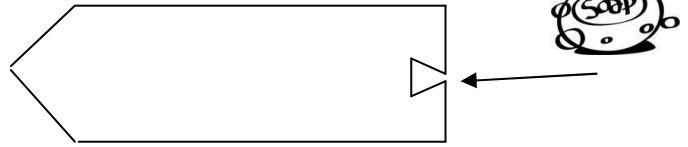
- Take a funnel - how long does it take for a bottle of water to flow through it? How could we slow down the flow? Put a marble in the funnel, cotton wool, or paper?
- Which of these will float or sink? Record their observations on a chart for your profile book to encourage organised observation. Sample objects to try include: blocks, coins, corks, screws, paper, cardboard, keys etc
- Can some 'floaters' hold up a 'sinker'? How could you sink a 'floater' or float a 'sinker'?
- What animals live in water? Can we find any in a local pond? What do they look like?

Soap Powered Boat

Some boats go by wind power. Some by motors. You can make a boat go by soap power!

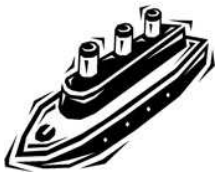
You will need:

A cardboard milk carton or shiny cardboard, scissors, soap.



Cut out a little boat this size and shape using one side of the milk carton.

Directions:



Your boat doesn't need sides, it just needs to be flat. The shiny part of the milk carton is water proof and will float. Fill the sink with cold water. Put a tiny bit of soap on the back of the boat. Put the boat in the water very gently.

Watch it sail around by soap power!

Lets see how it works. Water has a sort of a skin on the surface. The skin pulls from all sides. If you put a boat without soap on the water, the boat will stay still. This is because the water skin is being pulled evenly from all sides.

But soap makes the water skin weaker. The soap is at the back of the boat so the pull at the back is weaker and the pull at the front and sides is stronger, so the boat moves forward.

Gravity

Let your child experiment with gravity by dropping various materials from a ladder (supervised) or a deck or similar. Do they reach the ground at the same time?



SCRAMBLES

You can scramble eggs, but you can't unscramble them. You can scramble inks, but you can't unscramble them either. Get two felt-tip pens of different colours. Make scramble marks with both pens on a strip of paper towel. Stand the strip in a glass of water with the water level at the bottom of the marks. Look at the strip in the morning.

What happened?

The water rises up the paper and carries the ink with it. But one colour of ink will soak into the water faster than the other. And that ink is carried up sooner. Try other colours, try three colours. Have a race!

What is full?

Fill a glass with pebbles. Ask your child if it is full. Put in more if they think they will fit until they agree it is full.

Then pour some sand into the glass. Ask how it could be full, yet still hold more? Probe until they mentions the space between the pebbles. Now ask if it is full again. They will most likely say yes. Now pour some water into the glass. Ask them if they know why the water also fits into the glass when it seemed full before. Ask them if they could start with a glass of water and then add the sand and pebbles. "Why not"?

Experimenting with Friction

Take a simple flat thick piece of cardboard which is big enough to be used as a ramp. What happens when you roll a toy car down it when you cover the ramp with: A towel, carpet offcut, sandpaper, shiny paper etc.

Measure with a ruler how far the car travels from the end of the ramp with each different surface and mark it. The challenge is to describe why the distance varies. What happens if you tilt the ramp. Look up friction in the dictionary when you have finished.

Rub a balloon on wool and stick it to the wall or ceiling. Why does it stick there? Then try rubbing your arm hard, why does it get hot?

The aim for all these activities is to provoke thought and get your child to explore their world and try to explain it and understand it for themselves.

Water play

Draw a flower on a paper towel strip. Place one end in a glass of coloured water. Watch as the water colours the flower.