

Paper cities

Shapes and patterns from nature, folded into 3D paper buildings.

Craft

Type

10–15 min

Duration
typical. Nobody is moved on

7

Paper techniques

4

Core materials

What it is

The activity

Flat paper folded, cut and curled into small 3D buildings. Seven techniques turn a flat strip into a form that stands up.

Buildings go on a shared base, so the city at 17:30 is not the city at 10:00.

Theme

Biomimicry. Nature has already solved the structural problem and a designer borrows it. A child finds a shape in nature and builds with it.

Space. Here the city is a lunar base.

Explore

Geometry a child can pick up and look at:

- circles in a sliced onion
- hexagons in honeycomb
- triangles in a leaf
- spirals in a snail shell

The printed patterns are there when there is no real nature.

Device magnifier

The other activity on this station. A lens held on one of our phone cameras with Blu Tack. A leaf becomes a landscape, and the shape comes from there.

[How it runs](#)

YOU CAN SAY

Look closely. What shapes can you find?

YOU CAN SAY

Is it any of these?

- round
- six-sided
- pointed
- spiralling
- ribbed
- branching

Make

EXAMPLES

Two example boards, built and pinned up. Check both before the doors open and rebuild only what is damaged. Click a photograph to enlarge it.



Paper techniques. Curls, fringe, quilling, shapes, pleats and tubes.



Folds and spirals. Scored strips, two spirals, three pleated forms.

Printed examples

On the table, beside the board.

A4

Models

Finished buildings on the table, made in the seven techniques, for a child to pick up and turn over.

TECHNIQUES

Try them before building anything.

Shapes

Fold a strip. Three folds a triangle, four a square, five a pentagon. Glue the tab inside.

Feet

Snip slits along the bottom and glue them flat to a base. Flat becomes upright.

Fringe

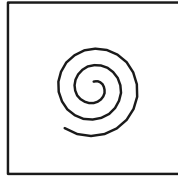
Lots of small snips two-thirds down a strip. Curl them round a pencil for grass or hair.

Pleats

Fold a strip back and forth like a fan. Stretched out it becomes stairs, a bridge, a flower.

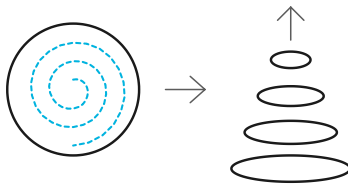
Curls

Wrap a strip tightly round a pencil, release it, fold and glue the end. Towers, domes, spiral stairs.



Quilling

Make a shape from a strip, a circle, a square or a heart, then roll a second strip tightly and slot it inside.



Spirals

Cut round and round inside a shape towards the middle, then pull the middle up and stick each end.

STEPS

- 1 **Pick a shape from nature.** A snail shell, a leaf, a honeycomb.
- 2 **Decide what the building is for.** A school, a shop, a library, a home.
- 3 **Make it,** using one technique or two.
- 4 **Give it feet and stand it on the lunar base.** That is the city.
- 5 **Keep going.** Another building, a street, doors, windows, signs, tiny paper people.

YOU CAN SAY

What is your building for? Who is it on the moon for?

- somewhere to sleep
- somewhere to grow food
- a school
- a shop
- a library
- somewhere to look at the stars

YOU CAN SAY

Leave it on the base and it becomes part of our city. Or take it home. It is yours either way.

A finished building at step 4, at about ten minutes. Step 5 is where an hour goes, for a child who wants one.

ON THE DAY

Tinker beyond paper

Egg cartons for beehive walls. Half a plastic bottle for a dome. Bubble wrap round a tube for a textured wall.

Tips

A building that falls down needs a bigger base or thicker tape. Say it before it happens.

Kit

A pencil, and glue or tape. Fringe, curls and spirals all wrap paper round a pencil.

Setup

MATERIALS

Core

- coloured paper
- coloured card
- tape
- scissors

Optional

- white paper
- pencils
- glue stick
- base to build on
- egg cartons
- cardboard tubes

Print

- printed examples

Made in advance

- example board

SETUP

RESET BETWEEN CHILDREN

Offcuts cleared, scissors back in the pot, the surface clear enough for the next child.

The lunar base is not cleared. It is the one thing on this table that accumulates.

Safety

Children	Scissors, throughout. Pencils, glue and tape.
Adults	Nothing.
First aid	Cleaning wipes and plasters. The risk is cuts.

At the Science Fair the stall sits beside a staffed tool area and needs none of its tools, so the two should not share a table.

Notes

- The lunar surface the buildings stand on is being made on Friday. It is not on the table yet.

CORE ACTIVITY

Device magnifier

A little lens on a phone camera, and a leaf becomes a landscape.

Tool Type	8 Phones two out, the rest charging in twos	1h 30m Battery roughly, on each phone	Take one Lenses in a kit made up at the table
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What it is

The activity

A small lens on a phone camera, held with Blu Tack. The phone becomes a magnifier.

The phones are ours, and the lens stays on. It is fitted once and left there all day.

Theme

Biomimicry. Looking closely is how a child finds a shape worth building. This ends at the pattern; the paper next door starts from it.

Explore

On the table

Plants, leaves, flowers, rocks and shells. Children look, they do not hunt.

Nature's Patterns and rubbings are there too: paper over a surface, crayon or pastel.

Paper cities

The other activity on this station. The shape a child finds here is what they build there.

[How it runs](#)

YOU CAN SAY

What can you see that you could not see before?

- lines
- ridges
- hairs
- layers
- holes
- repeats

YOU CAN SAY

Could you build that out of paper? Go next door and try.

Make

STEPS

- 1 **Blu Tack around the camera lens**, not over it. A small piece.
- 2 **Press the lens onto it**, centred over the glass. It stays on.
- 3 **Look**. Hold the thing still and move the phone to focus. About 2 cm between the lens and the object is roughly right.
- 4 **The phone comes back**, is wiped, and goes on charge, lens still fitted.

Steps 1 and 2 are done when a phone is set up, and again if a lens comes off. Not between children.

Setup

Power. The phones charge at the table all day, in twos. This station needs a socket, possibly two.

MATERIALS

Items

- lenses
- Blu Tack
- phones
- plastic bags
- wipes
- pastels or crayons

To look at

- nature materials, collected by staff

Print

- *Nature's Patterns*

SETUP

Eight phones, two out at a time. The other six charge in twos. Each holds roughly an hour and a half, so a phone leaving the table is a phone going on charge.

The phones are Samsungs, and the camera opens without having to log in.

A lens fitted to each phone before the doors open. Nature materials out. Lenses and Blu Tack within the facilitator's reach, not loose across the table.

The take-home kit, laid out. A family makes one up themselves from Blu Tack, a plastic bag and a lens. The phone at home is their own.

RESET BETWEEN CHILDREN

The phone comes back to the facilitator and goes on charge with its lens still fitted, and the next pair comes out. **It is wiped as it goes on charge**, so every phone is wiped between the visitor who had it and the next one. Nature materials back where they can be picked up.

Safety

Children	Lenses and Blu Tack. An iOI phone with a lens fitted.
Adults	Nothing.
First aid	_____

A lens is small enough to swallow. They stay with the facilitator, and one a child is keeping goes to the adult with them.

Phones are on charge at the table throughout, in twos, from a socket at the station.

No blade, no heat.

Notes

- The nature materials still have to be collected and brought.
- The *Nature's Patterns* printable still has to be found and printed.
- Confirm a socket at the station, ideally two.

Wind Tunnel

Make something light enough to fly, and put it into the airflow.

5

Makes

28

Materials named

3

Printed step strips

3

Trays cut in advance

What it is

The activity

Children make a lightweight flyer and test it in the tunnel. The example board is headed *Can you make it fly?* and pins up five makes with the built object beside each label.

Nothing is finished until it has been in the airflow.

Theme

- **Flight.** Light enough, and shaped to catch air.
- **Biomimicry.** Nature solved these shapes first, and two of them are on the table as cutouts.

Explore

Aerodynamic animals

Two printed cutouts on the example board: a kingfisher and a bullet train.

The bird's beak enters water without a splash, and the train's nose was shaped to enter air the same way, to stop the bang heard at a tunnel mouth.

Printed A4, colour, one side.

The sycamore seed

The paper helicopter is a samara. It spins as it falls, and the spin slows the fall.

It is the one make here with a nature example a child can hold in the other hand.

YOU CAN SAY

Can you make it fly?

YOU CAN SAY

What in nature already flies like that?

- a seed that spins
- a bird that dives
- a jellyfish that drifts
- a parachute of thistledown

Make

EXAMPLES

Check the example board before the doors open, and rebuild it only if it is damaged. Click the photograph to enlarge it.



Can you make it fly? The five makes, with the built object beside each label.

Paper helicopter template

Handed out at the table, one per child who makes a helicopter

A4, mono, 1 side · [the PDF](#)

Sign

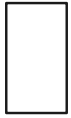
Above the station

A3, colour, 1 side

TECHNIQUES

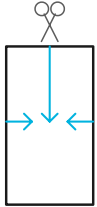
Five makes. A child picks one, and each is its own short build.

Helicopter



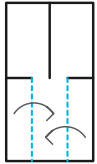
STEP 1

One printed template.



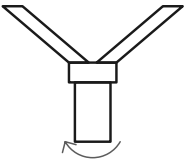
STEP 2

Cut down the middle from the top, and a notch in at each side.



STEP 3

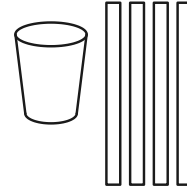
Fold the two side flaps in over the body.



STEP 4

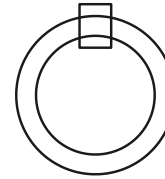
Bend one blade forward and the other back, then drop it.

Hovercraft



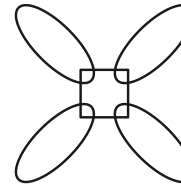
STEP 1

An empty pot and four strips of paper.



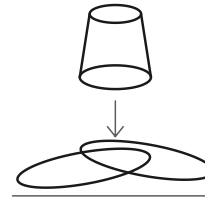
STEP 2

Bend each strip into a loop and tape the ends together.



STEP 3

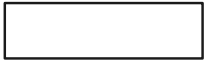
Cross the loops and tape them together at the middle.



STEP 4

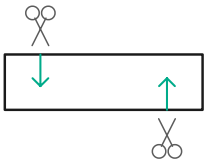
Sit the pot on the loops, open end down.

Ring



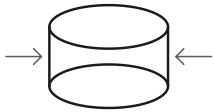
STEP 1

One strip of thick coloured paper.



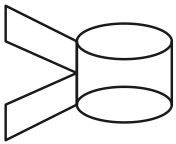
STEP 2

Cut a slot in from the top at one end and from the bottom at the other.



STEP 3

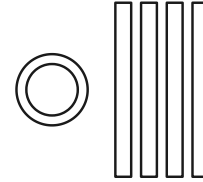
Bring the two ends round and slot them together.



STEP 4

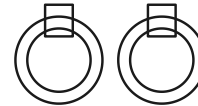
Push the two slots into each other, so the spare ends stand out past the join.

Jellyfish



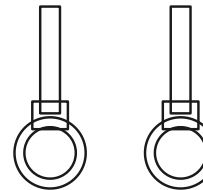
STEP 1

A bottle cap and four strips of cellophane.



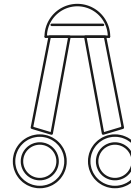
STEP 2

Bend two of the strips into loops and tape the ends together.



STEP 3

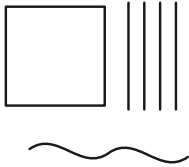
Tape a loop to the end of each of the other two strips.



STEP 4

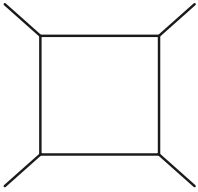
Tape both strips under the bottle cap.

Parachute



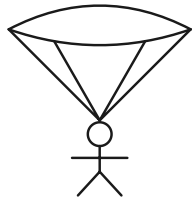
STEP 1

A square of emergency blanket, four lengths of yarn and a pipe cleaner.



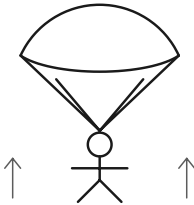
STEP 2

Tape a length of yarn to each corner of the sheet.



STEP 3

Bend the pipe cleaner into a little figure and tie the four ends to it.



STEP 4

Hold it in the airflow. The sheet opens.

Balloons and straws are there for younger children.

STEPS



1 Look at the board. Five makes, with the built object beside each label.

2 Pick one and make it, from the trays of cut strips.

3 Put it in the airflow. That is the test.

4 Change it and test it again, for as long as they want to.

A flyer is in the tunnel inside ten minutes on any of the five. Step 4 is where an hour goes.

Setup

MATERIALS

To fly

- coloured cellophane
- coloured paper, thick
- coloured paper, thin
- tissue paper
- emergency blankets
- feathers
- paper cups
- light junk

To join

- masking tape
- clear sellotape
- glue sticks
- yarn
- pipe cleaners
- scissors

The tunnel

- display board
- display board holder
- fan repair kit

Adult use

- glue gun
- glue gun sticks
- superglue

For younger children

- balloons
- straws

Print

- paper helicopter template
- example cutouts
- sign

Made in advance

- wind tunnel
- board example
- cut strips

The jellyfish needs a bottle cap, which a child fetches from the shared materials station.

SETUP

Specialist kit

The tunnel, with the mesh attached before the day. The fan repair kit travels with it: dowels, cable ties, a small hook and pliers.

The fan needs a socket. Where the tunnel stands is decided by where the socket is, not the other way round.

Cut in advance

Three trays of strips before the doors open: cellophane, thick paper, thin paper. Refilled from stock through the day.

Printed

The helicopter template, A4 mono, one per child. The sign, A3 colour.

RESET BETWEEN CHILDREN

Offcuts cleared, scissors back in the pot, the trays topped up.

A flyer left in the airflow blocks it for the next child.

Safety

Children handle	Scissors, children's scissors. Pipe cleaners, balloons, straws and paper cups are per child.
Adults handle	Glue guns, adult use only. Superglue, staff use only.
The fan	A factory chrome finger guard is fitted to the fan, and that is what protects fingers. A net sits on top of the guard, below the fan, mostly to stop cellophane and other light material being drawn into the blades. The top is not covered. Supervised at all times. It is mains and needs a socket , so the station has a trailing lead.
The airflow	Nothing is fired into the wind tunnel. Flyers are held in the airflow or let go into it by hand.
First aid	Cuts, from the children's scissors. The first aid pack is at the tool area.

The fan repair kit is not a first aid kit. It holds dowels, cable ties, a small hook and pliers, and it is for the tunnel.

Notes

- The A3 sign has not been made. It prints on Friday.
- Check the example board against the built makes at the venue, and correct any step that does not match.

CORE ACTIVITY

Junk Modelling Vehicles

Vehicles built out of junk, and run. The *roll* half of Nature in Motion.

2

Chassis

3

Drives
one not yet working

6

Diagrams

19

Materials named

What it is

The activity

A vehicle built from junk, and made to move. Two chassis and three ways of driving it.

Paired with the [wind tunnel](#) as *fly*. The stock comes from the junk bank beside the table.

Theme

- **Making something move.** An axle that turns freely is the whole difference between a model and a vehicle.
- **Space.** A rover for somewhere with no roads.

Explore

On the table

The example board, headed *Can you make it move?*, with the built vehicles beside it.

A child looks at what is there and takes the drive rather than the design.

What has wheels on it

Bottle caps, tubes, lids. Everything in the junk bank is a possible wheel, body or axle until a child decides otherwise.

Two ideas from nature

- **Grip.** Tread copied from a tree frog's toe pads, and a dry gripper copied from a gecko's foot.
- **Body shape.** A shape can cut drag, which is what the boxfish story is about.

The photographs are in [the biomimicry research](#), filed there under Moon Buggies.

YOU CAN SAY

Can you make it move?

YOU CAN SAY

What is going to push it?

- a balloon

- an elastic band
- a slope

Make

EXAMPLES

The example board asks **Can you make it move?** and answers it in three moves: wheels and an axle, an elastic band, a balloon. Check it before the doors open and rebuild it only if it is damaged. Click the photograph to enlarge it.



Can you make it move? Wheels and an axle, an elastic band, a balloon, with a built car for two of the three.

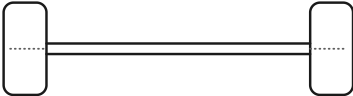
Box of built models

On the table, laid out in three columns. A child picks one up rather than reading it.

TECHNIQUES

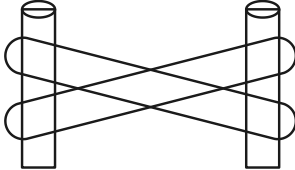
Two chassis and three drives, drawn separately so a child combines them rather than copying a finished car.

Wheels, axle and a body



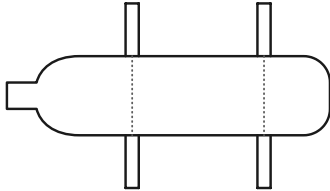
Wheels and axle

Seen from above. A skewer or a dowel, with a wheel pushed on to each end.



Chassis A, lolly sticks

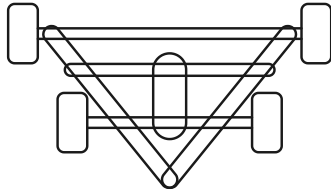
Two sticks crossed, a straw taped across each end. The axles run in the straws.



Chassis B, a bottle or a jar

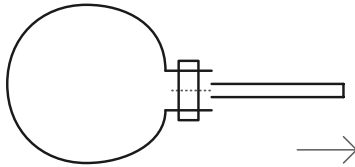
Skewers pushed straight through a bottle. On a jar they are taped along the underside.

Three ways to make it go



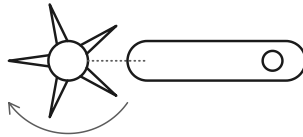
Elastic band

Seen from above. A band round the narrow axle, hooked over a stick laid across the triangle. Winding it stores the turn.



Balloon

The neck stretched over a straw and taped. The air leaves at the far end.



Elastic band fan

The bottle top cut into petals, on a band running the length of the body to a peg at the tail.

The fan drive does not run yet. A child may try it on the day, and it is not expected to go.

STEPS

1

Pick a body from the junk bank. A lolly stick chassis, or a bottle or jar.

2

Get the wheels turning. An axle through a straw taped underneath, caps for wheels.

3

Give it a drive, one of the three: an elastic band, a balloon or a band-driven fan.

4

Run it, and change one thing.

It rolls at step 2, which is about ten minutes. Steps 3 and 4 are where the time goes, and a vehicle that only rolls is still a finished one.

Setup

MATERIALS

Wheels and axles

- bottle caps
- plastic lids
- corrugated card
- wooden skewers
- wooden dowels
- paper straws

Made in advance

- example board

Bodies

- lollipop sticks
- plastic bottles
- small jars
- cardboard tubes

Joining

- masking tape
- scissors

Drives

- elastic bands
- balloons
- string

Adult use

- glue guns
- glue gun sticks
- craft knives

Most of these come from the junk bank.

SETUP

RESET BETWEEN CHILDREN

Offcuts and failed builds back to the junk bank rather than into the bin.

Scissors back in the pot, the ramp clear.

Safety

Children	Scissors, tape, elastic bands, straws, bottle caps, lids and card. Skewers and dowels, which have sharp ends.
Adults	Glue guns. Craft knives, and cutting a bottle open.
First aid	Cleaning wipes and plasters. The risks are cuts, and a wound elastic band letting go.

A wound elastic band stores energy and can flick when it lets go.

LEGO cars

LEGO buggies, run down a ramp. Slope, speed and distance.

Build

Type

10 to 15 min

Duration

8

Buggies at once

5

Materials named

What it is

The activity

Children build a LEGO buggy and run it down the ramp. The LEGO is a box of random pieces, plus components sorted into grathnels.

Theme

- **Slope, speed and distance.** The ramp is a fair test.
- **Space.** A buggy for the moon, the same build under the theme.

Explore

Two that change the build

- **Grip.** A tree frog's toe pads became a hexagonal wet-weather tyre tread, and a gecko's foot became a dry gripper.
- **Body shape.** Drag is something a shape can reduce.

Photographs

[The biomimicry research](#) has the images for both.

YOU CAN SAY

What will make it go furthest?

YOU CAN SAY

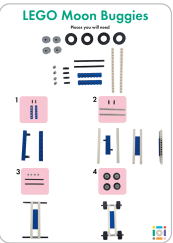
Change one thing and run it again.

- a steeper ramp
- bigger wheels
- heavier or lighter
- a pointier front

Make

EXAMPLES

The build sheet is on the table. Click it to enlarge.



LEGO Moon Buggies build sheet. A4 portrait, colour. Pieces at the top, then four steps.

Example inspiration printout

On the table, beside the build sheet.

The ramp itself

Foldable, and built. A child sees it before anything else.

STEPS

Collect the pieces from the top of the sheet first: four wheels and four tyres, four small grey connectors, four black pins, two blue beams, two black axles and two long cream beams.

1

Two black pins into each blue beam.

2

The blue beams across the two cream beams, making a rectangle. That is the chassis.

3

An axle through each end, with a small grey connector on each side.



- 4 A wheel onto each axle end.** Four wheels, and it rolls.
- 5 Set it at the top of the ramp and let go.** See how far it runs.
- 6 Change one thing and run it again.**
- 7 Break it back into the box.** The LEGO stays with us, so nothing goes home from this station.

Steps 1 to 4 take about five minutes and the buggy rolls. Step 6 is open-ended and that is where the rest of the time goes.

Setup

MATERIALS

Items

- box of random LEGO
- LEGO components in grathnels

Print

- example inspiration printout
- print outs

Made in advance

- foldable ramp

SETUP

Eight buggies at once. Eight sets of pieces laid out, so eight children can be building while others run theirs down the ramp.

Piece	Per buggy	Eight sets
Wheel rims	4	32 · 8 groups × 4
Tyres	4	32 · 8 groups × 4
Axle connectors	4	32 · 8 groups × 4
Pins	4	32 · 8 groups × 4
Blue beams	2	16 · 8 groups × 2
Axles	2	16 · 8 groups × 2

Piece	Per buggy	Eight sets
Cream beams	2	16 · 8 groups × 2

A group is one buggy.

Point the ramp away from the aisle, into open floor against a wall or a barrier, never towards where people are standing.

RESET BETWEEN CHILDREN

Buggy broken back into the box, pieces off the floor, the run cleared.

Back to eight sets. The station only takes eight at a time because eight sets of pieces exist, so a buggy not broken up is a child who cannot start.

Safety

Children	LEGO pieces and the cardboard ramp. Nothing here is adult-only.
Adults	Nothing.
First aid	Cleaning wipes and plasters.

Buggies on the floor. This is the only station that sends something across the floor at ankle height, and a car under a foot is a trip hazard. What lands on the floor is picked up between children rather than at the end of the day.

Small parts. A box of loose LEGO is a choking hazard for a small child, and this fair is advertised from 7 with younger siblings arriving alongside. The pieces stay on the table and what falls is picked up.

Notes

- **The ramp is built and still needs decorating.**
- **Guided or free build is not settled.** The station could run the four steps on the sheet, a free build from the box, or both.
- **The build sequence and the piece list need confirming with Muireann** before the day.

Sounds of the Universe.

Children listen to sounds made from real space data, make something inspired by one, and add it to a shared sound map.

Electronics

Type

4

Parts to the station

6

Printables

2

Boards

What it is

Four places

- the **listening station**, iPads and headphones
- the **information display** on sonification
- the **making table**, with the testing board
- the **sound map** installation

A creation

A made thing with one conductive touch point. Touching it on the map plays its sound. The map fills through the day.

What it is made of decides whether it works.

Explore



Listening station

iPads run the Sounds of the Universe programme. Children tap the buttons, listen on headphones, and choose one sound to make from. The sonifications are from NASA and ESA.



Information display

Context on sonification and the individual sounds, for parents and older children.

YOU CAN SAY

What is a sonification?

Scientists turn information from space, like the brightness, position or movement of things, into sounds we can hear.

Listen, and imagine what created them.

Make

EXAMPLES

The sound map so far

Creations go on the area for their sound.

The two trays

Tested materials sorted into Conductive and Not conductive.

The printed sheets

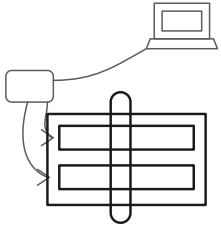
Six sheets, one print job.

The six, and where each goes

TECHNIQUES



Materials Testing



A Makey Makey on the testing board, running the Is It Conductive? experiment: two foil strips on card with a gap, one clip to each. A material laid across the gap closes the circuit.

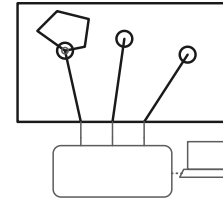
The child is not part of it.

Children sort what they test into the two trays, and use a conductive material as the touch point on their creation.

Nothing happening means the USB is out, a clip is off its foil, or the material is not touching both strips.



Sound map



A large cardboard installation wired to a Spoke Board, one path per sound into its own terminal.

A plain circle is an empty touch area; the ringed one has a creation joined on. The dotted stub is the link to the computer, behind the panel.

YOU CAN SAY

Which materials can we use to trigger a sound? Some materials carry electricity. These are **conductive**.

Try it: choose a material, place it on the testing board, and see if it completes the circuit.

YOU CAN SAY

What does this sound make you imagine?

- Is it: rough, smooth, crunchy, hollow, sharp, fuzzy, echoing or heavy?
- Does it: ring, buzz, hum, crackle, tick, drift or rumble?

YOU CAN SAY

Explore the map! Touch the creations to hear the sounds that inspired them.

STEPS

- 1 Make something inspired by the chosen sound, from the conductive, craft and recycled materials. It can be a place, object, creature or abstract shape.
- 2 Find the path on the map for that sound.
- 3 Connect the creation to the path with split pins, copper tape or crocodile clips.
- 4 It is now part of the installation.

Reset the Spoke Board when a creation or a button is added. This may need facilitator support.

Setup

MATERIALS

Making

- conductive materials
- craft materials
- recycled materials
- split pins
- copper tape
- crocodile clips
- trays

Boards

- Spoke Board
- Makey Makey
- extension lead

Listening

- iPads
- headphones

Print

- six sheets, one print pack

Made in advance

- sound map installation

SETUP

Spoke Board and Makey Makey behind or under the installation, out of reach. Leads against a wall or under the table, taped down.

Test one creation through the whole path before the doors open: touch it and hear the sound it was made from.

RESET BETWEEN CHILDREN

Reset the Spoke Board whenever a creation or a button is added.

Trays tidied, split pins and clips back in the tin.

Safety

Hazard	Who it reaches	What we do
Mains electricity	Everyone at the station	The Spoke Board, the Makey Makey and anything they plug into stay behind or under the installation, out of reach. An adult at the station whenever it runs.
Trailing leads	Everyone, including under-5s	Against a wall or under the table, taped down along the length. Not across a walkway.
Split pins and crocodile clips as small parts	Under-5s	Handed out at the table, not left in an open tray. An adult at the making area.

Notes

- **How the Spoke Board reaches a computer is not written down.** Cable or Bluetooth, and how it is powered, decides where the mains lead runs. Settle it before the leads are laid.
- **Which sonifications are on the iPads.** One path per sound, so the sounds set the number of paths.
- **What happens to a creation at the end of the day**, taken home or left on the map.

Materials area

Children do not make anything here. They take materials from this table and build at the making tables around it.

19

Items on the table

2

Prepared in advance

4

Shared with the tool area

What it is

What it is

A junk bank and craft materials. Found and donated junk on one side, craft materials on the other. It supplies the making tables, so it is stocked before they open, not with them.

It is the one table where running low stops other stations rather than this one.

Junk models can be taken home.

Theme

None of its own. It takes the theme of whichever table it is feeding.

Make

Setup

On the table

- light junk (e.g. bottles)
- heavier junk (e.g. cardboard boxes)
- straws
- kebab sticks
- bottle caps
- pipe cleaners
- feathers
- lollipop sticks
- elastic bands
- ballooons (balloon powered cars)
- string
- scissors
- glue sticks
- masking tape
- hand saws
- cutting boards

Made in advance

- example board
- sorted junk

SETUP

Set out the example board and the sorted junk, and stock the table before the making tables open.

RESET BETWEEN CHILDREN

Restock from the boxes as it empties.

Safety

Children	Hand saws, from age 5, with an adult supervising. Scissors and cutting boards too. Kebab sticks are the sharpest thing on this table. Hand them out rather than leaving them in an open tray. They stay at the table and are not carried around the room.
Adults	Supervising the hand saws.
First aid	

Notes

- Double wall cardboard will arrive in the donated junk. The chompsaw at the tool area cannot cut it at all, so sort it out of the stock before the tool area opens.

Quiet Creative Space

Alien Ecosystems: invent what grows on an alien planet, and how the species there depend on one another.

What it is

A child invents an alien species, then works out what it needs from the others around it. Cut and stuck card, tissue paper and sticks.

Two routes. Both can run. Follow whichever the child in front of you wants.

One shared installation

Everyone adds a species to the same piece. The species co-exist on it, so it grows through the day.

Mini worlds

One world per child, built inside a shoe-box lid like a paper theatre. Elements stand at different depths.

Explore

Talk first, make second. The question is not what an alien looks like, it is what it lives on.

YOU CAN SAY

What would be growing on your planet? What does it look like?

YOU CAN SAY

What does it need from the others to grow?

- who feeds it
- who cleans up after it

- who it shelters
- who carries its seeds

YOU CAN SAY

Things on Earth do that for each other too. Would it work the same way in space?

Make

EXAMPLES

Reference photographs

Alien and earth ecosystems and landscapes, on the table to look at. They are what the talking starts from.

TECHNIQUES

Cut and stick card

Thin coloured card, cut to shape and drawn on with pens. Glue stick to join, masking tape where it needs to hold.

Tissue and sticks

Tissue paper for anything soft, frilled or see-through. Sticks to hold a shape up off the surface.

Paper theatre

For a mini world. Stand pieces at different depths inside the lid, nearest at the front, so it reads as a scene rather than a flat collage.

No PVA at this station. Glue stick only.

STEPS

1

Think what grows on the planet. Not a creature yet, a thing that lives there.

2

Decide what it looks like.

3

Work out what it does for the others, and what they do for it.

4

Make it, from card, tissue paper and sticks.

5

Add it to the shared installation, or build it into a mini world in a shoe-box lid.

Setup

MATERIALS

On the table

- thin coloured card
- scissors
- glue stick
- pens
- masking tape
- shoe-box lids

Helen brings these

- tissue paper
- sticks

Print

- reference photographs

Soft floor

- cushions
- foam mats, 50x50cm

SETUP

Clear the room first. The job is taking things out to open the space, not bringing more in.

Then mark the areas out with masking tape on the floor.

RESET BETWEEN CHILDREN

Offcuts cleared, scissors back in the pot, lids stacked.

The shared installation is not cleared. It is the one thing here that accumulates.

Safety

On the table: scissors, glue stick, pens, masking tape, thin coloured card, tissue paper, sticks, shoe-box lids.

Children	
Adults	
First aid	

Notes

- **Which route runs is not decided.** Shared installation, mini worlds, or both. It changes whether shoe-box lids are needed.
- **The floor is not settled.** Two cushions, no bean bags, twenty foam mats that could come. The Mosque has been asked whether it has anything soft to use.
- **The reference photographs still have to be printed.**

Tool area

Two tables holding the powered and cutting tools. Children saw at one. Only adults work at the other.

2

Tables

3

Tools

5

Youngest to use a chompsaw

What it is

One station, two tables. Chompsaws where children cut. Glue guns and the rotary tool where only an adult works.

It serves the other stations. A child brings a piece and an adult cuts, glues or drills it.

Chompsaws

Children's table. Cuts cardboard, not skin.

Glue guns

Adults' table. Mains.

Rotary tool

Adults' table. One hole per bottle top, and holes in bottles.

Make

Setup

MATERIALS

chompsaws glue guns rotary tool

SETUP

Two tables, clearly separated. Chompsaws where children cut. Glue guns and the rotary tool where only an adult works. A child must not be able to reach the second table by leaning across the first.

Inductions before the doors open. Nobody uses a tool they have not been inducted on, and that gate applies to facilitators and volunteers alike. Induction is per tool and follows the tool around the room, because glue guns also appear on the Materials area and Wind Tunnel lists.

Mains power. The tool area goes on the socket, clear of the walkway. Leads taped along their length, never across a doorway.

Cardboard is pre-cut in advance and chosen to suit the saw, so nobody judges thickness on the day. Double wall is set aside, never forced through.

Empty the chompsaw dust drawer before starting, and at least every 30 minutes after that.

RESET BETWEEN CHILDREN

Offcuts cleared, the cut surface swept. Glue guns left in their stands, not on the table.

Safety

Children	Chompsaws, from age 5 , once inducted, with an adult at the table.
Adults	Glue guns and the rotary tool. Facilitators, and volunteers inducted on the tool.
First aid	The first aid pack lives at this station , so this is where it is for the whole room. Burns from the glue gun tip and from the chompsaw cutting head, which is hot straight after use. Cuts from the rotary tool bit.

Chompsaws. Do not touch the cutting head just after use: it is hot. A red blinking light means it has overheated, and it goes off for at least 30 minutes. Empty the dust drawer before starting and at least every 30 minutes. Avoid cutting over tape or glue. The head cuts cardboard and not skin, and it will not snag on hair or clothes.

Glue guns. Adults only, a facilitator or an inducted volunteer. Burns come from the tip and from hot glue. Never left unattended, and left in the stand rather than on the table.

The rotary tool is not available to the public. Staff and inducted volunteers only, and it is never handed to a child. A child brings a piece and an adult drills it. Nothing holds the work: who holds the tool is the control. Mind what is under the work. Never left unattended, and put away out of reach when it is not in use.

Two tables, clearly separated. A child must not be able to reach the adults' table by leaning across the children's. An adult is at the chompsaw table at all times.

Nobody uses a tool they have not been inducted on. The gate is the induction, not the role. Inductions happen before the doors open.

This station is staffed by its volunteer and does not need a facilitator, because the whole team is in one shared room. A volunteer still takes no child anywhere, and uses no tool they have not been inducted on.

Notes

- **The station has nobody for 45 minutes.** The volunteer half days run 9:30 to 13:00 and 13:45 to 18:00. Unless somebody covers the gap, the tools go away and the table closes.
- **Nothing on file says what an induction is,** who gives it, or how long it takes.