5 Mind-Blowing Science **Experiments** for the Classroom

BFX Furniture

Periodic Table Battleship

This fun and really simple activity will have your students memorising the periodic table in no time.

You Will Need:
- 4 x laminated copies of the periodic table
- 2 x file folders
- 1 x big binder clip
- 2 x whiteboard markers

Method:
1. Print out and laminate 4 copies of the periodic table sheet.
2. Along the left-hand side of the table, label each row from A-I and label numbers 1-18 across.
3. Attach 2x copies to the inside of the file folder with binder clips.
4. Clip the folders together at the top with a binder clip to hold the folders open so they stand up.
5. Players then circle rows to make 1 group of 2 squares, 2 groups of 3 squares, 1 group of 4 squares and 1 group of 5 squares. These are the 'battleships'.
6. The ships can be arranged horizontally or vertically but not diagonally.
7. Players can choose to call out the coordinates of the element, the element's atomic number, the abbreviation of the elements or the names of the elements.
8. Players mark an X on the elements that are a 'miss' and circle the elements that are a 'hit.'
9. Play until one person sinks all the other's battleships.

Link:
https://teachbesideme.com/periodic-table-battleship/

YEAR 7-8 / CHEMISTRY

Learning Outcome
By playing this game students will become more familiar with the periodic table, its elements, location on the periodic table and their abbreviation and atomic number. Ideally, they'll memorise most, if not all of the periodic table of elements, and be able to identify each element.

Grow Your Own Geode Crystals

You Will Need:
- 3 x Tablespoons of Borax
- 1 x Cup boiling water
- 1 x Packet of pipe cleaners
- 1 x Glass mason jar
- 1 x Roll of Paper towel
- 1 x Skewer/pencil/chopsticks
- 1 x Fishing-line or thread

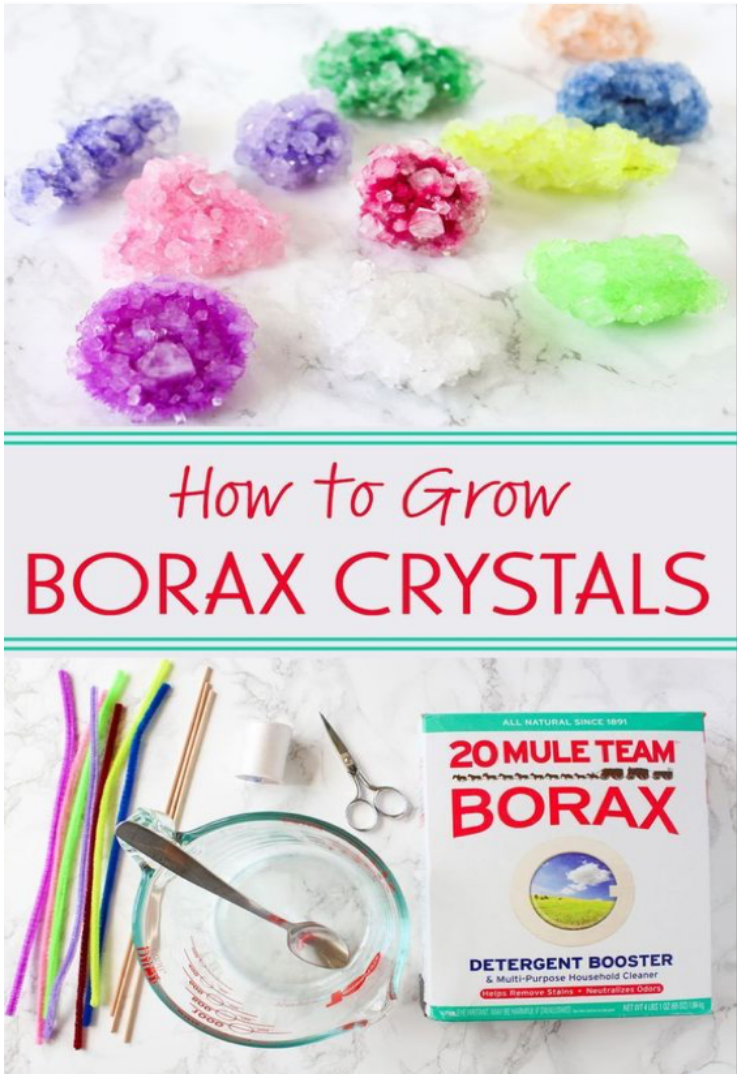
Method:
1. Twist a coloured pipe cleaner into a loose coil and shape it as desired.
2. Measure your fishing line or thread and cut so when suspended in the glass the pipe-cleaner coil won't touch the bottom of the sides of the glass.
3. Tie fishing line or thread to the pipe-cleaner coil, attach to a wooden skewer, pencil or chopstick.
4. Add 3 tablespoons of borax powder for each cup (237 ml) of boiling water in the jar.
5. Stir the solution until none will dissolve anymore and it becomes a saturated solution.
6. Suspend your pipe-cleaner coil in the glass jar.
7. Cover the solution with something to keep it hot for longer.
8. Leave over night for best results (between 8-12 hours).
9. Pull your geode crystals out of the solution then snip off the fishing line or thread.
10. Allow to dry fully on a paper towel.

Link:
http://www.instructables.com/id/How-to-Grow-Borax-Crystals/

YEAR 6-8 / CHEMISTRY

Learning Outcome
Students experience geology and the formation of crystals first hand by learning about saturated solutions and particles. Students will see that as the solution cools, the particles settle out of the saturated mixture and form the crystals that you see while the impurities remain behind in the water.

Safety Tip:
Wear gloves when pulling your geode crystals from the borax solution.



Brain Hat Activity

You Will Need:
- Brain hat printable on cardboard paper
- Scissors
- Sticky tape or glue
- Coloured pencils or crayons

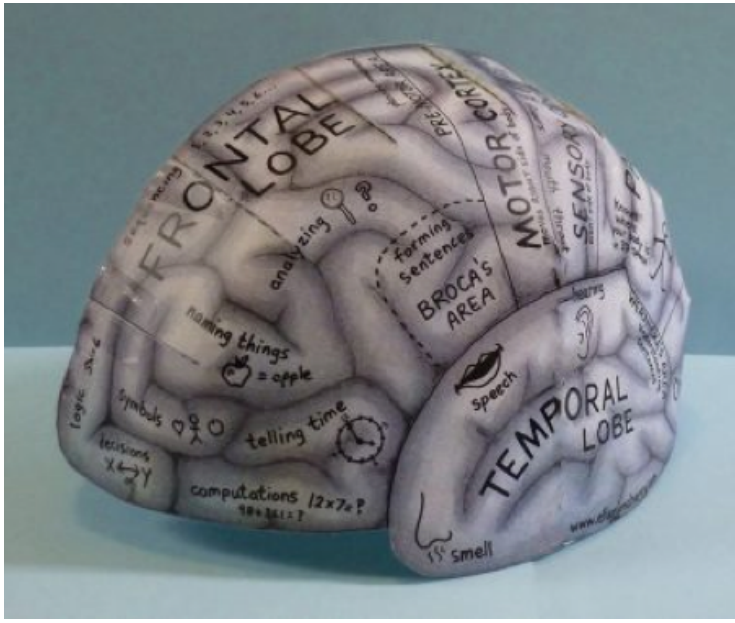
Method:
1. Visit the link below to download the printables and print onto cardboard paper.
2. To assemble, first cut out both hemispheres around the outside edge. Then snip in on the dashed lines.
3. Don't cut the triangle out. Just snip the dashed lines. Pull each (now snipped) dashed line over until it touches the other line.
4. Secure with tape or glue. It should then take on a half-round shape.
5. To put these two halves together, simply choose one side to overlap just slightly onto the other
6. Secure with tape.
7. Have students try on their brain hat and take turns identifying the parts of the brain as well as its specific function.

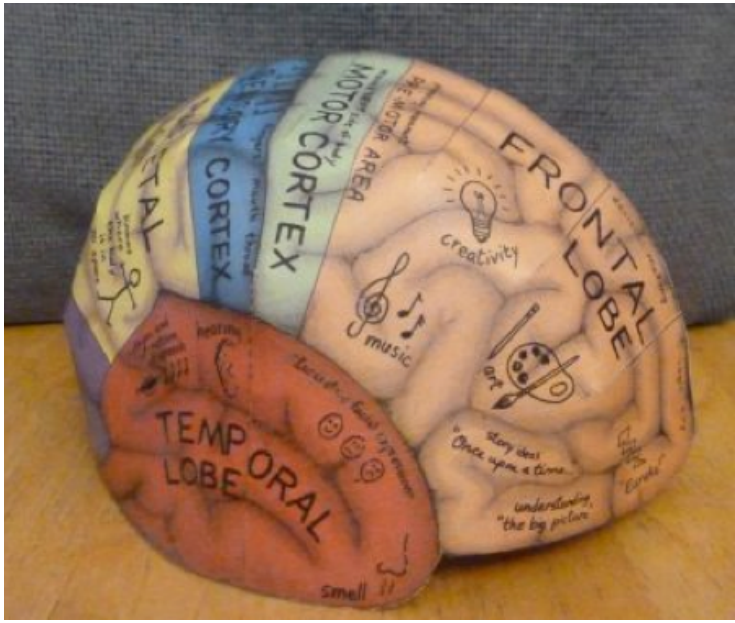
Link:
(Grab the printables from the PDF below)

EllenJmChenry
http://www.ellenjmchenry.com/homeschool-freedownloads/lifesciences-games/documents/Brainhat.pdf

YEAR 10 / BIOLOGY

Learning Outcome
Students learn to identify parts of the brain in the left and right hemispheres. Each hemisphere has 4 lobes: frontal, temporal, parietal, and occipital. Each lobe may be divided, into areas that serve specific functions such as speech, senses, memory and motor skills. Have students not only identify the parts of the brain but also each part's function. Test their memory by setting them the task of labelling all the parts on the blank brain.





Brain Hat Resources

Information sourced from:
Mayfield Clinic
https://www.mayfieldclinic.com/PE-AnatBrain.html

The Human Brain	
Part	**Function**
Cerebrum	The largest part of the brain and is composed of right and left hemispheres. It performs higher functions like interpreting touch, vision and hearing, as well as speech, reasoning, emotions, learning, and fine control of movement.
Cerebellum	Located under the cerebrum. Its function is to coordinate muscle movements, maintain posture, and balance
Brainstem	Includes the midbrain, pons, and medulla. It acts as a relay center connecting the cerebrum and cerebellum to the spinal cord. It performs many automatic functions such as breathing, heart rate, body temperature, wake and sleep cycles, digestion, sneezing, coughing, vomiting, and swallowing.
Frontal Lobe	Responsible for personality, behavior, emotions Judgment, planning, problem solving Speech: speaking and writing (Broca's area) Body movement (motor strip) Intelligence, concentration & self-awareness
Temporal Lobe	Responsible for understanding language (Wernicke's area) Memory Hearing Sequencing and organization
Motor Strip	Responsible for the body movement, reactions
Sensory Cortex	Responsible for taste, touch, sight, smell, sound)
Parental Lobe	Interprets language, words Sense of touch, pain, temperature (sensory strip) Interprets signals from vision, hearing, motor, sensory and memory Spatial and visual perception
Occipital Lobe	Interprets vision (colour, light, movement)

How to Create 3D Animal or Plant Cell Models

YEAR 11-12 / BIOLOGY

Example Materials (Edible Version)
- Cake
- Rice Krispy treats
- Jelly
- Skittles
- Gummy worms
- Chewing gum
- Marshmallows
- Cookies
- Sprinkles
- Food colouring
- Gobstoppers
- Sour straps

Example Materials (Non-edible Version)
- Styrofoam
- Pipe cleaners
- Clay
- Shower gel
- Noodles
- Yarn or twine
- Buttons
- Rubber bands
- Cardboard
- Bouncy ball
- Playdough
- Felt fabric

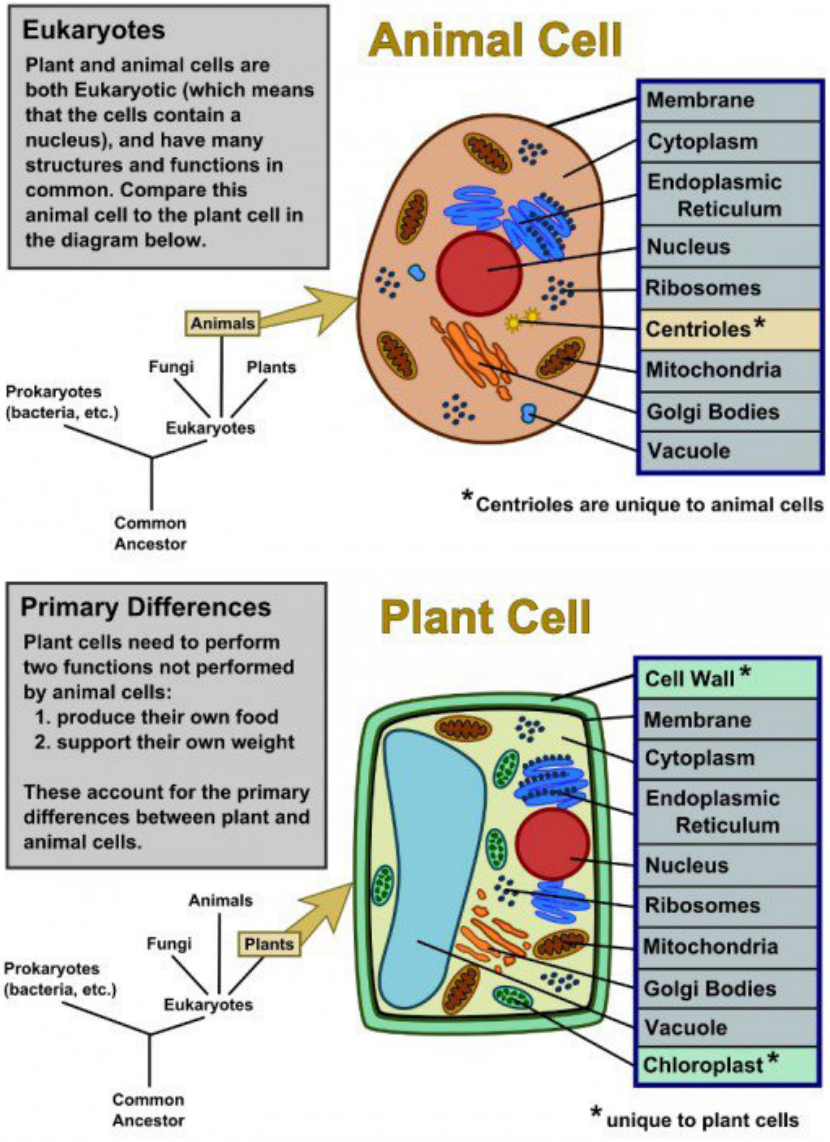
Method
1. Working in pairs, students decide if they want to build a plant cell or animal cell, then decide if they want to use edible or non-edible materials.
2. Students brainstorm materials/edibles needed.
3. Students gather materials (either purchasing themselves or teacher supplies).
4. Students build their plant or animal cell referring to the provided table and diagrams, labelling each respective part using toothpicks and paper.
5. Students complete their animal or plant cell and present them to the class.
6. If students choose the edible option, they may want to eat them with the class.

Link:
Owlcation
https://owlcation.com/stem/3d-cell-model

Learning Outcome
At the end of this plant and animal cell activity students will be able to differentiate between the structure and functions of the plant and animal cell organelles, including cell membrane, cell wall, nucleus, cytoplasm, mitochondrion, chloroplast, and vacuole.

You can assign this activity as an in-class task (you will need to provide materials) or let students build their animal or plant cells at home (especially if they're baking an edible cake-based cell).

Animal or Plant Cell Resources



Images sourced from Owlcation
Data sourced from
https://biology.tutorvista.com/animal-and-plant-cells/plant-cell.html
https://biologywise.com/animal-cell-functions

Both Plant & Animal Cells	
Part	Function
Cell Membrane	A semi-permeable barrier, controlling the movement of molecules and substances in and out of the cell
Cytoplasm	The fluid matrix that fills the cell. The cellular organelles are suspended here and this matrix maintains the pressure of the cell, ensures the cell doesn't shrink or burst.
Nucleus	The control center for both plant and animal cells. It houses genetic material (chromosomes). The nucleolus is located at the near center of the nucleus and is crucial for protein synthesis in animals.
Mitochondria	The main energy source of the cell and carries out cellular respiration. They are called the power house of the cell because energy(ATP) is created here. Mitochondria consists of inner and outer membrane It is spherical or rod-shaped organelle
Ribosomes	The site for protein synthesis where the translation of the RNA (ribonucleic acid) takes place. Ribosomes are found freely suspended in the cytoplasm and also are attached to the endoplasmic reticulum
Endoplasmic Reticulum	The transport system of the cell. It transports molecules that need certain changes and also molecules to their destination. ER is rough and smooth. ER bound to the ribosomes appear rough and is the rough endoplasmic reticulum; while the smooth ER do not have the ribosomes.
Just Animal Cells	
Golgi Apparatus	Known by different names (golgi bodies and golgi complex), it is an organelle that has a sac-like structure. The golgi apparatus' function is to pack cellular substances, which are then transported out of the cell with the help of vacuoles.
Lysosomes	The digestive system of the cell. They have digestive enzymes helps in breakdown the waste molecules and also help in detoxification of the cell.
Vacuoles	Bound by single membrane and small organelles. In many organisms vacuoles are storage organelles. Vesicles are smaller vacuoles which function for transport in/out of the cell.
Cytoskeleton	The network of microtubules and microfilament fibres. They give structural support and maintain the shape of the cell
Just Plant Cells	
Cell Wall	Provides plant cells rigidity and structural support and cell to cell interaction.
Chloroplasts	Aid in carrying out the process of photosynthesis to produce food for the plants.
Chromoplasts	Plastids responsible for pigment synthesis and storage. They are found in photosynthetic eukaryotic species. They are also found in coloured organs of plants like fruits and flowers.
Plastids	Plastids are storage organelles. They store products like starch for synthesis of fatty acids and terpenes

Steady Hand Game

YEAR 6-7 / PHYSICS

You Will Need:
- 1 x empty container with lid
- 1 x AAA battery holder
- 2 x AAA batteries
- 1 x LED light
- 1 x Pin or needle
- Stiff unshielded wire (20 gauge galvanized steel wire or wire coat hanger)
- Flexible shielded wire (22 gauge hook-up wire)
- 1 x Roll of Duct tape
- 1 x Wire stripper
- 1 x Wire cutter
- 1 x Pliers

Learning Outcome

Students learn about electricity, and how circuits are made when electrons flow from the negative terminal to the positive terminal through a copper wire or some other conductor. Electrical circuits can get quite complex, but basically you always have the source of electricity (such as a battery), a load and two wires to carry electricity between the two. Electrons move from the source, through the load and back to the source.

Links

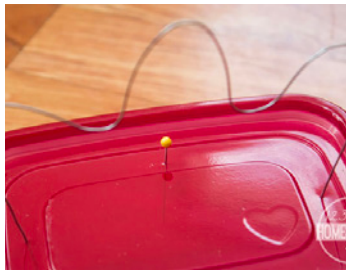
Research Planet
http://researchparent.com/homemade-steady-hand-game/

123homeschool4me
http://www.123homeschool4me.com/2016/06/electronics-project-for-kids-steady.html

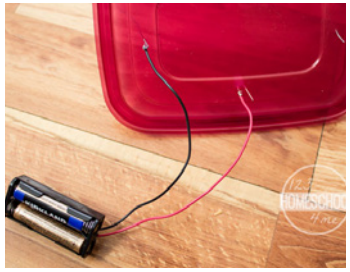
Steady Hand Game

1. Make 2 pin holes on either side of the container's lid and feed a length of the stiff wire through the holes, bending and shaping into waves.

2. Make 2 pin holes wherever you wish to place the LED light and feed the LED legs through the holes.



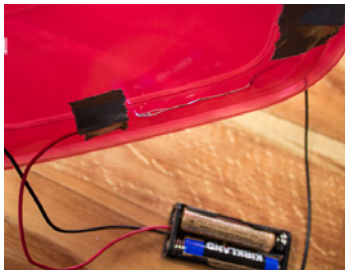
3. Use pliers to attach the battery holder to the connections for the stiff wire and the LED wire on the underside of the lid.



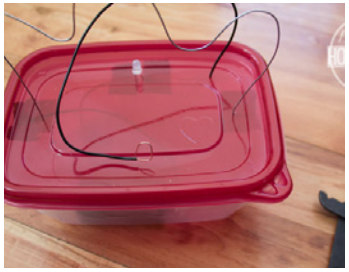
4. Since the LED is directional, you will first want to check that you are attaching the correct battery lead to the correct LED lead by touching the battery leads directly to the LED leads. In my case, the red lead of the battery pack needed to be attached to the long lead of the LED.

5. Bend the connections flush with the lid and use duct tape to secure.

6. Make another pin hole where you would like to place the flexible wire with the loop that the player will control while playing the game.



7. Cut a piece of shielded wire long enough to attach to the LED on the underside, come through the hole, and move across the entire curvy wire.



8. Use your wire strippers to strip the portion that will attach to the underside of the lid.

9. Thread the stripped portion of the wire through the hole on the top of the lid and use pliers to bend the wire around the remaining, unused LED lead. Secure with duct tape.

10. Strip some of the shielding off the other end of the flexible wire on the top side of the lid and use your fingers to form this potion into a circular loop.

11. Lastly, connect the loop to the curvy wire. When the loop touches the wire, the LED should light up. When it is held in such a way that there is no connection, the light should stay off.

Modern Science Rooms

The sciences enrich student's understanding of the way things work, from physics to biology, chemistry and all science branches in-between. Having modern and fully functional furniture and equipment is a necessity to supporting students as they investigate topics, perform experiments and explore new concepts.

- Bar height tables bring students to a higher level and create an active learning environment.
- Lab stools support students as they work.
- Mobile science benches allow students to join or separate the tables as needed.

Watch the walkthrough

www.bfx.com.au 1800 866 522

Featured Furniture

The E-Chair Lab Stool is a versatile seat perfect for science labs. Constructed with a sturdy 4-point base that allows for easy nested stacking. The E-Chair's seat and back are ergonomically designed to flex as students lean back. Students can sit either straight, side or saddle comfortably, all while resting their feet on the wrap around foot rail. The E-Chair Lab Stool goes perfectly with the Odyssey Science Bench. Featuring a compact laminate top that provides a durable and easy to clean surface for students to spread out textbooks and science equipment. They are constructed with a reinforced steel frame for extra stability. The Odyssey Science Bench is also fitted with a double foot rail and locking castors, making movement smooth and effortless.

FURNITURE FEATURES

- Benches fitted with locking castors for mobility
- Ergonomic seat and back
- Foot-rail for comfort
- Compact laminate top

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E-Chair Lab Stool

Odyssey Science Table

Science Rooms For All Year Levels

Across all year levels, the sciences enable students to develop their critical thinking skills, expand their knowledge and find solutions to problems. As students grow, they need spaces that can grow with them and environments that meet their current needs.

Science labs need:

- Durable tables made from high-quality materials able to withstand demanding environments.
- Suitable storage systems to store and organise science equipment like Bunsen burners, beakers, measuring tools and safety gear.
- Supportive and safe seating that won't hinder students as they move around the room

Featured Furniture

E-Chair Task

General Purpose Steel Frame Table

The E-Chair Sled Base Student Chair is engineered to withstand even the toughest classroom environments. Making it the ideal choice for science labs. Featuring an anti-rocking design with rear glides, ensuring safety and stability. The E-Chair Sled Base is available in 5 sizes to suit a range of year levels. The E-Chair is also AFRDI rated load tested and certified up to 135kg. When paired with the General Purpose Steel Frame Table, students will have a functional and supportive space for science class. This fixed height multi-purpose table features a silver powder coated frame that reinforces the structural integrity of the table. Finished with a compact laminate top available in a selection of both bright and practical colours.

FURNITURE FEATURES

- Posture supporting lumbar
- Lightweight chairs allow for easy stacking
- Compact laminate top
- Silver powder coated steel frame

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BFX Furniture

We offer a FREE on-site consultation that includes:

- Measure & Quote
- 2D or 3D floor plan
- Expert advice from our experienced Furniture Consultants

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Why choose BFX?

BFX Furniture is much more than just a furniture supplier. No matter how big or small the project, you can expect nothing but professional service every step of the way, from our expert sales consultants to our delivery and installation team.

BFX has grown to become one of the leading suppliers of furniture in Australia. With a service backed by years of extensive industry experience and a team dedicated to market research, we don't just deliver furniture, we deliver innovation and superior design. We are dedicated to helping you revitalise your school with Future Focused Learning.

Our 5-Step Fit-Out Process

1. On-site Consultation & Measure
Sit down with an expert and plan your perfect design.

2. Custom 3D Designs to Specifications
Visualise your space before you commit.

3. Quote Acceptance
Be confident you're getting the best price.

4. On Time Delivery
Straight from our QLD manufacturing facility.

5. Ongoing Support
Real people, lasting relationships.

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