Years 1/2

Mechanisms
Wheels and axles

Instant CPD

Tips for teachers

- ✓ Ensure a variety of different shaped boxes are available so children can select the one most appropriate for their design.
- ✓ Provide wheels with a range of diameters and thicknesses for children to explore and select the most suitable.
- ✓ A card disc glued onto a wooden/MDF wheel is easy to draw on to add details using felt tip pens.
- ✓ To add a trailer, use flat magnets glued onto the ends of boxes (opposite poles outwards) or short pieces of pipe cleaner bent to form a 'hook and eye'.
- ✓ **Homework** – ask children to complete a checklist of different types of vehicles and how many of each one they see in their local area.
- ✓ **Homework** – ask the children to record a range of wheeled toys. They could record in writing or with pictures such as drawings, cut outs or photographs.

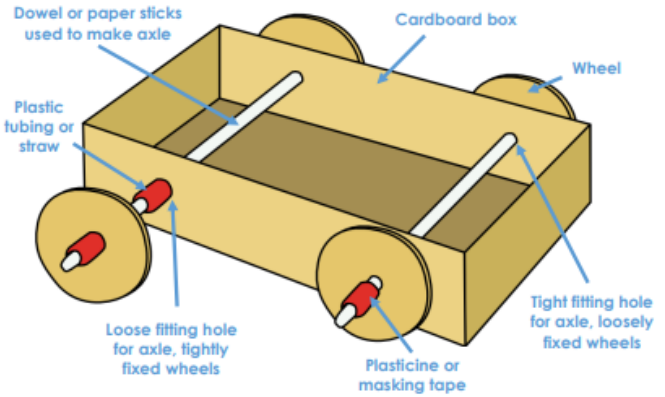
Useful resources at www.data.org.uk

- **Working with wheels and axles** (9-11 years but contains useful information)

EYFS Resources

- **Let's Look at Vehicles** PowerPoints with a range of wheels with discussion prompts and 'design a vehicle for an alien' activity and lesson planning.
- **Toys** Activities and goals for teaching about toys, including building a toy collection and practical skills.
- **D&T Primary Issue 34** Innovations in wheel design. Years 4-6.

Two different ways to fix wheels



Types of wheels

Ways to hold moving axles

Use **pairs of clothes pegs** glued with PVA to the underside of a box.
Check the peg holes are large enough to allow axles to move freely.
Make sure they are aligned carefully so the vehicle moves in a straight line when the wheel and axle mechanism is added.

Use **card triangles** with holes for the axle.
Check the holes are large enough to allow the axle to move freely.
Make sure opposite triangles are aligned carefully so the vehicle moves in a straight line when the wheel and axle mechanisms are added.

Use **large paper/plastic straws** fixed with masking tape to the underside of a box.
Check straws are positioned carefully so the vehicle will move in a straight line when the wheel and axle mechanisms are added.
Make sure the straw hole is large enough to allow the axle to move freely. The wheels must be fixed tightly to the axle.

Designing, making and evaluating a small wheeled trolley that will carry tools to use in the school garden or for a character in a story

An iterative process is the relationship between a pupil's ideas and how they are communicated and clarified through activity. This is an example of how the iterative design and make process *might* be experienced by an individual pupil during this project:

THOUGHT	ACTION
Who am I making the trolley for?	Talk about and explore a range of existing wheeled products.
How many wheels will it need? What type of wheels will be best?	Discuss and consider the best size and material from the wheels available.
What does it need to carry?	Talk about the surfaces the trolley might have to travel over.
	Discuss and list the things that need to be carried.
Should there be sections for different items? How big does each section need to be?	Use drawings and collect different sized and shaped boxes. Clarify and model ideas using the boxes.
Do we want to pull or push it? Which way moves best?	Try out existing trolleys and test out ideas including different types of handles.
How could it be appealing as well as functional?	Talk about and combine ideas to create designs.
What tools, resources and materials will we need?	Think about and collect resources Select appropriate tools.
What will I do if something does not work as planned?	Reflect on and refine ideas and designs as the process develops.
How will I check the trolley is fit for the user and for its purpose as I make it?	Frequently test the movement and design of the trolley with and without contents.
What do I think about my final product.	Reflect and evaluate against the original design criteria.

Glossary

- **Axle** – a rod on which one or more wheels can rotate, either freely or be fixed to and turn with the axle.
- **Axle holder** – the component through which an axle fits and rotates.
- **Chassis** – the frame or base on which a vehicle is built.
- **Friction** – resistance which is encountered when two things rub together.
- **Dowel** – wooden rods used for making axles to hold wheels.

Years 1/2

Food

Preparing fruit and vegetables

Instant CPD

Tips for teachers

- ✓ Display fruit, including photographs and associated technical vocabulary, to encourage the children to use it when discussing, designing and making a food product.
- ✓ Ask the children to sort a selection of fruit and vegetables – which is which? Photo cards could be used for this.
- ✓ Include fruit that is less likely to be known to the children.
- ✓ Stories and poems about food could be used for inspiration and as an introduction to the project.
- ✓ Visit a local shop or food market to give your project a real-life context.
- ✓ Carrots can provide a relatively cheap food for examining the effects of using different equipment such as grating, slicing into thin rings, slicing into sticks.
- ✓ Serrated knives with rounded ends are the best.
- ✓ Foods for chopping/slicing could be cut in half lengthways to provide a flat base and held still with, for example, a fork so that children cut safely.
- ✓ Before you organise any food tasting in your class, you need to check your school and local authority health and safety policy. Seek parental consent.
- ✓ As homework ask children to keep a weekly fruit and vegetable diary and ask them to record their results in a chart/table. If more appropriate, focus on fruit and vegetables served in school.

Useful resources at www.data.org.uk

- **Caribbean fruit cocktails** (7-9 years but contains useful information)
- **Are you teaching food in Primary D&T?**
- **Super salads** (7-9 years but contains useful information)
- **Fantastic fruit**

Other useful web-based resources:

- www.foodafactoflife.org.uk
- http://www.nhs.uk/livewell/5aday/pages/5adayhome.aspx

Teaching aids to demonstrate food processing skills

Peeling

Cutting

Slicing

Grating

Squeezing

Food Processing Equipment

Utensil	Food	Effect	Mouth feel
Juicer 	Orange	Makes juice	Liquid
Peeler 	Apple	Unpeeled apple	Crunchy
Knife 	Carrot	Thin rings	Crispy hard

Hygiene – some key pointers

- Jewellery is removed
- Hair is tied back
- Sleeves are rolled up
- Aprons are on
- Hands are washed
- Cuts are covered with blue waterproof dressing

Further information from www.foodafactoflife.org.uk

Designing, making and evaluating a fruit snack for a class picnic

An iterative process is the relationship between a pupil's ideas and how they are communicated and clarified through activity. This is an example of how the iterative design and make process *might* be experienced by an individual pupil during this project:

THOUGHT	ACTION
What sort of fruit product shall I make? Who will it be for? Which fruit will I put into my salad? Will my product appeal to my intended user?	Talking, drawing, writing lists, generating design criteria.
How will I process my fruit?	Using different tools and practising using different food-processing skills, e.g. cutting, slicing, grating.
How will different food processes create different effects?	Discussing and comparing different effects. Trying them out and evaluating.
What tools and food processing skills will I use? What order will I work in? How will I present my fruit snack?	Negotiating, developing and agreeing a plan of action, evaluating actions.
Do I need to adjust or change anything? Refining and reflecting.	Discussing, trying out and modifying the design.
Will my fruit salad meet the needs of the user and achieve its purpose?	Evaluating the product with the intended user and against the design criteria.

Glossary

- **Fruit** – plant or tree's edible seed with envelope.
- **Vegetable** – plant used for food.
- **Nutrients** – all the things in food that the body needs to remain healthy.
- **Pith** – the soft white lining inside fruit such as oranges.
- **Salad** – a cold dish of fresh and/or cooked vegetables or fruit.
- **Sensory evaluation** – subjective testing of foods where senses are used to evaluate qualities such as appearance, smell, taste, texture (mouth feel).
- **Kebab** – cooked and/or fresh ingredients on a skewer.

Years 1/2

Textiles
Templates and joining

Instant CPD

DESIGN & TECHNOLOGY ASSOCIATION



Tips for teachers

- It is helpful if each child has a named plastic envelope, zip wallet or folder in which to keep their work safe.
- Give children the opportunity to join fabrics in a variety of ways through focused tasks and compare the outcomes.
- In order for children to thread their own needle start by using a needle with a large eye and a sharp point.
- Children's stitching skills may be in their infancy and fabrics need to be chosen with this in mind. Start with felt as it doesn't fray and progress to other fabrics.
- Fabrics used for children's products could be reclaimed.
- Children should be taught to place their templates and pattern pieces economically on the fabric.
- Children could be reminded of sustainability issues, and of the need to reduce, reuse and recycle.
- Demonstrate sewing techniques, joining two pieces of fabric e.g. running stitch.
- Demonstrate other ways of joining, not sewing, to the class e.g. sticking, stapling, lacing.
- Encourage the children to make a mock-up from dipryl (disposable cloth fabric).
- Put technical vocabulary onto flash cards.

Useful resources at www.designtechnology.org.uk

- Joining and Fastening Fabrics

EYFS Resources
- Three Bears Picnic Blanket
- Let's Look at Hats

Three alternative ways of using templates and simple pattern pieces

Use clear sticky tape to position pattern on fabric. Cut around the pattern.

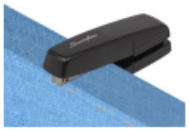
Use soft chalk pastel or soft white crayon to draw around the pattern prior to cutting out.

Use pins to secure the pattern on the fabric. Cut around the pattern.

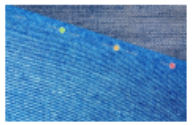
Exploring and evaluating joining techniques

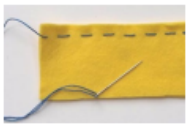
Joining fabric


Gluing


Stapling


Safety pin


Pinning


Sewing

Finishing techniques

Textile paints – glitter

Textile paints – raised

Adding sequins and shiny fabrics


Fabric crayons

Explore different techniques, including information and communication technology, for creating fabric designs and finishing techniques.

Designing, making and evaluating a puppet to perform a play

An iterative process is the relationship between a pupil's ideas and how they are communicated and clarified through activity. This is an example of how the iterative design and make process might be experienced by an individual pupil during this project:

THOUGHT	ACTION
What sort of puppet shall I make? Who is it for and what is it for?	Generating ideas through talking and drawing based on own experiences.
How can I make sure it fits my hand or finger?	Developing ideas using templates or pattern pieces to create mock-ups.
Which joining technique will work best for my puppet?	Exploring and evaluating joining techniques.
What media and materials will I use? How will I add the features?	Exploring and evaluating media and materials.
What shall I do first? What tools and techniques will I use? What fabrics shall I use?	Selecting from a range of tools, techniques and materials. Explaining choices.
More thoughts... judging, planning, generating new ideas.	More actions... making, testing, modifying.
Will the puppet meet the needs of the user and achieve its purpose?	Evaluating the puppet with the intended user and against original design criteria.

Glossary

- **Appliqué** – to attach a decorative fabric item onto another piece of fabric by gluing and/or sewing.
- **Design** – to generate, develop and communicate ideas for a product.
- **Embroider** – to decorate fabric with stitches.
- **Evaluate** – to judge how a product meets chosen criteria.
- **Fray** – to unravel or become worn at the edge.
- **Glove puppet** – a glove puppet fits over the hand, and the fingers operate its head and arms.
- **Mock-up** – a model which allows children to try out ideas using cheaper materials and temporary joints.
- **Seam** – a row of stitches joining two pieces of fabric.
- **Sew** – to join pieces of fabric with stitches.
- **Template** – a shape drawn to assist in cutting out shapes.