

GGA Knowledge Organiser Reception STEM – Types of Materials

Investigating

Cardboard



Easy to cut, shape and fold but this becomes more difficult the thicker it gets. Use old boxes for your supplies

Play Dough



Very easy to shape, roll out and cut. Can be made into almost any shape but not waterproof. Can be used to quickly join materials together

Plastic



Construction kits such as Lego, Meccano and K-nex. Very strong, waterproof easy to join and take apart. Some packaging is also made from plastic

Paper



Much easier to cut and shape than card as its thinner, but not as durable.

Research, Designing & Planning

Plan with your teachers

Design Specification

What does your design need to do e.g. does it need to move?

Planning

Talk about your ideas with your teacher

Design Development

Draw your design ideas

Making and adapting

Try out different materials to find the best ones for your design

Evaluating

How did it go? Did it work? Want went well? What could have been done better?



Cross Curricular Opportunities

English

Using adjectives and adverbs to describe the differences.

Science

Thinking about the qualities of each material, are they the right choice for the job?

Vocabulary

Materials

Something we use to make our designs e.g. paper, card, wood, plastic, fabric etc.

Texture

How our materials feel e.g. rough, smooth etc.

Waterproof

Does it soak up water like cardboard and paper would or does water run off it (as with plastic)

Durable and resilient

This means strong like wood or thick card, tissue paper isn't durable or very resilient!

Flexible

How bendy is the material, can it be folded or rolled up easily or is it very stiff?

Why are we learning this?

To know how to: know the differences between various kinds of materials

Why is it important?

So that we understand how to: choose the right kind of material for our project

Investigating

Scissor Safety



Holding Passing scissors scissors


Following a line



Cut just outside the line, if you wobble a bit it doesn't cut into your shape.

Use all of the scissor blades from the hinge to the tips, move the scissor handles slowly.

Cutting carefully



Cut, Cut, Cut

Open, shut, open, shut.
That's the way we cut, cut, cut.

Tuck your elbows nice and tight,
Make sure you hold your scissors right.

Fingers on the bottom, thumb on the top.
Do not let the paper drop!

Hold your scissors straight, not down,
Turn your paper round and round.

Open, shut, open, shut.
That's the way we cut, cut, cut.

Research, Designing & Planning

Plan with your teachers

1. Design Specification

What does your design need to do?

2. Planning

Talk about your ideas

3. Design Development

Draw your design ideas

4. Making and adapting

With some help you can start to make your design idea.

6. Evaluating

How did it go? Did it work? What went well? What could have been done better?

Why are we learning this?

To know how to: shape our materials and remodel them into a new design

Why is it important?

So that we understand how to: use cutting and shaping equipment safely and accurately



Scissor-Holding Tip for Toddlers:
happyhooligans.ca



A smiley face drawn on the thumbnail of your child's "cutting hand" serves as a reminder to keep the thumb facing upwards while he or she is cutting.

Cross Curricular Opportunities

Maths

Noticing the forms of basic 2D shapes as the outlines are 'followed' with scissors

English

Using words to describe what we are doing or how we have done it

Art

Drawing and designing outlines to prepare for cutting

Vocabulary

Cutting

Using scissors to slice through and split and separate materials into separate pieces

Outline

The outside line that makes the shape what it is.

Shaping

To make your design into the shape you need

Health and Safety

Holding the scissors carefully with our cutting hand. Being careful to keep our fingers that are holding the material away from the blades.
Passing scissors gently, holding them closed and by the blades.

GGA Knowledge Organiser Reception STEM – Joining Materials

Investigating

FPT Focused Practical Task

Investigate the best joining method for the materials used and the purpose of the design.

Cellotape

Instant sticky fix but and clear, can get tangles up and not easy to move once it is pressed down – can tear your materials!

Masking Tape

Doesn't stay sticky for very long but can be moved and re positioned. Good for hold together pieces whilst glue is drying

Glue Stick

Easy to use, be careful, can be a messy method!

Hole punch & tags

Instant joining works best using flat materials

Stapler

Very strong fastening method but can be tricky to fit long pieces of material together

Research, Designing & Planning

Plan with your teachers

1. Design Specification

What does your design need to do?

2. Planning

Talk about your ideas

3. Design Development

Draw your design ideas

4. Making and adapting

With some help you can start to make your design idea.

6. Evaluating

How did it go? Did it work? What went well? What could have been done better?

Why are we learning this?

To know how to: join materials together when constructing our design and technology projects

Why is it important?

So that we understand how to: choose the right method for the materials we're using.



Cross Curricular Opportunities

English

Describing what we are doing or how we have done it

Science

Investing the best methods for joining based on materials and uses of the design e.g. does it need to be waterproof?

Key Technical Vocabulary-Glossary

Join

Attach materials together using a way to stick them together.

Joining methods

Different ways you can join materials together (depending on what the materials are) such as sticky-tape, masking tape, glue stick, hole-punch & tags, stapler etc.

Reinforce

Make materials stronger, glue two sheets together to make them harder to tear or break

Assemble/Construct

To put all the pieces of a model together, building and completing the finished design