Nuffield Design & Technology
working in the curriculum

What can you learn from a textile tree?
four and a half hours work
**design context**

Children love to see different colours and feel different textures. Here they will handle and experience a variety of textiles and relate them to their everyday uses. They will have great fun spotting the inappropriate use of materials – like newspaper shoes, or a towel made from kitchen foil. They will learn to work together to produce a “learning tree” for the whole class and they can evaluate their own learning by using the resources hanging on their tree.

**learning purposes**

In this unit children will learn:

- that there are different sorts of materials including textiles;  
  (Session 1)
- that textiles have different uses;  
  (Session 2)
- simple wrapping techniques;  
  (Session 3)
- to make teaching cards for the class tree;  
  (Session 4)
- to contribute to a large group task.  
  (Session 5)
the small tasks
the focused practical tasks

1 Exploring materials 30 minutes
2 Relating textiles to their uses 30 minutes
3 Learning to wrap and manipulate textiles 30 minutes
4 Learning to make textile teaching cards 30 minutes
5 Writing the specification 30 minutes

the big task
the design and make task

The big task is to design and make a simple tree structure using a variety of textiles, paper and card. The children will also make textile sample cards to hang on the tree so that it becomes a learning resource for the whole class.

60 minutes

The evaluation 30 minutes
Unit review 30 minutes

with careful wrapping none of the cardboard is visible
The children can decide on the following:

- the sort of textiles they will use for making the tree
  required learning in Sessions 1, 2 and 3, design decision made in Session 5;

- the textures they prefer
  required learning in Sessions 1 and 3, design decision made in Session 5;

- the colours they prefer
  required learning in Sessions 1 and 3, design decision made in Session 5;

- how to wrap the textiles round cardboard tubes
  required learning in Session 3, design decision made in Session 5;

- how to make the labels to hang on the tree
  required learning in Session 4, design decision made in Session 5.
exploring materials

Teacher input

Tell the class that they are going to find out about some very important materials called textiles. Without them we’d all be very cold as we’d have no clothes. Explain that, to begin with, the class will look at a range of materials including some textiles.

Have a good selection of materials to show the class. The first five on this list represent the very minimum of textile samples you should have.

- Polycotton (polyester and cotton)– e.g. a piece from an old shirt
- Cotton – e.g. a piece from a towel
- Wool – e.g. a piece from some old socks or an old jumper
- Leather – e.g. a piece from old shoes
- Nylon – e.g. a piece from an old swimsuit
- Cottonwool – from medical kit
- Wire wool
- Sandpaper
- Newspaper
- Sponge
- Glass – e.g. from old spectacles (no sharp edges)
- Plastic (polythene) – e.g. piece from a washing up bottle
- Netting – e.g. from a child’s fishing net
- Aluminium foil – from kitchen

Have pieces of material or textile, not whole objects made from them i.e. a piece of wood not a pencil, a piece of leather not a shoe. Label each sample with its name. Later, some of the children may need help in discriminating between the name of a material and an object made of that material, and name labels will help them.

Explain that there is a wide range of materials available. They have different properties – they look different and feel different. For each of your samples suggest words that could be used to describe its look and feel. Here are some good words to start with.

**Feel:**
- rough/smooth
- stiff/bendy
- warm/cool

**Look:**
- shiny/dull
- rough/bobbly/smooth
- open weave/close weave

Show the class the range of materials you have collected and ask them to name them and describe the differences between pairs e.g. wood and sponge. Point out that some materials are found naturally, others are synthetic and some are made of a mixture of natural and synthetic.

Encourage the class to use the following sets of words as a minimum: shiny/dull, warm/cool, hard/soft, bendy/stiff, rough/smooth. You may want to add other words appropriate to your particular material samples. Write the words on the board and let the children practise reading them out aloud.
Pupil activity
Tell the class that they will work in groups to organise materials into groups according to what they are like. Show them the following pairs of words on labels and explain that they will have these labels on their tables along with a selection of materials. A4 stiff card folded in half will stand up and be visible. Write one of the pair of words on each side of the card.

Label pairs:
- shiny  dull
- warm  cool
- hard  soft
- bendy  stiff
- rough  smooth

Explain that their job is to put the shiny materials in a pile in front of the side of the label that says “shiny” and the dull materials on the side that says “dull”. Then they can re-sort their samples into warm/cool piles and so on. Each child should have the opportunity to pick up and handle the whole range of materials. They should discuss in their groups the look and feel of each material they handle.

Resources
Stimulus: a range of materials including polycotton (polyester and cotton), cotton, wool, leather, nylon, cottonwool, wire wool, sandpaper, newspaper, sponge, glass, plastic (polythene), netting, aluminium foil;

Consumables: a set of five large clear stand-up labels for each table.

Health and safety check
Discuss the hazards and risks involved in handling textile samples and how the risks can be controlled by the way the children behave – taking turns sensibly, not rushing and grabbing those fabrics that appeal.
SECTION 4  teaching the unit

relating textiles to their uses

Teacher input
Tell the class that they are going to play the crazy question game to learn about the uses of textiles. Start with the example:
“Paper is nice
I like paper
I’d like some paper shoes,
Would you?”
Ask the class why paper shoes are not a good idea and summarise the discussion with the key sentence: “The properties of paper make it unsuitable to use in this way”. The children should suggest a sensible alternative and you can summarise this with the key sentence: “The properties of that material make it suitable to use in this way”. To make the experience concrete it is a good idea to have some examples of the inappropriate materials and everyday textile items in the game. Here are 18 examples to choose from:
a T-shirt made from cling film
a scarf made from wire wool
a hat made from stone
socks made from orange peel
a vest made from sandpaper
a coat made from glass
gloves made from wood
a nappy made from cheese
a cardigan made from sponge
a belt made from raw spaghetti
sheets made from chewing gum
trousers made from leaves
a raincoat made from toast
a school bag made from jelly
a dress made from chocolate
a tie made from sweeties
a towel made from aluminium foil
a face flannel made from soap

Pupil activity
After playing the game ask the children to do some individual work on matching textiles with their everyday uses. There is a ready-to-copy sheet ‘Uses of textiles’ that you can use. Then they can become textile spotters around the classroom, the school, and at home. Explain that it is sometimes difficult to know what textiles have been used to make an item of clothing or furnishings but that looking at the labels will help.

Resources
Stimulus: samples of textile items e.g. socks, gloves, towel, dishcloth, and inappropriate materials e.g. spaghetti, foil, newspaper, chewing gum;
Consumables: ‘Uses of textiles’ sheet.

Health and safety check
Discuss the hazards and risks involved in using the textiles as suggested in the crazy question game.
learning to wrap and manipulate textiles

Teacher input

Explain to the class that they are going to make a textile tree. The branches will be made from card tubes wrapped in fabrics and that during this lesson they will learn to do this wrapping really well. Show the class a wrapped tube and then demonstrate how you did this explaining each step as you go along. There are two ways to do this. Secure the fabric strip at one end of the tube with a paperclip, wrap around until the tube is covered and then secure the other end with a second paperclip. Or starting in the middle of the fabric, wrap both ends around the tube at once until the tube is covered and then knot the two ends together.

Remind them that all these tubes will go to make up the branches of the textile tree. Children who have never used paperclips or tied a knot will need reassurance that it is not too difficult and that they have a chance to practise and experiment today, but they will be making the real tubes another day.

Pupil activity

Tell the class to try out clipping the paperclips onto the end of a cardboard tube to learn how they work. Encourage them to wrap closely, so as not to show much cardboard and then secure their fabric with paperclips. Some children will need more practice than others and they can help each other to hold the fabric still.

They should also practise wrapping and tying. If it is a slippery fabric it may need a double knot.

Put the practice tubes on display for future reference. Some of the good ones can be used in the textile tree.

Resources

Stimulus: sample of each kind of wrapped tube prepared by the teacher;
Consumables: cardboard tubes (one per child), large paperclips, textile samples.

Health and safety check

Discuss the hazards and risks involved in using paper clips and how the risks can be controlled by careful handling.
Learning to make textile teaching cards

**Teacher input**

Explain that today they will be learning how to make labels to hang on the tree and that these labels will become teaching cards to help them learn about textiles. Show the class how you prepared the sample teaching cards by making another one of each type and explaining how to do it as you go along.

- Pipe cleaner bent over into a hook at each end and hooked through hole in card.
- Card with top folded over to form a hook.

Use a small amount of glue to stick the textile sample to each card, and explain that it will need a little time to dry.

Explain that each card will have some information written on the back about the textile sample. It will be the name of the textile and one other word that describes type, texture, colour or use. Write the two appropriate words on the back of each sample card. You could colour code the labels as follows: white cards have name and type, blue cards have name and texture, and so on.

The class will need to become familiar with lists of words they can use on the labels. The minimum word list for names of fabrics is polycotton, cotton, wool, leather, nylon.

The minimum word list for type is natural, synthetic, mixture. The minimum word list for texture is warm, cool, hard, soft, bendy, stiff, rough, smooth. The minimum word list for colour is blue, green, brown, red, white, yellow, purple, orange, black. The minimum word list for textile use is towel, belt, shirt, swimsuit, scarf.

**Pupil activity**

Children can cut their own cards out in a shape they choose, use a pre-prepared leaf-shaped template to draw the shape before cutting, or use pre-prepared cards. If you are making the tree in the winter the shape might be snowflakes or icicles. Some or all of the cards they make may be kept to use later, but it is important that this session is seen as an exploration of the materials and techniques – a practice session.

**Resources**

**Stimulus:** sample of each type of card already prepared by teacher, word list on display;

**Consumables:** pipe cleaners, card; glue, textile samples;

**Tools:** hole punch (as many as possible), scissors, pencils or felt pens, leaf-shaped templates (optional).

**Health and safety check**

Discuss the hazards and risks involved in using scissors, glue and paper punches, especially when sharing is involved, and how the risks can be controlled by careful handling and using the correct procedures.
Teacher input

Tell the class that they know enough now to plan how they will make the class textile tree. Explain that they are going to write a class specification, and then they each will make their own specification to show how they will make their individual parts of the tree. Tell them that you will make the framework of the tree and they will add their parts.

Make a large chart to record the whole-class design decisions. There is an example: ‘Our textile tree class specification’ available as a ready-to-copy sheet.

You will have to take votes or have some other fair way to reach agreement about the class decisions. Write on the chart the themes you want to learn about (e.g. types of textile, textures, colours, everyday uses); the sorts of textiles you will use; the sorts of textures you will use; the colours you will use. The choice of colours could be related to the season, e.g. if you are making the tree in autumn you might ask the class to think about autumn colours.

Pupil activity

Tell the class that they can record their own design decisions on the ‘My textile tree specification’ sheet (available as a ready-to-copy sheet). Explain that they will use these sheets again when they are evaluating their contribution to the tree.

Remind the children about the appearance of the covered tubes and the teaching cards.

Resources

Stimulus: wrapped tube from Session 3, teaching card from Session 4;
Consumables: ‘My textile tree specification’ and ‘Our textile tree class specification’ sheets;
Tools: pencils.

Health and safety check

Revisit the discussion about controlling risks by asking the children to draw a picture of a part of the making process that may require extra care e.g. using scissors.
Teacher input
Have the framework of the tree ready for the start of this lesson. It should be fixed to the wall or freestanding safely, and should be at a level the children can reach. You could use the bare twiggy branches of a real bush or tree (strip off small twigs so the cardboard tubes will slip on easily) or draw a tree shape pinned to a display board so you can staple each finished tube onto it and form the branches that way (staple the tubes at one end only). Remember the children will have to hang their cards on the tree so you will need to make that possible by constructing the branches with that in mind.

You could add hooks of card or pipe cleaners to the tree structure to make it easier for them to find somewhere to hang their cards.

Pupil activity
Explain to the class that each one of them will be making one wrapped tube and one teaching card. If there is time, and enough materials they could make more. Each card will have a textile sample stuck on one side and will have two words written on the back by you or by the child. Some children will need help with this. The themes could be divided so that each group writes the name of the textile and an appropriate word from their given list e.g. texture words. The lists of appropriate words should be on display on the blackboard or given on a sheet to each group.
The minimum word list for names of fabrics is polycotton, cotton, wool, leather, nylon.

The minimum word list for type is natural, synthetic, mixture.

The minimum word list for texture is warm, cool, hard, soft, bendy, stiff, rough, smooth.

The minimum word list for colour is green, brown, red, white, yellow, orange.

The minimum word list for textile use is towel, belt, shirt, swimsuit, scarf.

**Extension work**

Pupils who finish early or who need an extra challenge could be asked to do the following.

- If they are able to tie a knot, they can wrap some more tubes in interesting and unusual ways.
- If they are able to plait, this gives another interesting decorative effect.

**Resources**

**Stimulus:**
- tree framework pre-prepared by the teacher;

**Consumables:**
- cardboard tubes (at least one per child), large paperclips, textiles, pipe cleaners, card, glue, textile samples;

**Tools:**
- scissors, pencils, felt pens/crayons, leaf template (optional), wall stapler (for teacher), thick marker pen.

**Health and safety check**

Revisit the discussion about controlling risks when using scissors, glue and paper clips.
**Teacher input**

Ask the class to look at the completed tree. Ask the class whether they think it is successful. Remind the class that one way to answer this question is to compare what the tree is like with what it is supposed to be like according to the class specification. Show the class the specification for the tree and check whether it does meet the requirements.

- Did we use the sorts of textiles we said we would?
- Did we have the textures we said we would?
- Did we have the colours we said we would?
- Did we show what they were used for?

**Pupil activity**

All the children should evaluate their own part of the tree, by looking back at the individual specification and comparing what they produced against what they had planned to produce. There is a ready-to-copy ‘My textile tree evaluation’ sheet available.

Now use the tree as a teaching tree. Ask a series of children to come up and each find a teaching card that has a textile:

- called nylon;
- with a rough texture;
- that is a brown colour;
- that might be used to make a shirt;
- that is natural.

The Textile Tree should be evaluated again after it has been used as a teaching tree. The class should ask the following.

- Has it fallen apart?
- Does it still look good?
- Could we use the cards to find out about textiles?

**Resources**

**Stimulus:** ‘My textile tree specification’, textile tree, teaching cards;

**Consumables:** ‘My textile tree evaluation’ sheets;

**Tools:** pencils.

**Health and safety check**

Discuss the hazards and risks involved in using the textile tree and how the risks can be controlled.
Teacher input

Explain to the children that it is important to think about how to get better at design & technology and that they can do this by talking about the following questions.

- What did you learn about textiles?
- Did anything surprise you about making a class learning tree?
- Could the tree be used to learn about something completely different? Like what?
- What did you find difficult to do?
- What did you get better at?
- What could have been done better?
- How could you make sure it was done better?

Pupil activity

The class should discuss the answers to the questions. The class should agree a target for getting better based on their answers for their next design & technology unit.

Resources

**Stimulus:** The textile tree with teaching cards.

**Health and safety check**

Discuss whether the class used hazard recognition, risk identification and risk control to design and make safely.
**Resource summary**

<table>
<thead>
<tr>
<th>Sessions 1</th>
<th>Session 2</th>
<th>Sessions 3+4</th>
<th>Sessions 5-7</th>
</tr>
</thead>
<tbody>
<tr>
<td>names of the samples of materials available in the session – cotton, wool, foil, net, linen, cardboard, metal, sandpaper – textile, cloth, fabric, material</td>
<td>flexible, warm, waterproof, strong, soft, rough, comfortable</td>
<td>wrap, paperclip, fasten, teaching card, loop, glue, sample</td>
<td>design specification, branch, twig, tree, sort, evaluate, evaluation</td>
</tr>
</tbody>
</table>

### Session 1

- A range of materials including a set of 5 large clear stand-up polycotton (polyester and cotton), cotton, wool, leather, nylon, cottonwool, wire wool, sandpaper, newspaper, sponge, glass, plastic (polythene), netting, aluminium foil.

### Session 2

- Samples of textile items e.g. socks, glove, towel, dishcloth, and inappropriate materials e.g. spaghetti, foil, newspaper, chewing gum.
- ‘Uses of textiles’ sheet.

### Session 3

- Sample of each kind of wrapped tube prepared by the teacher.
- Cardboard tubes (one per child) large paperclips, textile samples.

### Session 4

- Sample of each type of card already prepared by the teacher, word list on display.
- Pipe cleaners, card, glue, textile samples.
- Hole punches, scissors, pencils or felt tip pens, leaf-shaped templates (optional).

### Session 5

- Wrapped tube from Session 3, teaching card from Session 4.
- ‘My textile tree specification’.
- Pencils.

### Session 6

- Tree framework pre-prepared by the teacher.
- Cardboard tubes (at least one per child), large paperclips, textiles, pipe cleaners, card, glue, textile samples.
- Scissors, pencils, felt pens / crayons, leaf template (optional), wall stapler (for teacher), thick marker pen.

### Session 7

- ‘My textile tree specification’, the textile tree, teaching cards.
- ‘My textile tree evaluation’.
- Pencils.

### Session 8

- The textile tree with teaching cards.
This module of work links to many other areas of the curriculum and care will be needed to maintain the overall Design and Technology focus.

**Literacy**

There will be many opportunities for reading and writing labels and caption in this module.

New words can be made into a word wall for all to share and use when talking about the materials.

The tree could also be used as a stimulus for writing a class story using ideas from other stories already read, e.g. Jack and the Beanstalk.

**Science**

This module links very well to the QCA SoW 1C ‘Sorting and using materials’. The children will have the opportunity to investigate the materials using their senses and appropriate vocabulary. They will be able to divide the materials according to their properties and see that materials are chosen for specific purposes on the basis of their properties.

Games can be played where two properties are called out and children have to find the materials that have the properties. Can you do this when three properties are called out?

**ICT**

The QCA SoW 1D ‘Labelling and classifying’ links well with this module. The children will learn that pieces of information can describe objects and that the objects can be identified by key words.

The integrated task for this SoW could be to produce labels for the textile tree.

**Art and Design**

This work will provide an excellent lead into the QCA SoW 1B ‘Investigating materials’.

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**resources and links**

**links to other subjects**

This module of work links to many other areas of the curriculum and care will be needed to maintain the overall Design and Technology focus.
Uses of textiles

Name ________________________________

- belt
- tie
- leather
- wool
- felt
- cotton
- nylon
- silk
- hat
- T-shirt
- swimsuit
- gloves
Our textile tree class specification

We will make a tree to help us learn these things about textiles
1 What they are called
2 How they feel
3 How they look
4 What they are used for

We will use these sorts of textiles:
• natural textiles, e.g. wool
• synthetic textiles, e.g. nylon
• mixed textiles, e.g. polyester cotton

We will have these sorts of textures:
soft crunchy slippery stiff warm rough smooth

We prefer these colours:
red blue yellow green orange purple brown black white

This suggested format would work best as a wall chart. If you stick samples of textiles, textures and colours to the chart as well as write the words, it will be a useful resource in itself. As the class agree a decision you can draw a circle round their choice or a large tick (you may restrict or extend their choice by what you write on this chart)
My textile tree specification

Name ____________________________________________

Textile tube

I will wrap and clip textiles to tube

wrap and tie

Teaching card

I will fold over the end to hang my card

make a hole and use a pipe cleaner
My textile tree evaluation

Name ________________________________

How did I wrap my textile tube?

Wrapped and clipped  □

Wrapped and tied  □

Did it work?

yes
no

How did I make my teaching card?

top folded over  □

with a hole and loop  □

Did it work?

yes
no
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Nuffield Curriculum Project Centre Team
David Barlex, Director Nuffield D&T Senior Lecturer Brunel University
Jane Mitra, Deputy Director and Educational Consultant
Nina Towndrow, Project Administrator

Authors and contributors
Eileen Birkenhead, Educational Consultant
Daniel Davies, Bath University
John Garvey, Brunel University
Rob Johnsey, Warwick University
Teresa Linton, Grasmere C of E Primary School
Lynne Orford, Holtspur School, Beaconsfield
Chris Purdie, Townsville Junior Grammar School, Queensland, Australia
Cy Roden, Educational Consultant
Marion Rutland, Roehampton Institute University of Surrey
Joy Simpson, Whipton Barton Middle School, Exeter
John Twyford, Exeter University

Design
Dave Mackerell, Studio Communications

Evaluation
Patricia Murphy and Marion Davidson of the Open University

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Anna Wojtowicz and Caroline Reynolds from the Health and Safety Executive

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Nathan Barlex

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Joanne Jessop, Sue Byrne

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