

Unit 7E Activity week (optional)

About the unit

Not all D&T learning takes place in timetabled lessons. After-school and lunchtime clubs, activity weeks and school trips can all play an important part in developing pupils' D&T capability.

The main aim of this unit is to show how time outside lessons can be used to support pupils' learning, *eg*

- *by suspending the timetable and making other flexible arrangements*
- *by resourcing a project with school visits or visitors to the school*
- *by using local events and celebrations*
- *by working on a challenge, race or competition set by a national organisation*

Teachers can choose from two design and make assignments (DMAs) based on a school trip or industry experience. These have been selected because they can be adapted to meet the requirements of individual schools. The DMA chosen should allow pupils to show how well they can work independently, and how much they are able to draw on knowledge from a range of materials or focus areas.

Pupils gain the knowledge, skills and understanding they need to carry out the DMA successfully through product evaluation activities and focused practical tasks. They:

- learn how products are designed to meet particular needs and how the users interact with the products
- understand how and why products have changed over time
- learn how to use prototypes, preliminary models and mock-ups when designing
- learn how to use a range of cutting, shaping, forming and joining techniques and specified tools and equipment safely

The exact details of activities will need to be planned to meet the specific needs of an individual school's project.

Where the unit fits in

This unit is expected to take 6–9 hours.

This unit can be adapted for use with pupils in year 8 or 9. It is helpful if the activities and DMA for this unit are planned across the department, so that pupils have an opportunity to apply their knowledge across materials and continue to recognise the scope of D&T as a whole. The suggested DMAs enable teachers to link different areas of D&T easily.

Expectations

At the end of this unit

most pupils will: carry out their own research and use their findings about products that are produced commercially to develop their own ideas; consider the needs of users; clarify their ideas through discussion, drawing and modelling, and give reasons for choosing between ideas; work safely and accurately when using a range of resources, avoiding risk, noting any hazards to themselves and others, and identifying ways of controlling risks; compare their product with the design specification and identify successful, weak and problematic parts of their work

some pupils will not have made so much progress and will: carry out research and use their findings when developing ideas; illustrate alternatives using sketches and models and choose between them, showing an awareness of constraints; measure, mark out and cut materials reasonably accurately during modelling and production; note safety equipment used and identify its purpose; identify successful, weak or problematic parts of their work

some pupils will have progressed further and will: carry out their own research using sources not provided by the teacher, and use their findings about existing products when developing their own ideas; make effective use of preliminary models to explore and test their thinking, and use formal drawing methods to communicate their intentions; use a wide range of techniques skilfully during trialling and production, including measuring, marking out, cutting, forming, joining and finishing; devise tests to evaluate the effectiveness of their product in use; evaluate how they have achieved their original design proposals and make recommendations for further development of the product

Prior learning

It is helpful if pupils have:

- selected appropriate materials, tools and techniques
- followed instructions, *eg to carry out fair tests*
- used equipment accurately and appropriately, following safe working practices
- planned an order of work, with a list of equipment
- made a prototype to test their ideas

Pupils should have gained the above knowledge, skills and understanding in years 5 and 6, through unit 5A ‘Musical instruments’, unit 5B ‘Bread’, unit 5D ‘Biscuits’, unit 5C ‘Moving toys’, unit 6A ‘Shelters’, unit 6B ‘Slippers’, unit 6C ‘Fairground’ and unit 6D ‘Controllable vehicles’ in the key stage 2 scheme of work, or similar projects.

Language for learning

Through the activities in this unit, pupils will be able to understand, use and spell correctly words relating to:

- models, *eg preliminary model, mock-up*

Speaking and listening – through the activities pupils could:

- share information and discuss ideas in groups, and solve problems

Writing – through the activities pupils could:

- group sentences into coherent paragraphs, with sub-headings as appropriate
- plan and develop ideas and lines of thinking in continuous text
- join ideas within sentences including using links of time, *eg then, later, meanwhile*, and cause, *eg so, because, since*
- use punctuation correctly to mark sentences, *eg full stops, capital letters, question/exclamation marks, commas*, and clarify meaning

Resources

Resources include:

- case studies, *eg videos, pictures/photographs, books*, showing the product development process for a range of well-known products (preferably similar to the DMA set)
- case studies or examples of appropriate user research, *eg interviews, observation*
- materials, tools and equipment for prototyping, modelling and making mock-ups in food, resistant materials and textiles
- materials, tools and equipment to practise cutting, shaping and joining in a variety of materials in food, resistant materials and textiles

Future learning

This unit has links with future work in year 8. The knowledge, skills and understanding gained will provide a foundation for related work in all materials areas.

Out-of-school activities and homework

Pupils could:

- find out about the design, production, promotion, use and disposal of a product that is similar to the one they are going to design. They could consider *What or whose needs or wants might have been considered at each stage from design to disposal? How might they have been identified? Who might have been consulted?* They could list the criteria that the designer might have thought about
- find examples of how prototypes, models and mock-ups (in a variety of materials) are used

Links with other subjects

- English: finding and selecting information.
- Geography: going on a field trip.

Learning objectives

Pupils should learn:

Possible teaching activities**Learning outcomes**

Pupils:

Points to note**DESIGN AND MAKE ASSIGNMENT (DMA)**

- to identify, produce and evaluate products or systems needed for a local event, school trip or competition, by applying the knowledge, skills and understanding they developed during the product evaluation activities and focused practical tasks

Set the pupils a DMA which suits the school's particular circumstances, eg

- *an assignment as part of a D&T activity week*
- *work on a challenge, race or competition set by an outside organisation or company*
- *a project based on a local event, school visit or visitors to the school*

Examples

These example DMAs have been written so they can be copied and given directly to pupils. Make sure you supply background information and a specific context, so that the DMA is appropriate for your pupils.

School trip

Help to plan a school trip and develop a product or system that either meets the physical needs of pupils on the trip, or supports the learning activities of the trip.

Industry experience

After a visit to a manufacturing plant (or a talk and slide show by a manufacturer), either design a new product to add to the company's range, or design a product that would help workers at the plant.

- show an awareness of resources as a constraint
- find and select information which informs and clarifies the task
- draw upon their understanding of familiar products
- develop a preliminary model and use it as the basis for drawing up a manufacturing specification
- take account of the quality and type of materials available for use
- use tools and equipment to cut, shape and form materials safely
- evaluate their products by comparing them against their design criteria
- write a final review, based on their log, design folio and product, with an appropriate beginning and end, and a clear topic-led structure

Language for learning when reviewing the project

- Ask pupils to write a final review, based on their log, design folio and product. The opening sentence should explain the DMA, with further paragraphs focusing on:
 - working as a group
 - researching information
 - planning and exploring ideas
 - making the product
 - testing and improving
 The final sentences should give an overall evaluation.
- More able pupils should be expected to produce several paragraphs.
- Less able pupils should produce sentences in a start–middle–conclusion sequence. They might find it helpful to use time link words for the sequence of the DMA, eg *first, and then, finally*.

PRODUCT EVALUATION

Organise a range of activities that give pupils an opportunity to:

- learn how products are designed and made
- understand how and why products have changed over time

Plan appropriate activities to suit the DMA.

- that products are designed and made to meet particular needs
- Show the pupils how to carry out their own research and use their findings about products that are produced commercially to develop their own ideas. Discuss with the pupils how different designers have met similar needs with different solutions, particularly over time.
- describe the need that a product is designed and made to meet and explain how different designers have addressed similar needs with alternative designs over time

■ essential activities

○ optional activities

Learning objectives

Pupils should learn:

- how users interact with products and how to clarify people's needs

Possible teaching activities

- Ask the pupils to consider the needs of the user. Encourage the pupils to find out about these needs by talking to and observing users. Pupils might need guidance on how to select recording tools when they are observing and how to write interview questions.

Learning outcomes

Pupils:

- select and use appropriate techniques to investigate the situation in which a product is used and the needs of potential users

Points to note**FOCUSED PRACTICAL TASKS (FPTs)**

These practical tasks will need to be planned to suit the DMA. Tasks should focus on the knowledge and understanding outlined in 'About the unit'. They should give pupils an opportunity to practise any new skills they will need during the DMA.

- to use prototypes, models and mock-ups when designing

- Show the pupils prototypes, models and mock-ups that are appropriate for the task.

- know how to make their own prototypes, models and mock-ups and when these will be most useful

- how to use a range of cutting, shaping, forming and joining techniques and specified tools and equipment safely

- Ask the pupils to practise relevant cutting, joining, shaping and forming techniques.

- select and use specified tools and equipment to cut, join and form specified materials safely and accurately

■ essential activities

○ optional activities