

A Guide to Mixed Age Planning in Design and Technology



Many schools are now teaching in mixed-age classes as pupil numbers dwindle in village schools and schools in higher birth rate areas merge or expand their numbers to 2 ½ form entry. This provides a unique challenge to teachers who are trying to cover the National Curriculum for both age groups in a one year period.

The Design and Technology curriculum hones in on the four main aspects of the design process, as well as a focus on cooking and nutrition:

- **Design** – generating, developing, modelling and communicating design ideas, using traditional and digital techniques
- **Make** – selecting and using a range of materials, ingredients and equipment to perform practical tasks
- **Evaluate** – exploring, investigating and analysing products, as well as a wider-world appreciation for key events and individuals in the field
- **Technical knowledge** – essential understanding of systems such as electrical and mechanical
- **Cooking and nutrition** – key principles in food such as healthy, balanced diets and seasonality

Design and technology projects are methodical

The majority of our Design and Technology units are methodical and follow a step-by-step approach, which usually begins with research, idea generation and modelling, then moving onto the creation of a prototype and/or completed product and finally testing and evaluating the outcome. It is, however, important to recognise that all aspects of the process are equally important to the children's development and know-how. The finished product is not the primary goal. Instead, it is the result of a learning journey that encompasses a variety of skills, technical knowledge and applied-learning.

Our approach enables you to manage each part of the process, one stage at a time, when delivering

to a broader range of ages and ability. It can also be helpful to introduce a classroom rota by table or group which addresses each stage at a differentiated level so children can work at a pace appropriate to their needs.

If teaching a mixed-key stage class or group, the curriculum objectives from KS1 are built upon in KS2. For example:

Key stage 1: Design - Design purposeful, functional, appealing products for themselves and other users based on design criteria.



Key stage 2: Design - Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.

The KS1 objective builds on the child's ability to use and apply a list of design criteria prescribed to them → to learn how to write a list of their own in KS2. When approaching a KS1 unit with design criteria, you could differentiate this activity to include a KS2 task to extend the existing design criteria by 1-2 points to tailor the product more to the client/user needs such as aesthetics (the way the product looks and how it is decorated).

What can we do to help support and extend learning in these circumstances?

Whenever you teach Design and Technology, some distinctive areas of ability will usually emerge. There will be three main areas of attainment in your outcome: **high**, **middle** and **low** ability.

Occasionally, some pupils will demonstrate ability way higher than that of their peers, while others will struggle to produce a product with much accuracy or quality and find it very difficult to access your lessons. Some SEND pupils, particularly those with autism, may struggle with sensory aspects such as dealing with wet substances e.g. glue and paint.

Consider:

- What have I got to extend and enrich this project for the more able?
- How am I going to support the less able?
- How will I support my SEND pupils?

Every unit of work you plan should cater for these areas of attainment. When planning a project you should always prepare for this.

Ask yourself: You cannot simply assume that there will be differentiation by outcome because this will not provide a suitable platform for everyone to achieve. If your task is suitably open-ended to enable the children to work at their own level of ability then you may not need to think much about extension work, but you will always need to think of support for students who are struggling to access your lesson.

Typically, high ability pupils will already be able to generate and draw ideas, as well as measure and use basic craft equipment skilfully and accurately. High ability thinkers will likely produce more unusual and creative responses to a design brief and have a more polished feel to their final products. It will be easier for them to see beyond the finished article and explain ways in which they may amend or improve their products.

Next steps for more able pupils in design and technology

Consider challenging your more able pupils from the get-go. The more complex (but achievable) the design idea phase of the process, the longer but more complex the final outcome ought to be.

Often ideas can appear simple on the page, but once a pupil begins to take into account the materials, equipment and methods of assembly, it can reveal which ideas are more realistic and suitable to the brief.

Consider higher-order thinking questions throughout the full process such as:

- How do these ideas relate to the client/brief?
- Can you label, segment, identify or list the parts of this idea?
- What materials could the parts or product be made of? Why?
- How does this product function/work?
- What could you change to improve this idea/model/product?
- How could you test this idea/model/product?
- Can you predict what might happen if we change this 'x' element?

Often pupils can fixate on their first idea. Challenge them further by asking them to explain why the ideas succeeding their first do not fit the brief. Can they improve on the first one? Why not?

How to ensure curriculum coverage

If children complete an activity too quickly and to an acceptable level, try providing the children with:

- An **on-the-spot design challenge**, such as: Draw one or more ideas for a new electronic dog toy

and specify what you expect (labels, materials, who the target audience will be). You could use the '[Generic Kapow Primary - Design challenge sheet](#)' for this. To manage time or increase the difficulty for this extension activity, you could include a timed aspect to the drawing: *longer* needs more detail, colours and labels, and *shorter* is great for sketching practise.

- **Open-ended questions** and ask the children to record their answers.
- A **creation station**: include basic building materials, such as bricks or a crafts box with lolly-pop sticks, masking tape and other materials to experiment with. This can really help to develop their imagination but also their ability to problem-solve. You could include safe, recycled materials such as cereal boxes.
- A **responsibility**: they can help to support peers with gathering materials or discussing ideas, at various points in the process.
- An **evaluation** to complete during or at the end of their project. It will help children to see what needs to happen next, or how they might improve what they have already done. For this, check out our '[Generic Kapow Primary - Evaluation sheets](#)'.

How to support the less able

Design and Technology includes a lot of techniques and skills, some of which require a degree of accuracy to complete. For less able pupils, consider:

- Modelling or demonstrating the process both to the class and then at a small group/individual level so they can ask any questions and see much more clearly.
- Providing some pre-made parts to the project and focus on assembly skills, or vice versa, support with assembly.
- Limiting the number of ideas/models you wish the child to generate to provide more time.
- Limiting the number of criteria you wish the child to write to improve focus.
- Breaking the task up into smaller chunks.
- Providing the children with a physical model for them to look at and take apart.
- Providing examples or part-complete sentences for written and drawn elements.
- Grouping and pairing with a mixture of abilities, especially as part of team/paired activities

How to ensure curriculum coverage

Refer to the new 'Two-year cycle for mixed-age classes' in the Design and Technology curriculum overview. We have suggested a method for delivering all units across the curriculum, for key stage bracketed groups (KS1, lower KS2 and upper KS2).