

This article describes how the DATA primary unit of work on packaging was also used as a basis for cross-curricular activities.

A few months ago my colleagues and I set about writing a scheme of work for design and technology for our school. We initially discussed and identified the specific opportunities, skills, and areas of knowledge and understanding that would be covered during each year. Together with our overall theme plan we then identified units of work which could be used to ensure coverage of the Programme of Study for design and technology. We used many of the units from the DATA Guidance Materials for Key Stages 1 and 2, and in a similar style, we are writing other units to fit into other theme and curriculum links. Put together, these combined units of work will eventually form our scheme of work for design and technology.

We had decided that in the autumn term Year 3 children should have planned opportunities to develop their skills in measuring, marking out, cutting with scissors, using flexible sheet materials such as card, and using joining techniques involving a range of adhesives suitable for paper and card. I planned to use the DATA unit of work on packaging as I knew that this

unit would prove to be an ideal activity to incorporate these aspects of the National Curriculum requirements for design and technology. However, I also wanted to use the activity to genuinely develop aspects from the Programme of Study of other subjects, and not merely touch on vague links.

As an introduction to the activity, the children were asked to estimate how many pieces of card were used to make a cereal box. Most of the children opted for four or six, although four children were confident that only one piece had been used. All was revealed when the box was slowly opened out to reveal the one piece net. The investigative, disassembly and evaluation activity (IDEA) came next when the children were asked to open out other boxes, encouraging them to carefully undo the glued tabs to see how they had been made. The smaller "variety pack" cereal box proved ideal for this, although within days the children brought in over 100 other small boxes from home to receive a similar fate!

The class investigations of existing boxes soon showed that even the simple cube and cuboid shapes had been made in numerous ways. As part of their mathematics work the children were given the challenge of working out how many different ways they could make a cube. For this activity the children were allowed to use Clix to initially model different ways of making a cube.

These different nets were then copied onto 2cm squared paper and mounted unfolded onto larger pieces of sugar paper. This proved to be a successful way of recording the children's findings as well as providing some excellent display material. Much to their surprise the children discovered that there are at least 23 ways of arranging the sides of the cube. When this activity was evaluated afterwards it really had provided a super opportunity of addressing aspects of the mathematics programme of study on shape, space and measures.

As a focused task the children were shown how to construct a cube from a photocopied card net. The skills taught here included cutting with scissors, scoring, and using a

Wesley Till

Deputy Headteacher,
The Hugo Meynell
CE(C) Primary
School, Loggerheads,
Staffordshire

*Cassie and Gemma
use Clix to model
different ways of
making a cube*



range of adhesives. Being able to accurately use these skills would prove vital to the class when designing and making their own packaging later. This activity was delivered in the great 'Blue Peter' style, including the revealing of a completed cube which had been made earlier! My colleagues and myself have welcomed the inclusion in the requirements of focused tasks as a way of teaching the skills and techniques necessary for children to produce quality work.

The opportunity now arose to develop a science based activity around fair testing. The children worked in teams of four, with each team making cubes from four different materials – photocopier paper, sugar paper, thin card and thick card. The object of the test would be to see which cube would support the greatest mass before collapsing. Safety and test rules were discussed and each team member had the specific job of either being the mass loader, observer, recorder and timekeeper. The timekeeper was necessary as it was decided that in order to be recorded as supporting a mass, the cube would need to support the mass for at least 30 seconds. Not surprisingly the cubes made from the thicker card proved generally to be the strongest, although a few surprises did happen with two paper nets which refused to give up!

Next, we examined a selection of solid shapes. This was approached as a mathematical activity in that the children set about identifying each shape by name, and then recording the geometrical features and properties of each shape.

We then took the children to the local supermarket to research types of packaging used. The children were given the task of selecting examples of packaging, and then recording details of the actual product together with the name of the 3D shape and materials used in the packaging. The range of chocolate boxes found included some lovely examples of triangular, hexagonal and other prisms.

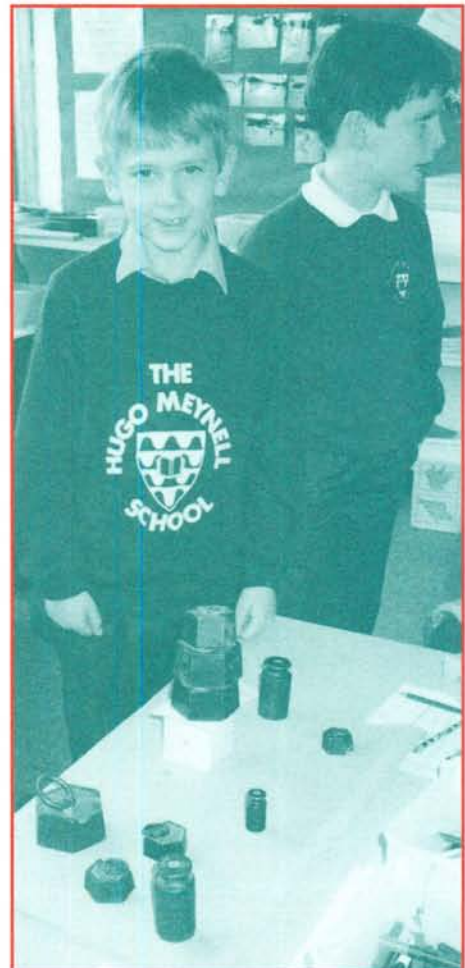
A further focused task involved the children making other three-dimensional shapes. This time, they had to first work out the

shape of the required net using squared paper. In order to cope with the ability range within the class, the tasks were differentiated by giving the various ability groups different shapes to make. These ranged from a cuboid, square pyramid, and pentagonal, hexagonal and octagonal prisms. Once again, the Clix proved invaluable in showing the children how some of the shapes could be constructed. *The Checkcard Book* by Peter Sellwood was also useful in providing examples of the nets of a further wide range of shapes. The more complex shapes were then made from Checkcard itself.

Our English scheme of work for Year 3 includes letter writing, and the opportunity was used to get the children in pairs to write real letters to packaging manufacturers to request product information. The Yellow Pages proved a good source of addresses, although the children also wrote to the head offices of supermarkets and food producers. I have always found that children's letters are more successful than those written by adults, and this occasion proved no exception. With nearly a 100% response from companies, the children received such items as packaging samples, technical data sheets, product brochures and price lists. The items received were examined and then put on display for reference later.

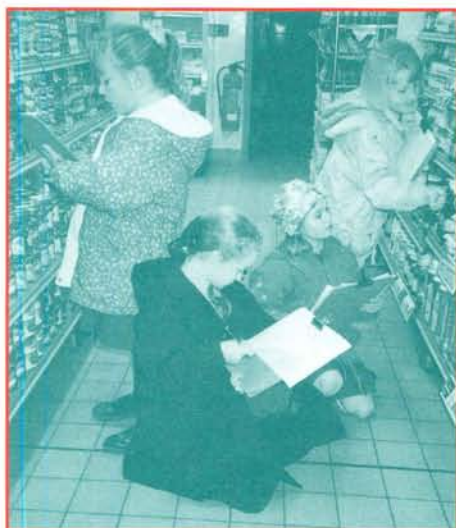
The actual design and make activity (DMA) was the task of designing and making a box for a small present. The second half of the autumn term automatically lends itself to seasonal activities, and it was suggested that the children could either make their boxes for themselves or alternatively give them as a present.

Testing the nets



Right: Rachel, Gemma, Gina and Gemma research the range of packaging available at the local supermarket

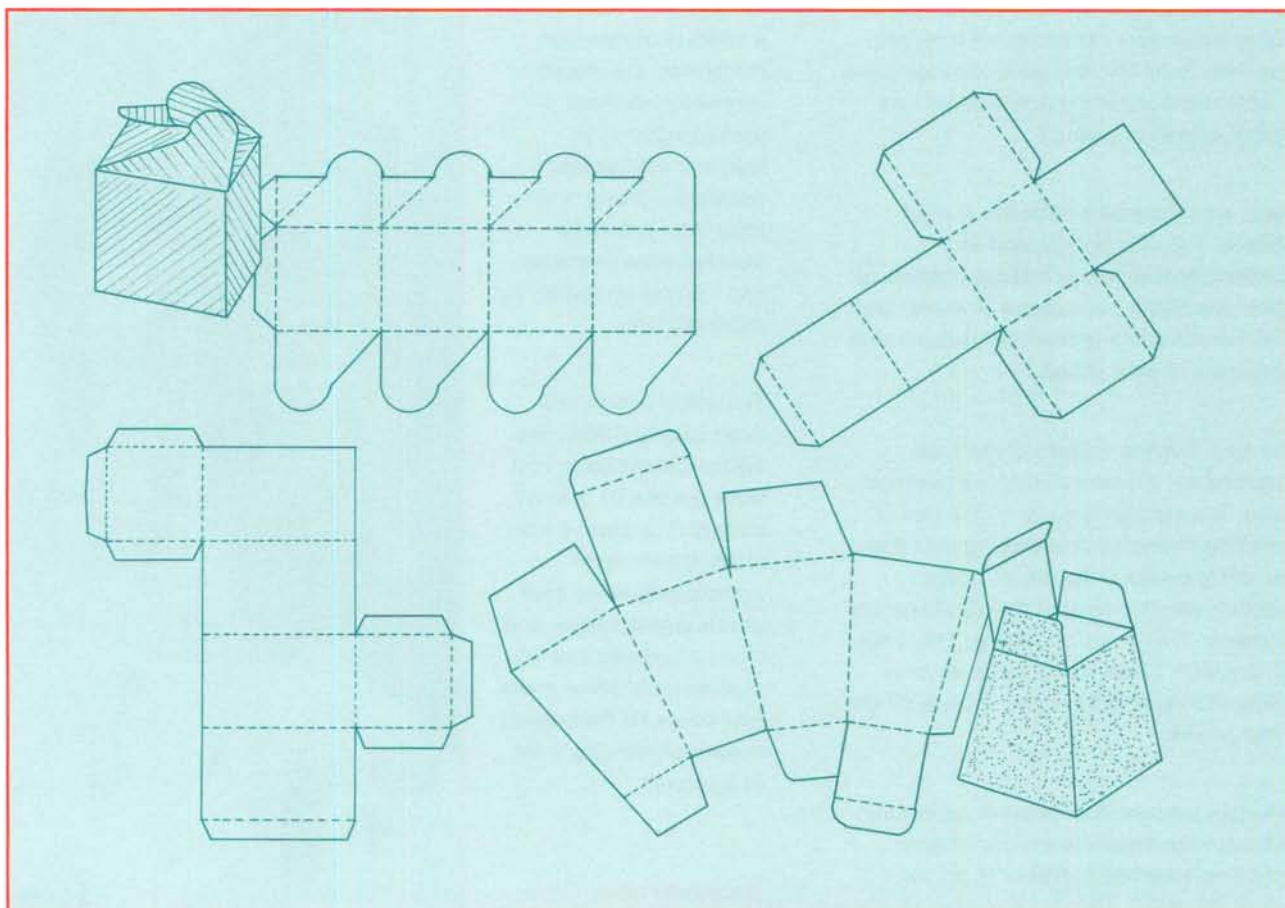
Far right: Annabel discovers a somewhat tasty use of a triangular pyramid



At this stage, the effort put into the earlier activities started to pay off. Because the children had thoroughly investigated nets they were able to put their recent experiences and research findings to good use. Before the children set about designing their ideas it was felt important to make it clear to the children what materials and other resources would be available to them. This was done by laying out the items on a

work surface and briefly explaining the use of any new items to the children. Consumable resources for design and technology are expensive, and a few weeks earlier a letter was sent to parents explaining what we were hoping to do and requesting help with resources. It is said that every cloud has a silver lining, and the demise of a local printer noticed by a keen-eyed parent meant that we had a fresh

Some typical nets found in packaging





Some of the finished packaging products

range of card to choose from. Also, a source of clear acetate sheet suitable for windows in the boxes came from the reuse of unwanted overhead projector transparencies.

The children initially drew their ideas on design sheets and then they made mock-up boxes using paper. This activity was useful in that it reminded many of the children that tabs are needed in order to help join the nets together. At this stage the children were encouraged to consider the final artwork that they wanted to put onto their boxes. When looking at a flat net it can be very easy to put lettering and graphics in the wrong position and it was useful doing this activity at this point. Having completed the paper mock-ups each child then explained their ideas to the rest of the class.

Next came the making of the final product. Using a sheet of squared paper as a master, photocopied grids had been produced onto some of the thin card. This was then available for the children to choose and use if needed. Having made nets as focused tasks, then for testing, and then for mock-ups, the children had by now got quite skilled in their manufacture. However, it was felt that it was important to stress that this was the final product, and that these final boxes would need to be of the highest possible quality.

The National Curriculum requirements for design and technology refer to the three types of activity that pupils should be given opportunities to undertake – the investigative, disassembly and evaluative activities (IDEAs), the focused practical tasks (FPTs) and the design and make assignments (DMAs). Activities such as the packaging activity described can provide ideal opportunities to integrate each of these activities in order for them to complement and support each other.

The National Curriculum requirements for design and technology also state that "Pupils should be given opportunities to apply skills, knowledge and understanding from the programmes of study for other subjects, where appropriate, including art, mathematics and science." In analysing this packaging activity on completion, the whole activity really proved to be a successful way of meeting these requirements.

Following the revision of The National Curriculum Orders, we are presently revising our schemes of work for all subjects. However, the packaging activity will certainly be included next year!

References

SCAA (1995), *The National Curriculum Design and Technology Orders*.

DATA (1995), *Guidance Materials for Design and Technology – Key Stages 1 and 2*

Suppliers of specific resources:

Clix — NES/Arnold — 0115 945 2200
Checkcard and *The Checkcard Book* — Technology Teaching Systems — 01246 850085