

Moving Monsters

Abstract

As part of a recent module entitled 'Building on Teaching Practice', each student had to select a non-core subject to be studied for 10 morning sessions, on our BA (QTS) course at the University of Central England in Birmingham. The purpose of the module was for students to look at a particular subject they felt they either needed support with or one which they felt they would like to develop further. Gabby Bulmer and myself (Ruth Bond) decided to focus on design and technology, for the latter reason. This included looking at the latest non-statutory National Scheme of Work by QCA.

We decided to focus on the topic of 'Moving Monsters' which was aimed at Year 3 pupils. We used the National Scheme of Work as a springboard for our own work, adapting it to suit our own needs. This was to be followed by a presentation to the remainder of the group.

Having read the scheme we realised the main focus of the topic of 'Moving Monsters' was pneumatic systems. Neither of us knew very much about pneumatics, which meant that we had to carry out a large amount of research into the area. Our research took the form of reading design and technology books and looking on the Internet. We both found the Internet very easy to use and much simpler than we had expected. We located a number of websites which were of relevance to our work. Particularly useful was the 'Ask Jeeves for Kids' website (<http://www.ajkids.com/>) and the Education World website (<http://www.education-world.com/>), both of which would be appropriate for teachers and pupils alike. This information then formed the basis of a 'Monsters' board, put together by Gabby. The purpose of this board was to provide a visual element to our presentation and to show the Internet sites we had used. The board also showed the two pneumatic systems we had decided to focus on: the syringe and squeeze bottle systems.

Having discussed the elements on which we wanted to focus our work, we produced a scheme of work to cover six lessons. We then put together three lesson plans to exemplify part of our scheme. Gabby put together a lesson plan on the use of squeeze bottles for the pneumatic systems whilst I put together two lesson plans on the design and make assignment aspect of the scheme. By doing these three lessons we felt it would make the intentions of our 'Moving Monsters' work clearer to other members of our group.

Having put together our own scheme of work and lesson plans, we felt it would be appropriate for our presentation to include a cross-curricular element of our work. This was achieved through putting together a second board showing links that can be made between monsters and other curriculum subjects.

We felt this would be suitable as many subjects are being squeezed out of the school timetable to make way for the National Literacy Strategy and National Numeracy Strategy, or being linked with other subjects e.g art linked with design and technology. By making links with other subjects the topic of 'Moving Monsters' could be a common thread linked through several core and non-core subject areas, providing a more broad and balanced curriculum.

We now felt we should try to make some monsters of our own using two pneumatic systems. This would enable us to foresee any problems that may be encountered by pupils. I made two monsters. The first was a monster using a squeeze bottle, 5mm tubing and a balloon. I tried to make it look similar to a crocodile or alligator (see below).

Having used the technique of papier-mâché on the monster and painting it with acrylic paints, I was rather disappointed when the balloon failed to lift the mouth as high as I would have hoped. This was mainly because the squeeze bottle was too small for the size of the balloon. Following this I put together a storyboard explaining the four main stages of the monster's development. This was suggested in the QCA guidelines. By carrying out this activity it helped in my final assessment of the monster. I also felt this would be suitable for pupils as it would help to develop their own evaluation techniques.

The second monster I made using the syringe mechanism. I achieved this by fixing two syringes together with 5mm tubing through a 'trifle sponge' box. At the top of one of the syringes I placed a monster. I made the

**Ruth Bond and
Gabby Bulmer**



Story board - "Moving monster"

<p>①</p> <p><u>Pneumatic System</u></p> <p>air in bottle Bottle</p> <p>5mm tubing deflated balloon</p> <p>air pushed to the balloon 5mm tubing Inflated balloon</p> <p>Squeezed bottle</p>	<p><u>materials used</u></p> <p>Several boxes</p> <p>paintbrushes</p> <p>glue</p> <p>paint</p> <p>egg cartons</p> <p>scissors</p> <p>carbon</p> <p>newspaper</p> <p>making tape</p>	<p>②</p> <p><u>Inspiration from:</u></p> <ul style="list-style-type: none"> * Small creatures/mini beasts * Information from books and the Internet. * Pneumatic Systems - balloon pump. * Crocodiles, alligators, Loch Ness monster.
<p>③</p> <p><u>Constructed model</u></p> <p>2 boxes 1 egg box 1 liquid bottle tubing</p> <p>Balloon</p>	<p>④</p> <p><u>Finished product</u></p> <p>Mouth opens when the bottle is squeezed.</p> <p>Final model with papier mache finish.</p>	

Subject: Design and technology
'Moving Monsters'

Date

Time 1 hour

Objectives

For pupils to be able to:

- choose an idea for a moving monster, according to logistical constraints
- work collaboratively on a design for a 'moving monster' (2b)
- develop criteria for their designs (3c)
- develop a clear idea of what has to be done, propose a sequence of actions, and suggest alternative methods of proceeding if things go wrong. (3f)

Organisation

Pupils will be grouped on the carpet in the corner of the classroom during the introduction.

Pupils will be seated in table groups of 4 for the main activity and plenary sessions.

Differentiation

I will differentiate through my questioning of pupils during the introduction and plenary session. I will ensure all pupils have the opportunity to take part in the introductory activities regardless of their ability.

I will circulate around the class providing guidance and support for pupils who may be experiencing difficulties, either with the tasks or with working in groups.

Assessment strategies

Assessment will take place through my questioning of pupils during the plenary session at the end of the lesson, and also during the lesson when I will circulate around the class giving help and encouragement to pupils. I will assess the work to find out whether pupils have achieved the desired aims of the lesson.

I will give oral feedback during the lesson, with written feedback taking place after the lesson.

Resources

Variety of reclaimed materials as inspiration

Tubing

Balloons

Pencil crayons

Design sheets

Whiteboard

Timing

15-20 mins

Teacher

Explain the task, including constraints e.g materials, time and size.

Explain that pupils are required to work collaboratively.

Discuss the requirements of the monster – What does it have to do? Who is it for?

Ask pupils for their own ideas on parts of the bodies that may be able to move-relating this to the studies on mini-beasts. Selecting pieces of reclaimed materials to exemplify the various movements.

Record all details on the whiteboard

Explain the design sheet activity. answer pupils' questions.

Group pupils into fours.

Dismiss pupils to the various tables with design sheets.

Pupils

Listen to the teacher, answer questions.

Provide examples of

moving parts for the

Ask questions about monsters task.

Resources

Reclaimed materials

Design sheets

Whiteboard

Tubing

20-25 mins

Monitor and support pupils. Stop pupils after 10 minutes to show good examples of work and reiterate the requirements of the task. Give pupils oral feedback on the work carried out.

Carry out the task, ask for any assistance required.

Design sheets

Pencil crayons

Pencils

Reclaimed materials

5-10 mins

Plenary session, reinforcing knowledge and understanding. Answering questions.

Ask pupils questions relating to the exercise.

This will also help in assessing the pupils.

Show each groups final design sheets.

Pupils' work

Subject: Design and technology
'Moving Monsters'

Date

Time 1 hour

Objectives

For pupils to be able to:

- Select appropriate materials and techniques to enable them to make a 'moving monster' (4a)
- Join and combine materials and apply appropriate finishing techniques (4c,d)
- Evaluate their finished monsters-identifying strengths and weaknesses. (4f)

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I will circulate around the class providing guidance and support for pupils who may be experiencing difficulties.

Assessment strategies

Assessment will take place through my questioning of pupils during the plenary session at the end of the lesson, and also during the lesson when I will circulate around the class giving help and encouragement to pupils. I will assess the work to find out whether pupils have achieved the desired aims of the lesson. Pupils will also carry out their own self assessment having made their models.

I will give oral feedback during the lesson, with written feedback taking place after the lesson.

Resources

Variety of reclaimed materials

Tubing

Balloons

Pencil crayons

Design sheets

Timing
10 mins

Teacher

Ensure all pupils are aware of the requirements.
Make sure all groups have their design sheets to work to.
Dismiss pupils to the various tables with their design sheets.

Pupils

Listen to the teacher, answer questions.
Ask questions about the task.

Resources

Reclaimed materials
Design sheets
Tubing

30-40 mins

Monitor and support pupils. Stop pupils after 15 minutes to show good examples of work and reiterate the requirements of the task. Give pupils oral feedback on the work carried out.

Carry out the task, ask for any assistance required.

Design sheets
Pencils
Reclaimed materials
PVA glue
Masking tape

Paints – to be used when the model is dry

10-15 mins

Plenary session, reinforcing knowledge and understanding. Group pupils on the carpet-show each groups work. Ask pupils for any improvements they may make, or parts they particularly like.

Answering questions.
Show work.

Pupils' work

Scheme of work

Subject: Design and technology
Year 3 (7-8 year olds)

'Moving Monsters'

Time available

6 lessons x 1 hour

Aims

By the end of these lessons pupils will:

- have developed an understanding of a number of simple pneumatic systems(5c)
- have worked individually and collaboratively(2b)
- have designed and made a monster using pneumatic systems and reclaimed materials (5c)
- have studied work on mini-beasts to help in creating the moving parts of the monsters (2c & 3a)
- have used the INTERNET to gain information on monsters. (IT 1a)

Learning Objectives

Pupils will be able to:

IDEAs

- compare the effectiveness of a number of squeeze bottles for use in pneumatic systems
- construct a simple pneumatic system
- generate ideas based on the movement of minibeasts and information about monsters from the Internet, considering the purposes for which they are designing

FPTs

- assemble simple pneumatic systems
- explore a variety of ways of fixing components

DMA

- work collaboratively
- use a story board to record and sequence work
- design and make a "moving monster"
- evaluate the effectiveness of the pneumatic system used in the construction of the monster
- evaluate, as a team, the monster whilst outlining any possible modifications.

Development**Lesson one**

Introduce pupils to a variety of items which use air – recorder, bicycle pump, balloon pump. Encourage pupils to investigate the purpose of using air in the products, what happens to the air when you push the balloon pump? Construct a simple pneumatic system using a washing up liquid bottle and tubing attached to a balloon. Select appropriate squeeze bottles-dependent on the requirements of the pneumatic system.

Lesson two

Make a class collection of monsters with information gained from the Internet, library books etc. Link this with science work carried out on mini-beasts.

Lesson three

Create a number of pneumatic systems (linked to lesson 1). Try to control movement through the use of levers, syringes and balloons. Ask pupils to try and make the systems move in the same way as the monsters and mini-beasts researched in lesson 2.

Lesson four

Explain the 'moving monster' task-including constraints such as time, materials and size. Ask pupils to design a monster as a team including moving parts linked to mini-beasts and monsters. Pupils should include a list of material requirements, and the aim of their model.

Lesson five

Pupils will work as teams to create their monsters using reclaimed materials.

Lesson six

Pupils will evaluate their finished designs. They will present their models to the rest of the class. They will outline the strengths and weaknesses of their products through the use of a story board and evaluation sheets.

Assessment and Record Keeping

Pupils will be assessed:

- Informally during lessons whilst monitoring work.
- Through marking individual pieces of work during the lesson, to ensure concepts are understood and skills mastered.
- When marking work without pupils present make written comments or give oral feedback later.

Resources

Reclaimed materials, tubing

Bicycle pump, balloon pump etc.

Planning sheets, paints etc.

Cross-curricular links

Links can be made with:

Science through the use of mini-beasts

Art through the looking at a variety of works by Georgia O'Keefe – looking at flowers from the viewpoint of a minibeast or monster

English – links through poetry

Class reader: *The Iron Man* by Ted Hughes; *The Monster Garden* by Vivian Alcock

Investigate, Disassembly and Evaluative Activities (IDEAs)

- Familiar objects that use air
 - balloon pump
 - bicycle pump
- Examples of pneumatic systems
- Pneumatic systems using
 - syringes
 - squeezable bottles

Focused Practical Tasks (FPTs)

- Use of the INTERNET to locate images of monsters
- Cross curricular links-through the topic of minibeasts
- Use of animal pictures to aid designs

Design and Make Assignment (DMA)

- Lesson plans for the 'Moving Monster'
- Planning sheets
- Differentiation through the use of a storyboard.

Presentation on 'Moving Monsters'

- **Introduction – OHP**
 - Topic of 'Moving Monsters' Year 3
 - National Scheme of work
 - Produced our own scheme of work
 - Working through our scheme – IDEA, FPT, DMA
- **IDEA – OHP**
 - Start by showing Balloon pump, bicycle pump-within children's knowledge – **OBJECTS**
 - Lesson Plan on the best squeeze bottle for a pneumatic system – **OHP**
 - Pneumatic systems on monsters – **BOARD**
 - Syringe monster
 - Squeeze bottle monster-Ruth
 - Squeeze bottle monster- Gabby
- **FPT – OHP**
 - Links with the Internet – **OHP**
 - Links with other subjects – **BOARD**
 - Animal Pictures – **OHP**
- **DMA – OHP**
 - Lesson plan – talk through – **OHP**
 - Planning sheets – **OHP**
 - Differentiation – **Storyboard**
- **Evaluation**
 - Scheme of work – good
 - Can be adapted to other age groups

monster by sewing together two pieces of green felt and then adding the features (this would have provided another cross-curricular link with textiles). I followed this by painting the box a series of bright colours.

By squeezing the end of one of the syringes the monster was pushed out of the box.

I was very pleased with both of the monsters and felt that I would now be better equipped to teach this topic to Year 3 pupils.

The third monster was made by Gabby, using the squeeze bottle method. However, Gabby found the system failed to work as successfully as she would have hoped. This was for the same reason as mine; the balloon was too large for the size of the squeeze bottle.

Having put all of our work together we were then ready to carry out our presentation. The presentation was in front of the other members of the group approximately 12 other students, despite the small number we still felt apprehensive when talking through our work. We found that the best method of showing our

work was through the use of over head transparencies and with demonstration of our boards and models. We both felt that the presentation went well although we felt with hindsight our presentation would have been improved had we used "Power Point" and included some hand outs for the other students. We enjoyed the other students' presentations, whilst also finding it beneficial to our own knowledge. This was mainly because the other groups had taken different aspects of QCA guidelines and developed them in a similar manner to us, but aimed at different age groups. We all felt that we had learned something about the subjects discussed, whilst also learning to cope with the presentations themselves. Hopefully our ideas will be a springboard for others.

We would both like to thank Wes Till, our tutor, for compiling such an interesting module.

