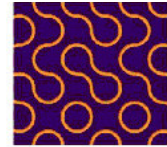




Sample Lesson Plan
The Big Bus Module: Shape Cloning



Shape Cloning

Title

Using *The Big Bus Shape Cloning* to promote reasoning and logical thinking in the understanding and handling of Shape and Space.

Introduction

With ten levels of difficulty, this module can be easily set to challenge the ability and concentration of every individual. The children need to predict the outcomes of their actions as they use rotation to clone apparently simple patterns on the screen.

In this lesson

The children are shown how to work with the module, and then presented with increasingly complex patterns to replicate on screen.

Age Range: 5 – 11 years

Lesson Plan

Learning objectives

Having completed this module most children will have developed their ability to:

- Try different approaches and find ways of overcoming difficulties when solving shape and space problems
- Approach spatial problems flexibly, including trying alternative approaches to overcome difficulties
- Use the correct language and vocabulary for shape, space and measures
- Recognise spatial patterns and relationships and make predictions about them
- Recreate 2D shapes.

Technical preparation

Install *The Big Bus* CD-ROM on to the computer. After a short opening sequence select the button to take you to either **Explorers' World** or **Bo Bear's World**. Open the notebook index and scroll through the available activities. Select **Shape Cloning**.

Previous experience

If the children already have some experience of recreating patterns by rotating simple templates, this will help them visualise their task and gain the greatest benefit from this module.

Introducing the module

Gather the children around a large computer monitor or interactive whiteboard. Recap the **key terminology** the children will encounter in the module. Discuss the terms clone and rotation.

Direct the children's attention to the computer monitor or whiteboard then select "**Start the activity**". Watch the introductory sequence with the children, pointing out that the circle segments are simply rotating to create a whole new pattern.

With the difficulty set at the default level of 1, show the children how to rotate a chosen segment by 90°. Move the mouse over the segment to highlight it, and then click to rotate it. Choose a segment that will help create the correct new pattern. Once it has been rotated into place, it locks in and it is no longer possible to highlight it. The program now informs the children of how many moves they have left in which to complete the pattern. They are also shown the restart button, which they can select at any time if they need to.

Now select an incorrect piece, rotate this and show the children how it remains highlighted and possible to rotate it again to correct it.

Remind the children of how many moves there are left in which to complete the pattern, then ask them for their input on which pieces to rotate.

The number of moves allocated is always two greater than the minimum needed to complete the puzzle. This allows for one mistake to be made and corrected.

Once the pattern has been successfully completed, the children are congratulated, then invited to try another puzzle at the same level, or to change the difficulty level by selecting from 1 to 10.

Show the children how to change to level 2, and then work through this puzzle with them, this time showing them how to use the reset button to start again with a full complement of moves available.

After the initial demonstration, and if more than one computer is available, the children could now break into working groups and undertake the module for themselves. Challenge them to start at level 1, moving up a level each time they successfully complete a pattern. Alternatively, set individual children different starting points, according to their ability, their challenge being to go up as many levels as possible in the time allowed.

Allow the children about 15 minutes to complete the module, and then gather them back together to discuss how they got on. How many levels did they each move up? Did anyone manage to complete a level without having to use the restart button? In what ways did the patterns change to make them harder from one level to the next?

Classroom management

A single classroom computer running *The Big Bus*, using a large monitor or interactive whiteboard, is an effective whole class teaching resource. Introduce the module to the whole class before pupils break into their groups.

If you have access to a computer suite this module can be completed as a whole class lesson. If you have access to only one or two computers, pupils will need to complete the module on a rotational basis.

Duration

Each group of children will require approximately 15 minutes of computer time. The teacher introduction and follow-up time will take approximately 15 minutes and 10 minutes respectively.

Differentiation

- Setting different starting levels for individual children enables the teacher to set challenges appropriate to their abilities.

Extending the module

- Challenge the children to complete the module at all levels.
- Set a rule that the children can only move up a level when they have successfully completed the current one without the use of the reset button.

Curriculum Information

The National Curriculum in England for Mathematics (KS1 & KS2)

Ma3: 1b, 1c, 3a, 3b.

The Scotland 5-14 Guidelines for Mathematics

Shape, Position and Movement: Level B, C, D.

The Northern Ireland Curriculum for Mathematics

Shape and Space –
Exploration of Shape: a, c.
Position, Movement and Direction: a.

The National Curriculum in Wales for Mathematics (KS2)

Ma3: 1.1, 2.1.

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