Unit 1A: An introduction to modelling

About this Unit:
In this unit children learn that a computer can be used to represent real or fantasy situations. They understand that the representation is not an exact replica of the original. They discuss the main differences and similarities between a representation and the original. They create their own representations of real or fantasy situations.
Children should be able to apply what they have learnt in this unit when exploring adventure programs or simulations.

Where this Unit fits in:
This unit builds on previous work with a range of ICT resources. These might include a painting program or a word processor that allows pictures to be imported.
The unit assumes that children:
- have sufficient mouse control to select and drag using objects and tools
- have used a simple objects-based graphics program to communicate information
- have used a simple painting program to create pictures.

Vocabulary:
Representation/model | stamp/motif | clip art | adventure | simulation

Resources:
Object-based graphics simulation package, with screens which represent real or fantasy situations | Simple adventure games | Painting program with stamps or motifs | Interactive Whiteboard is useful for introduction, demonstration and class discussion

Expectations: at the end of this unit,
Most pupils will be able to: understand that a computer can represent real or fantasy situations and that these do not replicate the original exactly; know that simple adventure games also represent real or fantasy situations; create a simple representation of a real or fantasy situation using either an objects-based graphics program or a painting program.

Some pupils will only be able to: use software, including a simple adventure game that represents a real or fantasy situation; create a simple representation of a real or fantasy situation with help.

Some pupils will also be able to: use a variety of software, including adventure games, to represent real or fantasy situations and identify similarities and differences; explain their decisions/choices.

These units have been adapted from material available on the QCA Schemes of Work website.
### Learning Objectives

*Pupils should learn...*

### Possible Activities

### Learning Outcomes

*Pupils can...*

### Consider

#### Setting the Scene

- **key idea:** that computers can represent real or fantasy situations.
  - Show children a screen that requires objects to be moved and placed under/over other objects.
  - Ask the children what would happen if they tried to hide real objects under a mat or behind a picture. Show them alternative screens and discuss whether they are good representations of reality.
  - Understand that the computer can be used to represent real situations.
  - This activity may not be necessary if children have covered it in reception. Their previous experience of using simulation programmes could be discussed to reinforce the idea that computers can represent real or fantasy situations.

#### Short Focused Tasks

- **key idea:** that a computer representation allows the user to make choices and that different decisions produce different outcomes.
  - **technique:** to use a mouse to move and place items accurately on a screen.
  - Demonstrate a selection of screens where children need to make choices for a particular purpose, *e.g.* sorting and classifying objects, choosing appropriate clothes for the weather, creating a scene from a nursery rhyme, making an identikit picture.
  - Give children lots of opportunities to use the screens and to talk about why they made specific choices.
  - When the children have had a turn, discuss the basis on which they made their decisions.
  - Understand that they can make choices and that people make different choices for different reasons.
  - Understand that their decisions can produce different outcomes.
  - Teacher intervention in modelling activities is critical in ensuring that children understand the underlying concepts. As children are utilising established ICT techniques and skills in most modelling activities very little teaching time is required for this and the focus can be directed towards discussion and interaction with children as they work.
  - IWB is useful for pupil interaction and whole class discussion.

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### Learning Objectives
Pupils should learn...

### Possible Activities

**Short Focused Tasks (cont.)**

- **key idea:** that a computer can be used to represent a wide range of environments and some are more elaborate than others.

- Look at a simple adventure game or simulation. Work through the beginning of the game or simulation with all the children together. Discuss the sort of environment or situation it represents.

- Ask the children if the representation is a good one and what similarities or differences they can see.

- Devise a set of questions to ask children, *eg If they were out in the countryside, would they be able to hear anything? What might they hear? Can they hear the same sorts of things when they use the adventure game? If the scene depicts an urban area, what sorts of things would they expect to hear? Does the adventure game have these? When we can hear traffic, what does it tell us? Can we tell if it is going fast or slow? How does the computer show this?*

- Provide opportunities for children to explore the program. Encourage the children to discuss the decisions or choices they make and why they make them.

### Learning Outcomes
*Pupils can...*

- Understand that a computer can be used to simulate/model an environment where choices can be made.

### Consider

- This activity could be introduced on an IWB where the teacher can ask questions and the pupils can discuss the environment represented. They must then have opportunity to explore the program and discuss choices made.

*Or;*

- It could be extended over a number of weeks with children working in small groups, taking turns and revisiting the adventure game on a number of occasions. If this approach is adopted, it is essential to draw children together on a regular basis so that they can share what they have discovered and discuss their progress.

- Some children may like to keep a record of the things they find, the routes they took or the places they visited.
### Learning Objectives

*Pupils should learn...*

### Possible Activities

- In a class discussion ask the children to compare the adventure game with real life through a series of questions, e.g. *Do the characters in the adventure game ever get tired? Do the children get tired when they go out for a long walk or on a long journey? Do the characters ever need to stop and eat or go to the toilet? Does the adventure game show us what season it is? Does this matter? If it was a different season, would this affect the way the characters were dressed? When we see representations on the television how realistic are they? Are cartoons as realistic as representations using real people in real places? Are these sorts of programmes exactly like real life? Do they think that actors would really get hurt?*

### Learning Outcomes

*Pupils can...*

- *Know that representations of real or fantasy situations can be made in many different ways and although some, like television programmes and films, are very complex they do not replicate real life exactly.*

### Consider

- *An IWB could be a useful visual record of the class discussion.*

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*These units have been adapted from material available on the QCA Schemes of Work website*
## Short Focused Tasks (Cont.)

- **key idea:** that they can use a computer to create representations of various scenarios.

- **technique:** to use simple tools in a painting package.

- **technique:** to print out their painting.

- **technique:** to add stamps/motifs or clip art to a scene.

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<td><em>Pupils should learn...</em></td>
<td><em>Demonstrate how a simple painting program can be used to create a visual representation of a scenario, e.g. a place or a picture of their favourite story or rhyme; a friendly, or not-so-friendly monster.</em></td>
<td><em>Use a painting program to create a representation of a scenario.</em></td>
<td><em>Only use the simplest tools of a painting package; the children should not need any more at this stage. It is important to establish rules for printing, such as getting permission before printing out work.</em></td>
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<td><em>Allow children to experiment and create their own representations, using simple tools, e.g. brushes, colour-fill, palette, stamp.</em></td>
<td><em>Print out their work unaided.</em></td>
<td><em>If there is no access to a painting program with a stamp or motif facility, it is possible to replicate the activity to a certain extent using a word processor which has a facility to drag pictures onto the scene very easily.</em></td>
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<td><em>Show the children how to use the print tool to print out their own work.</em></td>
<td><em>Can select and add stamps/motifs or clip art to a scene.</em></td>
<td><em>Create a set of word processor files that have easy access to appropriate clip art, e.g. fairy tale characters and backgrounds, wild animals and backgrounds, under-sea creatures, out-of-space characters etc.</em></td>
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<td><em>Demonstrate how stamps/motifs or clip art can be used to create more complex representations, eg a garden, a jungle or a fantasy world with monsters, aliens and creatures. The stamps or clip art will enable them to create more detailed representations.</em></td>
<td></td>
<td><em>Demonstrate how the clip art can be imported to create a representation of the appropriate scenario. More able pupils will need to know how the size of the imported pictures can be altered. Consider providing a background already created and a very limited number of stamp and clip art choices.</em></td>
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<td><em>Ask the children to create their own representation using stamps or clip art. They should print out their work and discuss why they chose particular stamps or pictures.</em></td>
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## Learning Objectives

**Pupils should learn...**

- Discuss with the children how the computer was used to represent real or fantasy situations. Tell them that they are going to create their own representations and they can choose what they would like to represent and how they will do it using appropriate software. This might be linked to topic work, e.g. a story or nursery rhyme, designing a new outdoor play area, concocting a new set of meals for school dinners, visualising places to go on holiday, fantasy creatures from out-of-space or new modes of transport for the next century.

- Children should decide on the environment or representation that they wish to create. They should think about what it will look like and what sorts of decisions or choices they will have to make.

- Some children will be able to use a text tool or a word processor to produce a caption for their representation.

## Possible Activities

- **Assessment Task**
  
  - to create a representation of a real or a fantasy situation.

  - Discuss with the children the different ways the computer was used to represent real or fantasy situations. Tell them that they are going to create their own representations and they can choose what they would like to represent and how they will do it using appropriate software. This might be linked to topic work, e.g. a story or nursery rhyme, designing a new outdoor play area, concocting a new set of meals for school dinners, visualising places to go on holiday, fantasy creatures from out-of-space or new modes of transport for the next century.

  - Children should decide on the environment or representation that they wish to create. They should think about what it will look like and what sorts of decisions or choices they will have to make.

  - Some children will be able to use a text tool or a word processor to produce a caption for their representation.

## Learning Outcomes

**Pupils can...**

- Describe their scenario.

- Explain why they made their decisions or choices.

- Explain how their representations differ from real life.

## Consider

- This activity could be done with either a painting package or an object-based graphics package. The choice of scenario is best linked to other activities going on in the classroom.

- More-able children will be able to produce alternative choices and talk about the differences. The use of models and patterns is a useful means of supporting children’s writing.

- Writing labels and captions is a good extension to this activity.

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