

Unit 3D Exploring simulations

ABOUT THE UNIT

In this unit children begin to understand that computer simulations can represent real and imaginary situations. They learn how to explore simulations, explore options and to test their predictions. They evaluate simulations by comparing them with real situations and considering their usefulness.

Children will apply what they have learnt when using simulations throughout their work, for example predator/prey simulations in science.

WHERE THE UNIT FITS IN

This unit is an introductory unit.

TECHNICAL VOCABULARY

- simulation

RESOURCES

- a computer simulation which allows the user to make choices, enter data, explore consequences, and to freeze position, *eg an adventure game*

EXPECTATIONS

at the end of this unit

<i>most children will:</i>	recognise patterns within simulations and make and test predictions
<i>some children will not have made so much progress and will:</i>	use simulations to make and test predictions; explore options
<i>some children will have progressed further and will:</i>	identify the relationships and rules on which the simulations are based and test their predictions

LEARNING OBJECTIVES	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES	POINTS TO NOTE
SETTING THE SCENE			
<p>CHILDREN SHOULD LEARN</p> <ul style="list-style-type: none"> • key idea: that computer simulations can represent real or imaginary situations 	<ul style="list-style-type: none"> ◆ Demonstrate the main features of the simulation. Show the class how to make choices and enter data. Point out how the computer simulation allows users to study or try things which would be difficult or impossible to do in practice. Compare the simulation with other models, <i>eg those used by architects</i>. Ask the class to think of examples where simulations might be useful, <i>eg for training pilots, designing buildings, testing products</i>. 	<p>CHILDREN</p> <ul style="list-style-type: none"> • understand that computer simulations can represent real or imaginary situations • understand that computer simulations allow users to try things that would be difficult or impossible to do in practice 	<p>Useful simulations include adventure games that allow prediction of outcome; problem solving; scientific simulations allowing variables to be changed, <i>eg sunlight and water for a plant</i>.</p>
SHORT FOCUSED TASKS			
<ul style="list-style-type: none"> • key idea: that computer simulations allow users to explore options • technique: to enter data into a computer simulation 	<ul style="list-style-type: none"> ◆ Ask the children to explore the first part of the simulation in small groups for a limited amount of time. Ask them to record any decisions that they have made and the results of any actions. Bring the class together to discuss what they have found out. ◆ Ask the children to write down what they will do next when they use the simulation again. Encourage them to think of a variety of actions. Ask the children to carry out the actions and to record what happened. Bring the class together to discuss questions such as <i>what can be changed; how has it changed; what happens; does it always happen?</i> Discuss any patterns and connections that they have identified and tell them how they can test if they are always true. 	<ul style="list-style-type: none"> • use the simulation to make and explore predictions and to identify patterns 	<p>Children who find the activity easy could be encouraged to express patterns and rules formally. This provides an opportunity to develop their use of causal language such as 'because'.</p>
<ul style="list-style-type: none"> • key idea: that computer simulations are simplified representations 	<ul style="list-style-type: none"> ◆ Ask the class to evaluate the simulation by answering questions such as, <i>how is the simulation like/not like...; what has been left out; is it realistic; is it helpful; how could it be improved?</i> 	<ul style="list-style-type: none"> • evaluate simulations 	
INTEGRATED TASK			
<ul style="list-style-type: none"> • to explore the effect of changing the variables in simulations and use them to make and test predictions 	<ul style="list-style-type: none"> ◆ Children could apply the skills learnt in this unit whenever they explore computer simulations as part of their work in other subjects. 	<ul style="list-style-type: none"> • use simulations to develop an understanding of what is being simulated • develop their ability to recognise patterns and make and test predictions 	



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