

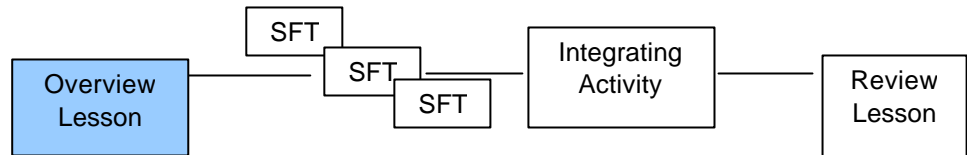
Learning objective: I know.....

Lesson 1 of 6

PoS 2c

*The computer can simulate real or imaginary situations*

QCA Unit: 3D



## Resources

Board for brainstorming, screen and projector, some example simulation games including board games.

### Software you could use:

Powerpoint, The Model Shop,

### Support files:

simulations.ppt, rabbits.swf,

## Setting the scene (10 mins)

Share the learning objective with the class. What is a Simulation anyway? (The imitation of a situation or a process) Many computer games are simulations, they let you make choices that affect what the outcome is. (The Sims, Sim City, Theme Park, Theme Hospital to name but a few) Adventures are a special kind of simulation designed for entertainment, we look at those in another lesson.

## Main Input (15 Mins)

Are simulations used in real life though?

Use the presentation to look at how hospitals are using patient simulators to train doctors on. Research simulations rarely use graphics like games do, just numbers. Look at the simulation of hospital resources coping in an emergency, it's not as pretty as theme hospital but it was used for real research. Some other people who use simulations are the RAF, architects, scientists and car designers.

So are all simulations on the computer?

Actually children have been role-playing real life situations in their games and play since the earliest civilizations. When children play families or cops and robbers they are simulating imaginary situations based on real life. What are many board games if not simulations of real life situations? (e.g. Monopoly, the game of life...) Even some toy figures seek to imitate real life, (farmyard animals, babies...) however what they lack are any rules to go with them. We create the rules ourselves.

So what do you need for a simulation?

Above all you need some rules (the constructs) and a way to interact with the simulation (the model) and to be able to change things (the variables) that affect the outcome. Whether the situation is real or imaginary does not matter. Computers are good for simulations as programs are ideal for having rules and can react quickly.

Let's look at a simulation.

Turn on the monitor and show the chosen simulation. In our example it is the rabbit population sim. Explain how it works and what it is doing. Have a child come up and demonstrate using it.

### Activity – short focused task (5 mins)

Each child should experiment with the chosen simulation and see what the maximum rabbit population is that they can achieve in 5 mins.

### Review and recall (10 mins)

Bring the class together and review the learning objective. What happened when you added the foxes?

#### Key questions to ask and to display:

Why might someone want to use a simulation?  
Why are computers good at simulations?  
Can you name a game that isn't a simulation and explain why?

#### Vocabulary:

Simulation, rules,

### Teaching Points:

The simulation's purpose itself is not important, it should not be something yet that the children need to discover. That would confuse the focus at this point. The purpose of the lesson is to show that people use simulations in real life and the computer is a versatile tool for making them. In Sherston's "The model shop" a good introduction is to use the ball throwing simulation.

Don't worry about defining, constructs, variables or modeling at this stage. Modeling comes up again in year 5 and is best defined then even though they might well be modeling when using some of the simulations.

### Assessment Opportunities:

Make sure the children understand what the simulation represented during the plenary and how they could change settings to alter the outcome.

### What comes next:

Becoming aware of the hidden rules that govern simulations.



<http://www.activescience-gsk.com/>