

Modelling & Simulation Levelled Examples

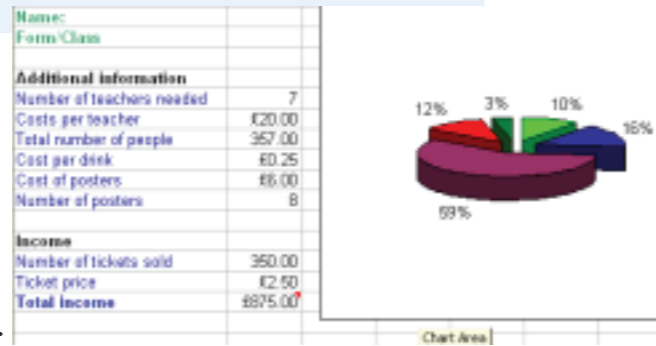


Context:

Over several lessons the children used Excel to model the costs of a school disco.

What the children did:

The children worked individually to create a spreadsheet model, adding in variables and answering 'What if?' questions. This included the cost of teachers, drinks, posters and the DJ. As a final task the children had to produce a report for the headteacher, identifying the most profitable day to hold a school disco.



What the children said:



Pupils should:

- Know how to adapt, or create a new model to answer new questions.
- Be able to develop a hypothesis and create a spreadsheet model to test it.
- Know that changing variables, e.g. cost and time, can change the outcome.
- Change variables within models and explain the impact.

Next steps:

Test predictions by varying rules in models and assess the validity of the conclusions.

Suggested resources:

Spreadsheet software e.g. Microsoft Excel, Textease Spreadsheet, 2Calculate, Number Magic See Kent ICT for a range of online simulations.

Example Cross Curricular Activities:

- Create a spreadsheet model of different mobile phone tariffs exploring the effect of changing the variables of cost and time (Mathematics).
- Model the effects of changing the number of consumers and predators living within a particular environment (Science).
- Explore the impact of global warming using a spreadsheet model (Geography).
- Investigate the costs of staging a school production and the number of tickets needed to be sold to break even / make a profit (Mathematics).
- Develop a spreadsheet for monitoring levels of stock in a supermarket or school tuck shop including the use of IF statements to indicate stock levels are low (Mathematics).

Attainment target for ICT

Level 4

Pupils understand the need for care in framing questions when collecting, finding and interrogating information. They interpret their findings, question plausibility and recognise that poor quality information leads to unreliable results. They add to, amend and combine different forms of information from a variety of sources. They use ICT to present information in different forms and show they are aware of the intended audience and the need for quality in their presentations. They exchange information and ideas with others in a variety of ways, including using email. They use ICT systems to control events in a predetermined manner and to sense physical data. They use ICT based models and simulations to explore patterns and relationships, and make predictions about the consequences of their decisions. They compare their use of ICT with other methods and with its use outside school.

Level 5

Pupils select the information they need for different purposes, check its accuracy and organise it in a form suitable for processing. They use ICT to structure, refine and present information in different forms and styles for specific purposes and audiences. They exchange information and ideas with others in a variety of ways, including using email. They create sequences of instructions to control events, and understand the need to be precise when framing and sequencing instructions. They understand how ICT devices with sensors can be used to monitor and measure external events. **They explore the effects of changing the variables in an ICT based model.** They discuss their knowledge and experience of using ICT and their observations of its use outside school. They assess the use of ICT in their work and are able to reflect critically in order to make improvements in subsequent work.

Level 6

Pupils develop and refine their work to enhance its quality, using information from a range of sources. Where necessary, they use complex lines of enquiry to test hypotheses. They present their ideas in a variety of ways and show a clear sense of audience. They develop, try out and refine sequences of instructions to monitor, measure and control events, and show efficiency in framing these instructions. They use ICT based models to make predictions and vary the rules within the models. They assess the validity of these models by comparing their behaviour with information from other sources. They discuss the impact of ICT on society.