**Modelling and Simulations**

**Whole School Overview**

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| Year Group | Learning Objectives | Key Skills |
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| 1 | * To understand computers can represent real or fantasy situations * To understand computer representation allows the user to make choices and that different decisions produce different outcomes | * Understand that computers and technology can be used to represent and model situations. * Use an art package or drag and drop software to create a representation of a real or a fantasy situation * Explore a simulation to support a given topic and talk about what happens and why |
| 2 | * To use a range of basic simulations to represent real life situations and explore the effects of changing variable and the benefits of using the simulations. | * Enter information into a basic computer simulation and explore the effects of changing the variables in simulations and discuss the benefits of using these simulations. (i.e. traffic light simulations) * Discuss their use of simulations and compare with reality |
| 3 | * To use a range of simulations to represent real life situations. * Use simulations to make and test predictions. | * Continue to explore simulations as appropriate and as link with other curriculum areas and discuss the benefits of using these simulations * Use simulations to make and test predictions. |
| 4 | * To understand that ICT allows for situations to be modelled, or those which it would be impractical to try out in real life and investigate the effect of changing variables in these simulations. * Begin to explore software to model 3D objects made up of cuboids. | * Begin to use software to represent 3D objects or items. * Continue to explore simulations as appropriate and as link with other curriculum areas. |
| 5 | * To understand that ICT allows for situations to be modelled, or those which it would be impractical to try out in real life and investigate the effect of changing variables in these simulations. * Know that simulations are often guided by hidden rules * To use software to model 3D objects. | * Use software to create models of 3D objects, landscapes or items. (Sweethome 3D) * Explore a range of increasingly complex simulations, exploring the effect of changing variables and recording the results. |
| 6 | * To understand that ICT allows for complex situations to be modelled, or those which it would be impractical to try out in real life investigate the effect of changing variables in these simulations. * Know that simulations are often guided by hidden rules * To use software to model 3D objects, working to a scale. | * Use software to create models of 3D objects, landscapes or items, including creating to scale * Use a range of more complex simulations, exploring the link to ‘real life’ and the impact of changing variables. |