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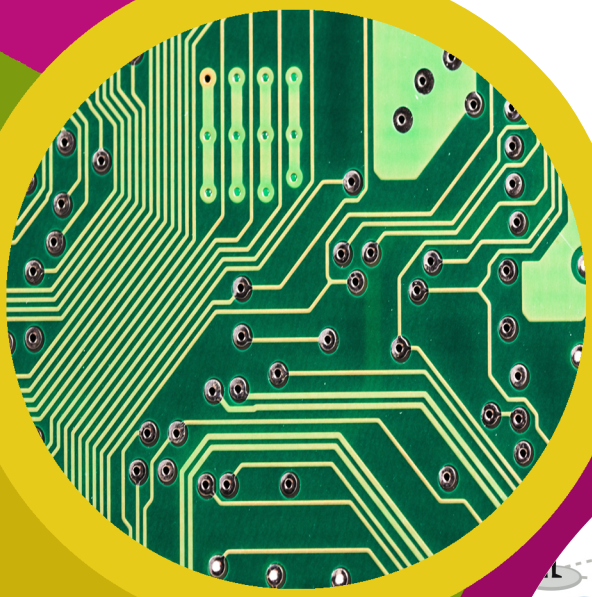
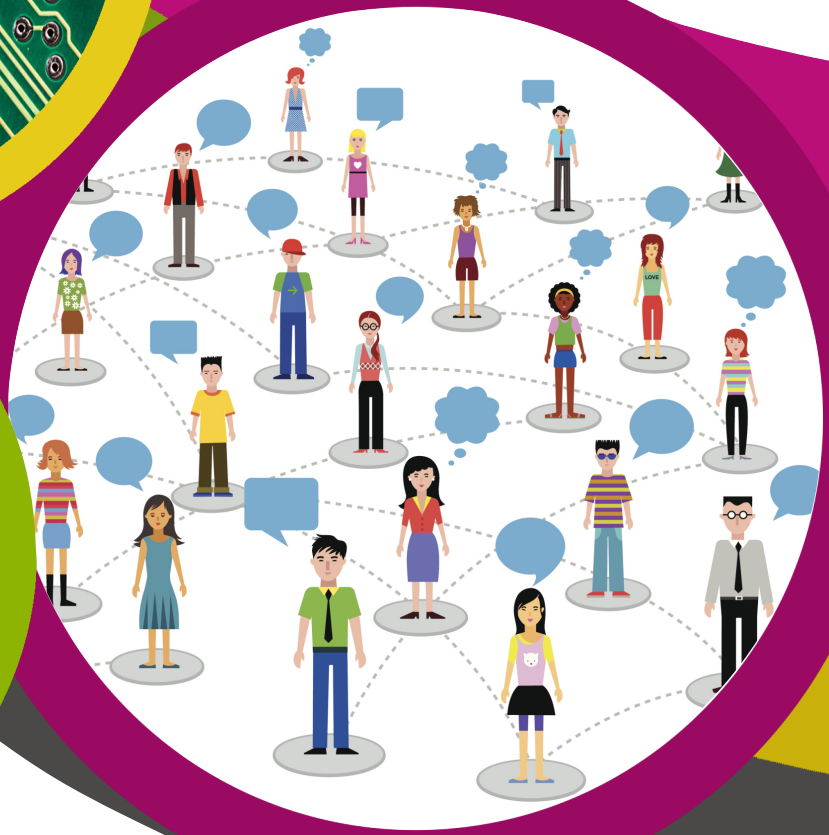
Modelling Zombies
Teacher Guidance





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Links to Science and Technology AoLE

Being curious:

(PS3) I can suggest conclusions as a result of carrying out my inquiries.
(PS2) I can recognise patterns from my observations and investigations and can communicate my findings.

Computation:

(PS3) I can use conditional statements to add control and decision-making to algorithms.
(PS3) I can identify repeating patterns and use loops to make my algorithms more concise.
(PS2) I can follow algorithms to determine their purpose and predict outcomes.

Links to Other AoLEs

Humanities:
Human Societies:

(PS2) I have explored some causes and effects of events and changes in my community over time.
(PS2) I am beginning to understand how my community is governed and why there are rules.

The Four Purposes and Cross-Curricular Skills

This resource provides opportunities for **Critical Thinking and Problem -solving** throughout, you are encouraged to evalutate the models you use and draw conclusions from the results. You are also given the opportunity to be **Creative and Innovate** with your own model, designing the look of your model and improving on your code to add accuracy!

From **Data and Computational Thinking** strand of the **DCF** you are encouraged to use your **Problem-solving and modelling** skills. You are able to recognise and break down problems to predict their outcomes and change the instructions to achieve a different outcome.

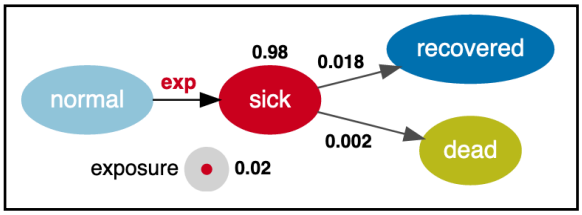
Why Is Learning This Important?

This resource allows you to learn about contagion processes and modelling the spread of contagions (such as a zombie outbreak and the Covid-19 pandemic). This is first done by and intuitively with dice rolls dictating the random spread of the contagion from individual to individual. You will then move on to using a proffessional model developed by Swansea and Warwick Universities to investigate the spread of Covid-19 which allows you to alter the starting parameters and see the changes they cause (a worksheet accompanies this task to encourage your individual exploration and prediction of outcomes). Finally you can develop their understanding of programming your own model in Scratch, before experimenting and exploring how modifying your algorithms can produce unique outputs in a creative way. This links well with **Humaities** and **Health and Well-being** investigating the effects of a pandemic on the individual and society at large.

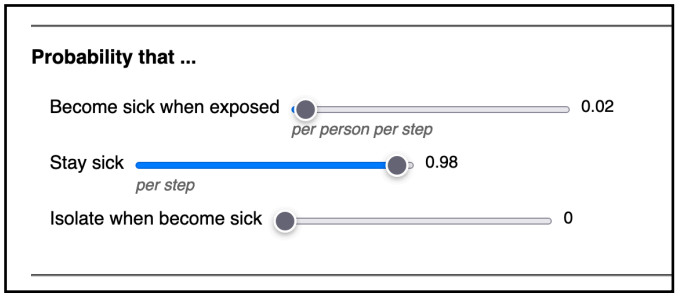
How to Use the Model

A computer model is a helpful application that we can use to represent and study complex real-life problems.

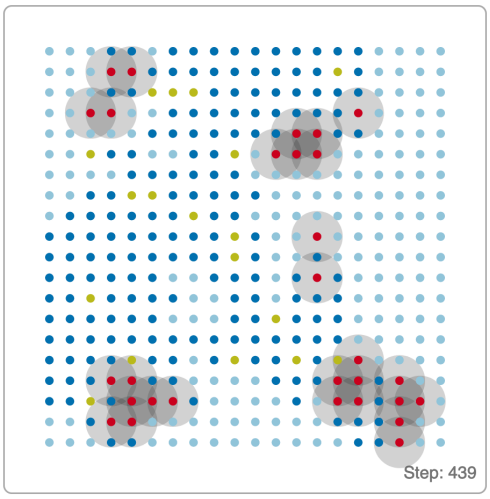
Particle People was designed to show how Coronavirus and other diseases spread through a population. Use this guide to help you answer the questions.



This chart shows the probability of getting sick, recovering and dying -



These options let you change the probability of becoming sick, staying



Click “run” and you can see how the virus spreads across the population.

These bonus options let you set all sorts of things such as population

Activity: Model Management

Simple - set the model to 'simple' to answer these questions

1. Try increasing the probability of people becoming sick. What changes?

_____

2. What happens when you decrease the probability that people stay sick?

_____

3. Find two options that reduce the spread of the virus when you increase them. What are they and why do they work?

_____

_____

Advanced - set the model to 'advanced' to answer these questions

4. Run the model. Do you think this advanced model is more realistic? Why?

_____

5. Play with the 'House and School' options. What happens when houses and schools are larger? How could this affect health services (e.g. hospitals)?

Discussion: Computer Modelling

This is a space for you to consider your thoughts about computer modelling. There is no one right answer to any of these questions but you may wish to discuss them with the person next to you.

What are the benefits of using computer modelling?

Are there any downsides or limitations to computer modelling?

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