



# Microbes on trial: Villains or Victims?

Marilyn Clark

Moray House School of Education, The University of Edinburgh, Holyrood Campus, Edinburgh, EH8 8AQ.

Links to sustainability

Microbes within the ecosystem and links to the survival of living creatures on our planet. The use of microbes in mitigating climate change and pollution.

## Introduction

Microbes are fascinating, abundant, and vital within the ecosystem of our planet and have been implicated in both great and terrible events throughout history. In this block of ten lessons students will be introduced to the world of microbes. They will learn what microbes are, the types that exist, and how these impact human lives in positive and negative ways. This is an interdisciplinary Level 4 unit based around the curriculum for excellence.

## Lesson 1

From the dawn of time: The **history** and **biology** of microbes

Key learning:

- The five major groups of microbes and key biological differences between them
- The evolution of different microbes throughout history

## Lesson 2-3

The yeastie boys: bread, beer and human civilisation

Key learning:

- Uses of yeast and making bread (**home economics**)
- How bacteria (yeast) has influenced human civilisation throughout **history**

## Lesson 9

Solutions: pollution and climate change

Key learning:

- How microbes can be **bioengineered** to eat plastics and clean up pollution
- The role of algae in reducing carbon dioxide in the atmosphere

## Lesson 10: The trial

**Are microbes guilty of crimes against humanity?**

Students are assigned roles (judge, prosecution, defence) and microbes are put on trial. Students will present reasons for or against the argument using notes gathered throughout the unit.

## Lesson 4

Fungi: famous decomposers

Key learning:

- The roles of microbes within the ecosystem (**biology, sustainability**)
- Students create an artistic piece highlighting the roles of fungi (**arts**)

## Lesson 8

Archaea and protists: extreme living

Key learning:

- The biology of archaea and protists
- Extremophiles and their living environments (research task: **Geography**)

## Lesson 7

Solutions: medicines

Key learning:

- How medicine can be made using microbial sources (e.g. penicillin and bacteria)
- The **chemistry** of medicines

## Lesson 6

Viruses the good the bad and the ugly

Key learning:

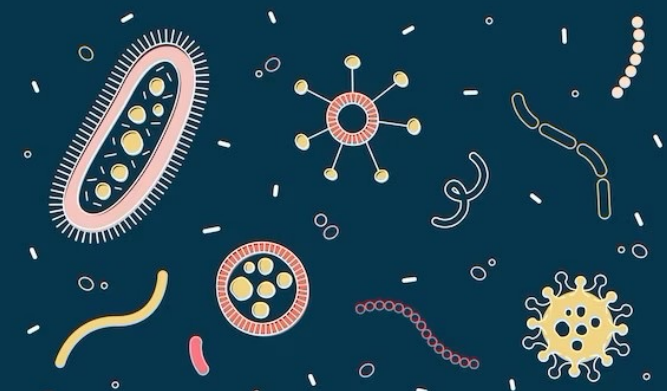
- The **biology** of viruses and how they cause disease
- An investigation of pandemics caused by viruses and how we have responded

## Lesson 5

Microbes throughout **history**: the plague and witchcraft!

Key learning:

- Bacteria and the plague
- How ergot poisoning may have influenced historical events such as the Salem witch trials.



E's and O's – Level 4