Module 7: Transmission of pathogens practical investigation

## Inquiry question: How can the spread of infectious disease be controlled?

The item below is an inquiry-based learning task for Year 12 that was developed by teachers at the 2019 Teaching the Year 12 Modules workshops.

## Content descriptor

Students investigate procedures that can be employed to prevent the spread of disease including hand hygiene.

## Working scientifically skills

* **Questioning and Predicting – BIO11/12-1**

A student develops and evaluates questions and hypotheses for scientific investigation.

* **Planning Investigations – BIO11/12-2**

A student designs and evaluates investigations in order to obtain primary and secondary data and information.

* **Conducting Investigations – BIO11/12-3**

A student conducts investigations to collect valid and reliable primary and secondary data and information

* **Processing Data and Information - BIO11/12-4**

A student selects & processes appropriate qualitative and quantitative data and information using a range of appropriate media.

* **Communicating - BIO11/12-7**

A student communicates scientific understanding using suitable language and terminology for a specific audience or purpose

## Instructions

1. Read: [COSMOS – How to wash your hands](https://cosmosmagazine.com/biology/how-to-wash-your-hands) then briefly summarise the information presented.
2. Describe how you could assess the relevance, accuracy and reliability of the information presented.
3. Explain why the procedure of washing hands is an important one in modern society.
4. Develop your own inquiry question that relates to a claim made from within the article or is related to hand hygiene. State an if-then-because hypothesis that could test the inquiry question. It should clearly show a relationship between the independent and the dependent variables.
5. Design a first-hand investigation that could test the proposed hypothesis. Predict the possible findings. Include measures to gather qualitative and quantitative data that is valid and reliable, ensuring all safe work practices are followed. Your experiment should include:
   * an aim
   * a hypothesis
   * an equipment list
   * a method, identified with labelled drawings
   * preliminary trials undertaken (if any) or a prediction
   * an explanation covering how you are going to ensure that the experiment is valid, reliable, accurate and safe
   * a risk assessment
   * your results,
   * An analysis of your data. Are there any patterns or trends in your data? What is the relationship between the variables you have investigated? Is the hypothesis supported by the data?
   * A discussion of your results that relates to what is known about hand hygiene. Was the outcome different from your prediction? Explain. What have you learned about the topic of your investigation? From your results can you make any suggestions about what procedures can be used to prevent the spread of disease? How can this information be used in a real world situation? Are you aware of any public health policies based on your research? If so describe those policies or awareness programmes.
   * A conclusion that relates to the aim and hypothesis.