



Definitions of the five types of scientific enquiry.

Types of scientific enquiry

1. Observation over time
2. Comparative and fair testing
3. Identifying and classifying
4. Pattern seeking
5. Researching using secondary sources





1. Observing over time

Some questions can be answered by observing how living things, materials and physical processes change over time. These observations may take place over different time spans from minutes or hours, to several weeks or months.

Examples

- How long will it take this cloth to dry?
- What happens when I put this carnation in coloured water?
- How does this carrot top change as it grows?
- How does the tree change over the year?





2. Comparative and fair testing

Some questions can be answered by looking for causal relationships between two variables i.e. when one variable is changed and its effect on something else is observed or measured.





Comparative testing

In a comparative test, the variable that is being changed is categoric i.e. has labels such as the names of plants or types of material.

Examples

- How stretchy are these fabrics?
- How long does a spinning top turn on different surfaces?
- How does the type of sugar affect how quickly it dissolves?





Fair testing

In a fair test, the variable that is being changed is quantifiable i.e. can be counted or measured.

Examples

- How does the number of layers of fabric wrapped around a buzzer affect its volume?
- How does the volume of water affect how much salt can dissolve in it?
- How does the length of a plucked string affect the pitch of the note produced?
- How does the distance of the light source from the screen affect the size of the shadow produced?





Comparative and fair testing

Sometimes, as part of a comparative or fair test, the results may be gathered over a period of time.

Examples

- How does the material a cup is made from affect how quickly the water cools?
- How does the amount of water affect how seedlings grow?





3. Identifying and classifying

Some questions can be answered by naming things and/or sorting them into groups. To do this, it may be necessary to carry out a simple test or use secondary sources.

Examples

- What is this animal?
- Which solids dissolve in water?
- Which materials are transparent, translucent and opaque?
- Which foods are high in fat?

Identifying,
classifying
& grouping





4. Pattern seeking

Some questions can be answered by looking for links between variables where there is no causal relationship. This can involve looking for patterns when making observations/measurements or within data from secondary sources.

Examples

- Do people with larger hands have larger feet?
- Do small seeds germinate more quickly?
- Do larger planets rotate more slowly?
- Do smaller mammals have a shorter gestation period?





Pattern seeking

Some pattern seeking questions are answered by carrying out a survey.

Examples

- Where in the playground do minibeasts tend to live?
- Where does litter accumulate in the playground?
- What is the make up of the recycling in our school?





5. Researching using secondary sources

Some questions cannot be answered by the pupils using first-hand experiences, for ethical or practical reasons, and therefore need to be answered using secondary sources.

Examples

- How far is the Earth from the Sun?
- At what temperature do different metals melt?
- What do the animals we found in the pond eat?

