Can You Trust Your IQ?

Key Learning Content

This film gives a general introduction to the difference between quantitative and qualitative data. It begins by showing people memorising cards and then asks whether this skill is a measure of intelligence. The IQ (Intelligence Quotient) test is described and compared with other, qualitative measures of intelligence. Problems with bias in designing intelligence tests are mentioned. The film concludes that intelligence is difficult to define.

Core Outcomes

Learning Points

- Be able to understand and make the distinction between quantitative and qualitative data.
- Be able to understand how quantitative data can be used to measure a qualitative feature.

Suggested Activities

- Categorise sets of data as either qualitative or quantitative.
- Design questionnaires to collect quantitative and qualitative data.

Extension Outcomes

Learning Points

- Be able to appreciate that different types of graphs or charts are appropriate for either quantitative or qualitative data.
- Be able to understand the distinction between discrete and continuous data.

Suggested Activities

- List types of charts or graphs appropriate for quantitative or qualitative data.
- Categorise sets of data as either continuous or discrete.

The Intelligence Quotient (IQ) is a score derived from several tests of intelligence, such as memory and problem solving.

Related Films

To use before the lesson plan:

Numbers: Life Without Numbers	This film describes how some societies can function without using any numbers other than 'one'.
Pi: Reciting Pi	This film shows people memorising large numbers of digits in the expansion of Pi.

To use after the lesson plan:

The Wrong Guy Won	This film explores the problem of bias in survey design.
Variables: Dating By Numbers	This film looks at the use of quantitative and qualitative data to predict the likelihood of attraction between men and women.
The Card Counter	This film describes how a mathematician used complex mathematics to give him a more than 50% chance of winning at a game of cards.

Guide Lesson Plan

Introduction

Show a sequence of pictures or objects to students without saying why you are doing so. Ask them to write down all the things they can remember seeing. Check to see who remembers the most. Ask the students what they think a high or a low score shows.

Show Film

Quantitative or Qualitative: Can You Trust Your IQ?

Main Activity

Foundation

Give the students lists of different types of data, from height and weight to hair colour and favourite foods. Get students to categorise the data into quantitative and qualitative. Explore how it is possible to have quantitative data about qualitative features, e.g. the numbers of people with blond or brown hair, or colours described in terms of the wavelength and frequency of light. Revisit the initial list and categorise the data into different degrees of "quantitativeness".

Main Activity cont ...

Advanced

Define continuous and discrete data, giving examples, and get students to categorise quantitative data according to whether it is continuous or discrete. Explore how even this distinction can be hard to make once averages are calculated, e.g. the average family has 2.3 children; the dollar exchange rate is 1:1.5434... (one unit of local currency to 1 dollar and 54.34... cents).

Extension Activity

Get students to design a questionnaire for the group to fill out assessing different aspects of intelligence. Get them to keep a tally of how many of their questions collect quantitative data and how many collect qualitative data.

Optional Extra

Get students to list all the different types of graphs and charts that they know and then consider whether any particular chart can be used for quantitative data, qualitative data or both. Highlight special cases, such as the bar chart (discrete data) and histogram (continuous data).

		2	6	4	9	8		
7	8		3	2	5			
9		4	7	1	8	2		
	4	8		7		5	2	
	9		2		4	6	7	8
	2	7	8	9		3	4	
4		9		8		7		2
2			9		7	4	8	6
8		3	4		2	1		

Can the speed at which someone solves a puzzle be used as a measure of intelligence?