

LEARNING and TEACHING POINTS

for Chapter 27 Handling Data

Learning to sort data according to given criteria is the foundation of counting and also of data handling. Give younger children lots of experiences of sorting, first using the actual objects themselves.

Use the children themselves for sorting. For example, get children to move to different corners of the classroom depending on their answers to questions like: how did you travel to school today? Which quarter of the year is your birthday? What's your favourite fruit out of apple, banana, grapes or melon? Then do the same kind of sorting by getting the children to stand in circles drawn on the playground, before moving on to simple examples of set diagrams.

A Carroll diagram is an example of a two-way reference chart, which children must learn to use and interpret.

Children should experience all four stages in handling data: collecting it, organizing it, representing it, and interpreting it.

Three ways to involve children in interpreting graphs: (a) write about what the graph tells us, particularly in relation to the questions and issues that prompted the collection of the data; (b) write sentences about what the graph tells us, incorporating key words, such as *most*, *least*, *more than*, *less than*; and (c) make up a number of questions that can be answered from the graph, to pose to each other.

Motivation is higher when the data is collected by the children themselves, higher still when it is collected to answer some questions they have posed themselves and even higher when it is about themselves!

The skills of handling data and pictorial representation are best taught through purposeful enquiries related to topics focusing on other areas of the curriculum, such as geography, history or science.

When introducing block graphs to younger children, get them to write their names on squares of gummed paper, which can then be arranged in columns, so that the individual contribution of each child can be identified.

If children are collecting (ungrouped) discrete data, use variables that have no more than a dozen values. If you want to use data about their favourite something (meal, television programme, pop star, book, and so on) then first agree with the class a menu of about six possibilities to choose from, rather than having a free choice.

Encourage children to collect examples of graphs and tables of data from the press and advertising, and discuss whether they are helpful or misleading.

If primary children are collecting data arising from a continuous variable (such as their heights) get them first to record the measurements to the nearest something (for example, to the nearest centimetre) and then group the results and handle it like grouped discrete data.

Only use pie charts with variables that have a small number of values. For example: the sex of the children in the class; their means of getting to school; their age in years; for each match this season the number of goals scored by the school football team.

Because computer software generates pie charts so easily, primary school children should learn how to interpret pie charts – but they do not need to learn how to draw them for themselves.

Use line graphs for statistical data only where the variable along the horizontal axis is 'time'. Possible examples would be: the midday temperature over a month; the number of children who walk or cycle to school each day over a month; the number of children who have completed their mathematics work by various numbers of minutes past ten o'clock.

Introduce scatter diagrams with examples of two variables taking just a few values, where the children can plot the data as points within the cells of a grid. For example, for the children in the class the variables might be (a) their favourite fruit and (b) their favourite cereal, chosen from menus of five options. Extend this experience to using numerical variables taking a small number of values, such as: (a) shoe size, and (b) height to the nearest 10 cm.

Children in primary schools can learn to use simple data processing software to produce scattergraphs for two variables. Use some examples of data that show strong positive or negative correlations and help the children to interpret the graphs and discuss the relationships between the variables that are indicated.