Matching Metrics

Overview

This activity is designed for small groups of students to interact and share their existing knowledge of metric units and measurements in everyday use. It also introduces the idea of 'personal references' or 'benchmarks': familiar quantities that can be used to help estimate other measurements.

Matching tasks like this are ideal as introductory activities, since they allow you to observe students' existing skills and knowledge as a starting point for teaching whilst encouraging students to cooperate and discuss numeracy ideas. They are one of the least threatening numeracy tasks to use because all of the answers are there on the table for students to find and there is no need for them to write anything.

Skills and Knowledge

- Metric units
- The metric system
- Commonly used metric measurements
- Language of measurement: length, width etc.

Preparation and Materials

- Photocopy Activity Sheet onto card (1 per pair or group of 4)
  - cards can be laminated for greater durability but this is optional
- Place each set into a labelled envelope.
- Cut some blank pieces of card or paper for the extension activity
- 1 copy of 'The Metric System' information sheet (teacher reference)

Suggested Procedure

Arrange students into small groups or pairs.

Give each group an envelope containing one set of cards.

Introducing the activity

Explain:

- *First tip the cards onto the table and spread them out so all members of the group can see and reach them.*
- *Then together sort the cards into pairs which match*
- *Each pair will have a long card describing something and a short card with a measurement.*

- *Talk to each other and explain your thinking as you put the cards together.*
- *It is important that everyone in the group knows why you matched each pair.*

Extension for quicker groups

If any groups finish before others, give them some blank slips of paper or card and ask them to make a new pair that might go with this set.

Debriefing the activity

The major aim of your discussion is to tease out students' existing knowledge, encourage them to be aware of what they already know and to share that knowledge with others.

The discussion will depend on what the students do find easy and familiar. For example, women who have been to hospital to have babies are more likely to know about baby weights, those who use recipes may know about standard cups, or people who swim regularly will know about the length of swimming pools.

Ask questions like:

- *Which of the pairs did you find the easiest?*
- *Why are you familiar with that?*
- *Do you use this lot?*
- *Which ones were less familiar to you?*
- *Did any of them surprise you?*
- *Are there any of these measurement units you have not heard of before?*

Allow students plenty of opportunity to share and ask questions about any aspect of the metric units they are not aware of.

This would include knowing the meaning of words such as 'length', 'width', 'height', 'weight', 'capacity' and 'volume'.

You might also ask them about the abbreviations used for each of the units as you discuss the items.

Checking the answers

Students can be encouraged to check some of the items by measuring if equipment is available.

For example

- The height of a doorway (2 m) can be checked with a tape measure
- The width of a hand (10 cm) and finger (1 cm) can be checked by measuring with a ruler.
- The volume of a cup (250 ml) can be measured with a measuring jug and water.

Members of the class will probably know some of the remaining answers through personal experience in sport, shopping, cooking and the like. The weight could be decided by putting them in order from lightest to heaviest.

- A ten cent coin weighs about 5 ½ grams
- Weights of eggs in supermarkets vary from 49 grams to 67 grams. A medium egg is 55 grams.
- One litre of water weighs exactly one kilogram.
- Obviously baby weights vary but 3.5 kilograms is a possible weight.
- Fridge sizes vary but a medium fridge is 300 litres. Ask students to look at the size of their fridge at home.

Introducing the idea of 'personal references'

It is useful to encourage students to think about how they can use their familiar knowledge to make other estimations. For example, swimmers might ask themselves 'How many swimming pools is that?', when estimating a distance.

Explain:

- *We call these measures we know well 'personal references' or 'benchmarks'*
- *They are very useful to make approximations or estimates of other measurements.*
- *Being able to estimate is an important part of numeracy.*
- *What are some of your personal references?*

Metric 'facts'

There are several facts about the metric system that it is important for students to know in order to understand the system. Depending on the students, you might find it best to introduce these one at a time, rather than all at once.

In this activity the 'facts' introduced are

- *The weight of one litre of water is 1 kilogram*
- *A metric cup is 250 millilitres.*

Follow up

The direction of the session will depend entirely on the students' current knowledge. This is an activity that allows you to find out what they know and proceed from there. Several activities could be used to follow it.

'Introducing Metric Length' follows extremely well as it establishes simple benchmarks for short metric lengths (1 cm - 1 metre) using hands, arms and fingers.

'Metric True or False' and *'The One Most Likely'* are other activities which provoke similar discussions about familiar quantities in the metric system. These can be used in subsequent sessions to revisit ideas and introduce new facts about the metric system.

Matching metrics

Activity Sheet

A matching activity for small groups or pairs

✂ Copy onto card and cut.

The height of a household doorway	2 metres
The width of an adult hand	10 centimetres
The weight of a newborn baby	3.5 kilograms
The length of an Olympic swimming pool	50 metres
The weight of one litre of water	1 kilogram
The width of a little finger	1 centimetre
The weight of a medium egg	55 grams
The capacity of medium fridge	300 litres
The weight of a ten cent piece	$5\frac{1}{2}$ grams
The volume of a kitchen cup	250 millilitres