Maths trail blazer

Ian Thompson explains how to lay a maths trail

It is generally accepted that children learn more from activities which relate to their own experiences and therefore make 'human sense'.

A maths trail capitalises on children's interest in, and willingness to explore, their local environment and affords a context for the discussion of mathematical ideas. It also provides a stimulus for related classroom work, complementing and extending the classroom treatment of the maths syllabus.

What is a maths trail?

A maths trail is simply an organised walk in the close neighbourhood of the school, during which the children's attention is directed towards those parts of the environment which illustrate aspects of mathematics. The trail is usually backed up by a set of teachers' notes and an activities booklet for the children, although the latter may be dispensed with for infants or non-readers.

Planning the trail

A trail should ideally last between one and one and a half hours, depending on the ages of the children, and comprise six or seven linked activity sites where they jot down information, count objects, make sketches, gather data, collect leaflets or brochures, note items of interest or simply discuss their observations.

Pupils' and teachers' materials

The pupils' booklet should include a map with the stopping points clearly marked, and it should be easy for the children to see at a glance what they are expected to do on the trail. The abbreviations OTT (on the trail) and BIC (back in class) can help children find their way around the booklet more easily and distinguish between the types of activity required.

Take care to achieve a compromise between making the booklet quick and easy to use and ensuring that the activities demand greater skills than copying or simply ticking boxes. The mathematical activities should involve more than routine computation. Lengthy calculations, scale drawings, mathematical constructions or other more time-consuming activities should be completed in a work book back in the classroom rather than in the hustle and bustle of a busy street.

The children need to be made aware of the purpose of the trail and should become acquainted with the format of the booklet. Because of the logistical problem of controlling the group's movements, it might be advisable for all the writing in the pupils' booklet to be carried out at the specified stopping points.

If you are planning the trail for other teachers, include: a copy of the pupils' booklet so they can see exactly what the children are being asked to observe or write; details of potential sources of danger; suggestions for discussion at the various sites or along the route, and ideas for preliminary or follow-up work.

Sources of mathematical ideas

Obviously the local environment of one school will be richer in mathematical potential than another. However, the following facilities are likely to be found in the vicinity of most schools.

- Railway station: reading and interpreting timetables; 24 hour clock; symmetry of the British Rail logo; single, ordinary return and saver tickets; costs of journeys to different places.
- Church: symmetry, tessellation and three-dimensional shapes; commemorative plaques and gravestone dates – for example, *Who is the oldest person buried in the graveyard?*; wedding fees.
- Children's playground: usually a wealth of three-dimensional shapes; non-standard units for measuring length (paces) or area (flagstones).
- Car park: car registrations in relation to age; tax discs; cubic capacity; makes of car and graphical representation; car parking fees; number of parking bays.
- Post office: pillar boxes, collection times, dating by door insignia (Roman numerals); telephones, numbers of kiosks, STD, directories, costs of calls home and abroad; letters, postal codes, stamps, postal costs, postmen's routes (plan the shortest route for delivering letters in a group of streets near to where you live).
- Bus station: timetables; bus routes; fares; positioning of bus stops.
- Shops: prices, comparative shopping (local supermarket); best buys (normal and economy size); opening times; shopkeepers' method of subtraction.
- Road signs: shape; signposts; milestones; distances to towns; highway code; speed and stopping distances. (Using a conversion chart, design sensible speed restriction signs for English roads in km/h.)

These are just a few of the natural and man-made resources which should feature in any school's local environment, and by no means are the suggested mathematical ideas exhaustive.

Follow-up work

This can take many different forms, and can encompass a wide range of mathematical activities. The children's observations, activities, data or materials collected, and their trail experiences in general, can provide a stimulus for many activities.

- Maths work new to the class: for example, observation or sketches of electricity pylons can lead to an investigation into the rigidity of triangles.
- The consolidation and practice of basic skills: for example, pricing items in the local shop can provide a context for money calculations, totalling bills, percentage increases, discounts, etc.
- More open-ended problem-solving: for example, *What is the best way of marking out a car park in order to maximise the use of space?* A practical solution, with children making and manipulating cardboard cut-outs of cars, can lead to productive group work, where children compare and contrast alternative methods and discuss the 'best' solutions.
- Investigative work: for example, *How many different ways are there of getting from school to the post office by the shortest routes?*
- Written work: for example, children can write about their experiences on the walk or make written suggestions for improving it.
- Individual topic or project work: for example, a child who has counted the spirals in pine cones and daisies may wish to explore the incidence of Fibonacci numbers in nature.

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