Beyond map skills

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Fig 1

The argument for using maps in education is well made and, for many, need not be rehearsed further. Maps are a natural part of the geography curriculum. We use maps as resources because they are available and they are effective in communicating information. Map-reading skills are important because maps exist in abundance and people without map skills are severely disadvantaged. Whether it is to find a shop in a precinct, to make a car journey or to take a walk in a country park, the map is ubiquitous and map-reading skills are essential. But there are values to maps that go outside the geography curriculum. Maps are not just tools for finding one's way around – they go well beyond that.

There are a number of higher-order skills that pupils need to become successful in all areas of learning and work. The first and most important is the gathering of information. Whether it is researching a project in biology or discovering information about ancient Rome, they need to locate the data from which they will build their work. They need to identify primary and secondary sources – they need to know the difference between an actuality and another person's or system's interpretation of the actuality. Learners need to make the distinction between the paper-based representation and the actual view. Geographers have a powerful means of making this point clear to children.

Pupils need to assess relevance and reliability of sources. Relevance can be judgements of scale or of content; they can be judgements based upon the needs of the audience – this is key in both the English and ICT national curriculum. Pupils have to make judgements regarding the validity of web pages in ICT. They can gain these generic skills by considering validity of mapping conventions and projections.

Science teaching, in particular science-1 (scientific enquiry), requires the pupils to make observations and consider the evidence. These are skills that are well developed through pupils observing the environment and making comparisons with the maps and charts available. The outcome 'making sufficient relevant observations and measurements' is readily feasible by pupils using large-scale maps of their school grounds. And again, in science, the pupils have to be discerning between primary and secondary evidence and the relationships between them. See fig 1 above and fig 2 below

Fig2

Mapping skills appears in the English curriculum. There is direct reference to the '...different forms of handwriting for different purposes, for example, print for labelling

maps'. Our use of mapping should be another opportunity for more widely applicable skills to be developed. In mathematics the emphasis is not only upon enlargement, scale and ratio but also on the interpretation of maps and scale drawings. The large-scale map experience of pupils and the use of numerical analysis is another bridge between geography and the broader curriculum.

And finally, yet quite significantly, the pupils' experience of maps in an electronic form enables them to '...interpret information and to reorganise and present it in a variety of forms that are fit for purpose' (ICT National Curriculum).

Beyond the curriculum

Pupils go to school to learn and the best learning is learning how to learn. If that is taught well then we have pupils who are autonomous learners, successful learners and dynamic learners. Maps and mapping plays a role in that development of structured strategic learning.

'Developing a cognitive map requires that participants think about what they (believe they) know, and then *say* what they *think they know* so that it can be *seen* through a map'. There is a growing emphasis of encouraging learners to be introspective upon their learning, to be aware of cognitive skills that aid learning and to physically represent what they know predicates good map skills. As geographers we rehearse that process by taking maps and annotating them. We superimpose concepts upon data. We can see nine-year-olds processing a sophisticated and detailed map of their locality and placing symbols on it to represent their places of interest. Activities like drawing lines of traffic flow, nature corridors and strategic gaps – all of these are concepts superimposed upon the concrete. It is both analysis and synthesis. The pupil is analysing the detail of the map and synthesising their own concept.

Fig 3

When we see children developing their mind maps, they are using similar cognitive skills as we see when developing maps of the environment. The spatial awareness is important, the relative positioning, the juxtapositioning and the general topology all have similar demands upon the learner. I contend that working in one field supports the activities in the other.

Another important area is the iconisation of knowledge and concepts. The Ordnance Survey map does this rigorously. The symbolism follows strict rules and maps become immediately interpretable. It is important that geographers emphasise the iconisation process and that the symbol is not a church, the symbol is not a mast, but they are representations and that the representations are stylised and they are icons. Pupils should not just learn what an icon represents but that icons represent. Reinforcing a learner's ability to recognise that something is an icon enables them to then create icons for themselves and therefore further enhance their abilities to both map their cognitive understanding and make better geographic maps.

Beyond the body

There is much written about spatial awareness and abilities to read maps. Immediately comes to mind the gender issues of map reading and asking for instructions. If it is possible to lessen the gender divide then, as teachers, we perhaps have a role. From a small piece of research: Psychologist Prof Deborah Saucier re-examined the assumption that men are superior to women in their ability to navigate. She set up an experiment to compare performance of men and women to follow a map compared with their performance when following descriptive instructions. While the men performed better using the map-reading techniques, women did far better using the more descriptive directions. The implications for teachers are twofold. We need to develop learning situations that use the learners' better skills so that learning is more efficient and more effective. We must introduce more experiences for those with poorer map-reading skills so hopefully remediate the situation. However, this latter point may not be valid. Does practising a skill where the skill is poorly developed necessarily develop that skill?

And one final observation: The spatial capabilities of young students frequently exceed their numerical skills. Tapping these strengths can foster an interest in mathematics and improve students' understanding of numbers. Allowing students to practice real-world navigation skills, use maps and learn about relative and cardinal directions while strengthening spatial awareness can give gains in numerical and literacy development. There is more to maps than geography.

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