

Investigating how children make meaning in multimodal maps

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INTRODUCTION

My interest in ‘multimodal mapping’ has arisen from my work on two research projects. Using mapping as a means of eliciting children’s responses was innovative, as its potential for use in research was, at that time, largely untapped. Until more recently, mapping has been predominantly word-based, although image is becoming increasingly common in the digital medium. Deriving from the European Représentation project (Crawford, Neve, Pearson and Somekh, 1999), the primary mode of representation in these maps was drawing. Again, this was innovative at the time. The maps produced by the children provided fascinating insights into their knowledge, experiences and perspectives, and in ways different from what they said in interviews and wrote in questionnaires.

Beyond the original aims of the projects, I have (thanks to the generosity of the project teams) been able to undertake secondary analysis of the maps. My particular interest is in children’s graphic text-making – their writing, drawing and image manipulation on the page and on the screen. Taking a multimodal social semiotic approach (Kress, 1997, 2003; Kress and van Leeuwen, 1996, 2001, 2006), I examine how they make meaning in these different modes and how they combine them multimodally, and investigate the principles that guide their text-making. With regard to multimodal mapping, I am interested in the variety of ways in which children make meaning in this genre.

SOME PRIOR CONSIDERATIONS

In devising the mapping tasks, the project teams were mindful of the need to provide a very clear focus. The aim of this aspect of the research in the ImpaCT2 project was to gain insights into young people’s knowledge and understanding of digital technologies in everyday life (Mavers, Somekh and Restorick, 2002; Somekh *et al.*, 2002; Somekh and Mavers, 2003), and in the GridClub evaluation, to elicit children’s perceptions of what it meant to be a member of an online club (Mavers, in press; http://partners.becta.org.uk/index.php?section=rh&catcode=_re_rp_02_a&rid=13617). A concise title was given: ‘Computers in My World’ and ‘Being in GridClub’. We also explained the focus by breaking it down into key questions. Children do attend carefully; what we asked for is what we got.

Image-based, the primary mode of representation in these maps was drawing rather than writing. In the ‘Computers in My World’ task, map-makers were asked to list what had been drawn. Some children did this down the side of the page but the majority labelled each

image. In practice, the children's drawings could be well understood without the addition of labels. However, from a multimodal perspective, the relationship between drawing and writing became interesting. Unlike the 'Being in GridClub' task, there was no request to label links.

How to construct the map was not stipulated. The sheets of white A3 paper provided were not in any way pre-marked. Map-makers were asked to make links as lines, but there was no specification of layout, although we encouraged exemplification and discussion of different possibilities. This was a significant decision because this openness allowed different kinds of structures, and how children organized their maps provided insights into their knowledge and experience. It might be argued that some maps were more successful than others. In recurring use of mapping, discussion of how different structures enable different potentialities for making meaning could be beneficial.

With the aim of expressing ideas speedily as 'snapshots' at a particular moment in time, the maps were completed in just 30 minutes. Each child was given a sheet of white A3 paper and either a pencil or a black biro. A benefit of large sheets of paper was that representations did not have to be cramped. The provisionality of computer-based concept mapping may provide ease of manipulation, amendment and extension but, for a large-scale project, hand-produced maps did not require expensive electronic resources, there was no need to learn computer skills and there could be ready swapping between drawing and writing. Video footage of the processes of map-making would have provided helpful insights into processes of production.

Interviews were conducted with a sample of 'Computers in My World' map-makers on an individual basis. We devised 10 non-leading, open-ended questions, followed by the opportunity to ask more specific questions of individuals:

1. I found your mind map really interesting. Please could you tell me about it?
2. Is any part of your map especially important? Why?
3. Where did you start to draw and why did you start there? What did you do next and why?
4. Can you tell me how you know all of these things?
5. If you'd had more time, would you have drawn anything else?
6. Why have you joined all of your pictures in this way?
7. Can you talk about the different ways computers are used in our world
8. Can you tell me about the different places where people use computers and new technologies?
9. Would you like to add anything?
10. Have you done anything like this before in school? Can you tell me about it?

In piloting, we found that teenagers answered questions readily but in short sentences (see Altrichter, Posch and Somekh, 1993). We needed to develop strategies to encourage fuller responses by opening up space for interviewees to take the lead (Mavers, Somekh and Restorick, 2002). In order to show that we were giving control regarding what to talk about and for how long, we learned to take our time and wait. Ethically, we were highly aware

that we did not wish to make participants feel in any way uncomfortable. This required explanation of how the interview would be conducted, creating a relaxed and informal atmosphere, and being sensitive to individuals and to the unfolding of the interview. With the same aim, we invited each individual who made a 'Being in GridClub' map to present their text to the group, with subsequent space for questioning by peers and the researcher.

EXAMINING THE MEANINGS MADE IN MULTIMODAL MAPS

My primary research interest is in children's graphic representation: how they make meaning in the discrete modes of writing and image-making, and how they combine them as multimodal ensembles. The maps produced in these projects became a rich source for investigating meaning-making in this genre. In designing multimodal maps, meanings are distributed across image, writing, linkage and layout. I argue that all of the various representations in the maps are worthy of serious attendance because text-making is always highly principled.

Drawing

Stipulating drawing as the primary mode of representation was not just 'a way in' for less confident writers, nor was it merely 'fun'. It had implications for the meanings that could be made. The affordances of drawing – its potentialities and constraints – offer certain aptitudes for making meaning. This makes it highly suited to some purposes and less so for others. In response to the focus, the children drew objects, people, activities, places and digital texts; representations that are well suited to drawing because that which can be seen can be remade as visual resemblance. In drawing an object, not everything that is seen can be drawn. Decisions must be made about what to include, omit or adjust. For me, analysis demands that even the smallest detail is attended to with seriousness. Shifts in what the children drew and how they drew particular items provided insights into their particular interests: how they viewed the world and how they shaped their representations for (in this case) a researcher audience. Looking across images can also show shifts in interest. Drawing tends to be seen as inferior to writing, and to be less trustworthy than written or spoken words. The drawings in these maps provided fascinating insights into children's interpretation of the world.

Writing

Writing is a highly developed mode of representation and communication that is used extensively for a range of purposes in everyday life. Words and wording provide infinite possibilities for making meaning. The linguistic possibilities of continuous writing were precluded in the multimodal maps I studied. On the other hand, digital mapping opens up possibilities for linking to more extended writing in the form of uploaded reports, web pages, and so on (see various papers in this volume). In the 'Computers in My World' maps, the children's writing was restricted largely to labelling. These provided generalizations (e.g. 'remote control car') whilst the related drawing showed specificities (e.g. a certain style, large bumper and wheels to indicate sturdiness). The same label 'computer' was

related to plethora of different drawings of computers. On occasion, children expanded their labelling in order to add further detail or to explain something. Hence, in these maps, how children combined drawing and writing was illuminating. In the 'Being in GridClub' maps, phrases and sentences on links gave information not possible in drawing, such as certain evaluations and opinions regarding what it meant to be a club member.

Layout and links

The relatively non-directive instructions devised by the project teams opened up possibilities for variations in design which enabled the map-makers to make meaning through layout and linkage in different ways. Structurally, the 'Computers in My World' maps bear similarities to both Novak and Gowin's concept maps and Buzan's mind maps, but precisely resemble neither. Nodes are generally linked and interlinked as in concept mapping rather than branched as in mind mapping, but the nodes are images rather than words in boxes and they do not generally have propositions as labelled links. As how to construct a map was not taught, there was scope for variation in the positioning of nodes within the space of the page, in their arrangement in relation to one another, in their sizing and in how they were connected and interconnected. A 'nucleus' node was frequently enlarged and positioned in the centre of the page, sometimes encircled, and had the largest number of exiting links. 'Spider'-like diagrams provided examples of the central theme and discrete groupings showed classifications (Mavers, 2003). Which images are linked and how was by no means random, and provided insights into how nodes were connected and interconnected.

CLOSING THOUGHTS

The genre of multimodal mapping has certain affordances. It does certain things well, and other things less well. That which was represented in the maps I studied did not exclude the map-makers' knowing about other aspects of the topic. In interviews, the children provided all sorts of other information and explanations as they spoke about their experiences, described events, gave their views, and so on. Understanding the potentialities of multimodal mapping is critical to the design of apt tasks. Those who live and work with young people cannot but be astounded by their creativity. Given the opportunity, they make the most of what is possible in the genre to produce fascinating texts.

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Diane's main research interests are in multimodal representation, social semiotics, literacy, and learning with new technologies. She has worked on a number of national research projects focusing on ICT and learning, and is currently undertaking small-scale research investigating the use of visualisers in the primary classroom. Diane has presented at numerous national and international conferences in Europe, including the UK, USA, Brazil, Australia and South Africa, particularly on the topic of mapping. Her current publications on multimodal mapping include MAVERS, D. (2003) 'Communicating Meanings through Image Composition, Spatial Arrangement and Links in Primary School Student Mind Maps', in C. Jewitt and G. Kress (eds), *Multimodal Literacy* (pp. 19-33). New York: Peter Lang and MAVERS, D., Somekh, B. and Restorick, J. (2002) 'Interpreting the Externalised Images of Pupils' Conceptions of ICT: Methods for the Analysis of Concept Maps', *Computers and Education*, 38: 187-207.

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