

Shapes of representation, shapes of knowledge: from object to visualiser to page



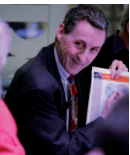
People Involved

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Key Words

visualiser, representation, knowledge, children, science

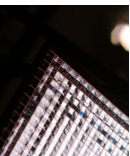


Description

A visualiser is an electronic imaging device. Consisting of a digital video camera connected to a data projector, images of documents and smallish items can be displayed on a large screen.



Since an initiative introducing visualisers into a group of London borough schools three years ago, they have become embedded in everyday pedagogic practice across the curriculum.



This digitization of the primary classroom has implications for representation in that it offers certain potentialities for how teacher display materials and resources.

My hypothesis is that it shapes what is to be known and how that knowing is demonstrated in children's curriculum work. The aim of this study is to investigate the interrelationship between object, digital display of that object and children's representation in their hand-produced science texts, and

how this is significant for knowledge.

The display of still and moving three-dimensional objects is well suited to visualisers, but is entirely new to the classroom. Through 'action learning', teachers have made creative use of the affordances of this technology by projecting images of living creatures (e.g. minibeasts), natural materials (e.g. seeds, flowers) and humanly made items (e.g. toys, printed circuit boards).

By enabling the display of objects in a way that would not otherwise be possible, scope is expanded for which resources can be viewed, and how. Almost unwittingly, new forms of representation enter the contemporary classroom.

A concrete object becomes a digital text. What the children see is not the original item but a high quality image of it. Size is transformed; three-dimensionality becomes flat; shape and colour are replicated; materiality must be inferred as texture is seen rather than felt.

Technological facilities allow the teacher to shape how the object is seen. The zoom facility enables magnification, how the camera is angled can give different

views, displays can be frozen whilst the object is removed, and movement can be viewed in real time, speeded up or in slow motion. Connected to the computer, movies can be made and screen displays can be overwritten. This leads to the first research question: How does the digital display of three-dimensional objects shape knowledge?

In response to pedagogic work around this shared display, children's subsequent text making is another shift to representation on the page. In this triple articulation, the original object-as-text becomes a digital display which becomes hand-produced curriculum work.

Graphic representation is one of the means by which children demonstrate their curriculum knowledge. Where digitally mediated imaging is the source by which children come to know (along with all the interactions that go on around it), understanding the interrelationship between knowledge represented on the screen and knowledge



represented on the page becomes central.

Although that which is displayed in the public and pedagogic space of the screen is shared in that everyone sees the same view, what is attended to semiotically is not only channelled by the teacher but also subject to the individual child's particular 'interest'.



The proposed study is timely in that, as a new and uncommon technology in schools, there is no published research on how visualisers are used in primary education. Little is known about the relationship between digital and paper based representation and how the shift from image on the screen to drawing (and other modes) on the page shapes semiotic potentialities, and how this shapes knowledge.



Furthermore, in comparison with writing, relatively little is known about children's drawing. The intersection of these three strands makes the focus of this study quite new.

This study will provide insights into the educational implications of a digital technology new to the classroom-as-workplace.

This 'knowledge gained in context' will be of benefit to teachers in the participating school. Integrating research findings into teaching across a range of courses at the Institute, as well as modelling actual use of a visualiser, will not only disseminate innovative professional practice but it will also help towards preparing the new generation of teachers and informing practising teachers

about the implications of the digital classroom for the representation and construction of knowledge.

In identifying some of the potentialities of the visualiser for enhancing teaching and providing new opportunities for learning, discussion around practical considerations, preparation, pedagogy and assessment will relate both to everyday professional concerns and to diversity of professional interests.

Methodology

This is a qualitative study. An integrated and coherent methodology, derived from the theoretical framework of multimodal social semiotics, offers a unified approach to all aspects of the research.

Analysis of the digital display in relation to the children's curriculum work will constitute my main focus, with particular attention to drawing, but also to writing. Detailed analyses of individual instances of children's representation, comparisons between different responses and emerging patterns across the dataset will provide the basis for theorization.

Children's texts will be studied with reference to teaching and interaction around the digital display and processes of production in text making. Where relevant, significant episodes will be subject to intensive, fine-grained examination.

Children will be invited to comment on, account for and reflect upon what they represented and why. Interviews

with the teacher will explore his/her rationale for using the visualiser and his/her expectations with regard to learning.

Outcomes

This study will contribute to academic and pedagogic debate around digital technologies, representation and knowledge. This will result in: two submissions to academic journals (e.g. Visual Communication, Curriculum Studies) and to a professional journal in education (e.g. Science Review), presentations, IoE Culture, Identity and Language seminar, presentation at either the regional (June 2007) or annual (January 2008) Association for Science Education (ASE) conference, Bera international conference 2007 (to be held at the IoE).

Teacher professional development:

- Staff development in the participating school
- LEA presentation
- Postgraduate teaching on BEd, PCGE, MA and EdD courses.



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