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PROCEEDINGS OF THE JOINT MEETING OF THE PRIMARY WORKING GROUP AND GEOMETRY WORKING GROUP OF BSRLM
BRISTOL, 18TH MAY 2002

The Primary Working Group welcomed an opportunity to meet with the Geometry Working Group in an effort to raise the profile of geometry and research in the earlier years of schooling. It was noted that with the introduction of the National Numeracy Strategy, number work has tended to dominate classroom practices in mathematics and that a greater emphasis on the wider curriculum is an important focus for the future.

So concerned have been the Royal Society that, in collaboration with the Joint Mathematics Council, they have recently published a report which argues that 'geometry should occupy a central place in the curriculum' (TES, 18th January 2002). The report points out that in today's society, the availability of powerful computers has led to the need for everyone to become more visually literate. Communication is so often based on graphics and computer-aided design packages, that understanding of such geometric interfaces has become fundamental for professionals and the public. Users range from scientists and engineers, to manufacturers, architects and designers (whether of airport terminals, brain scanners or web pages), all of whom need precise ways of describing shape, location and movement.

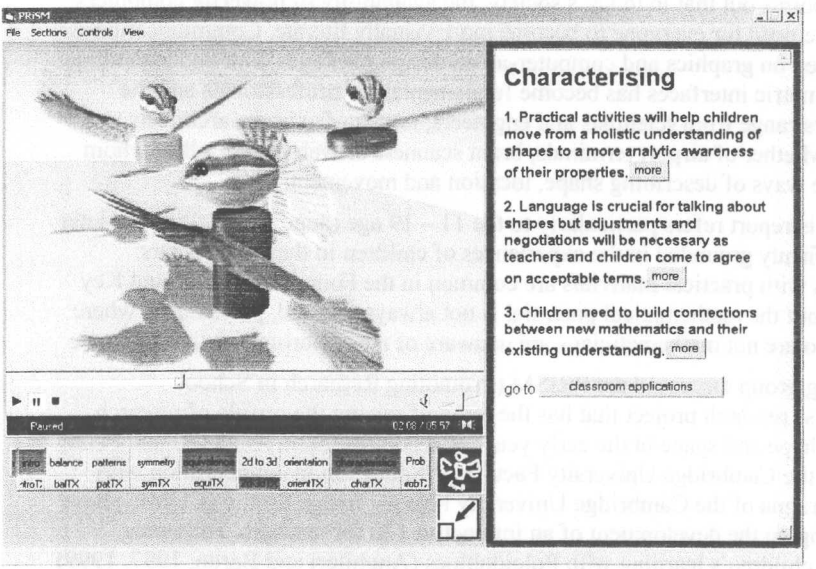
Although this report refers particularly to the 11 – 19 age range, preparation for later learning is firmly grounded in the experiences of children in their early years. Experiences with practical materials are common in the Foundation Stage and Key Stage One, but the mathematical potential is not always realised, particularly where teachers who are not mathematicians are unaware of the opportunities that can arise.

The working group discussed the PRISM (Promoting Research in School Mathematics) research project that has the remit of raising the profile of research relating to shape and space in the early years of schooling. Julia Anghileri and Penny Coltman of the Cambridge University Faculty of Education in collaboration with Charles Maragna of the Cambridge University Moving Image Studio (CUMIS) have been working on the development of an interactive CD for teachers. Following research on children's learning with Poleidoblocs (Anghileri and Baron, 1997, 1999) and a study of effective teacher interactions (Coltman, Anghileri and Petyaeva, 2002) the concern of dissemination to practitioners was addressed. Based on the premise that modern technology provides a powerful medium for providing access to a substantial amount of material in a flexible and autonomous way, the CD is intended for individuals and groups to use as a resource for information in developing their practice.

The CD consists of video sequences showing reception age children undertaking tasks relating to 3D shapes and some teacher interventions where they found the tasks

challenging. It also includes animations to make some of the content more explicit. For example, where a child is experiencing difficulty understanding the characteristics of cylinders, these are likened to cylinder bird babies that like to jump on their heads and jump on their feet and leave the same shapes in the mud. The animation reinforces the context which will support the child's understanding. Alongside the visual images is a text box identifying key statements from related research (figure 1). A series of buttons at the bottom of the screen give control over which section to watch as well as allowing for the usual controls of pausing or scrolling forward. Within the text box are buttons that take you from a single sentence statement of research findings, to a paragraph elaborating the findings, or to the research reference. Additional buttons enable the research to be printed out.

Figure 1: Screen image for the research sections of the CD

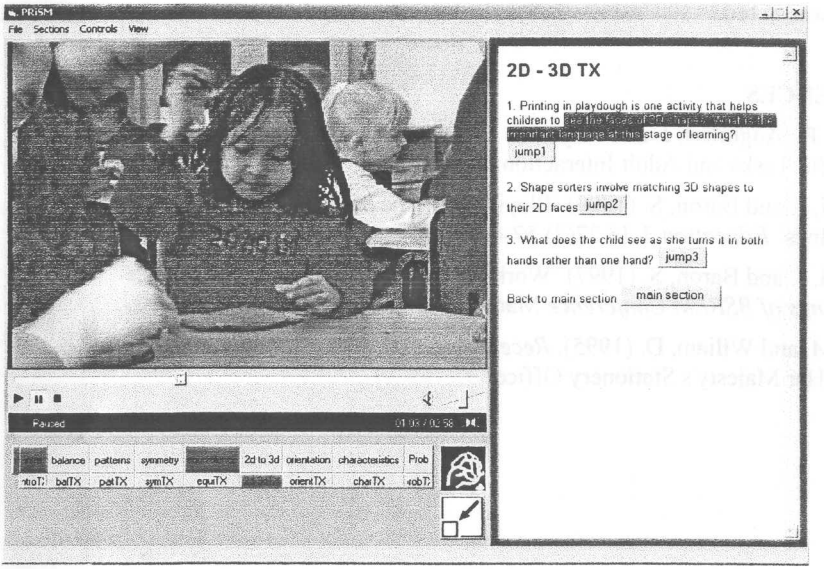


The research that has been selected does not give a comprehensive coverage of that which is relevant, but rather a sample from those sources most accessible to teachers (for example, Askew and Wiliam, 1995; Coltman, Anghileri and Petyaeva, 2002). These include mainly books and teachers' journals.

The CD has a second screen interface that uses video sequences and animations to explore classroom applications for some of the mathematics and some of the research findings (Figure 2). Again there is a text box for each section that includes some observations on the teaching sequences that may be used for teacher development.

The purpose of these sequences is to identify related teaching points and to stimulate reflection by asking questions that can be the basis for discussions among teachers themselves. It is not intended as a teaching guide and includes only selected aspects for attention. It is anticipated that the visual sequences and the different text will stimulate alternative uses for the CD to fit with teachers' particular interests or issues related to their own practice. The buttons on this interface allow for reflection on the visual images or movement between the different sections.

Figure 2: Screen for the classroom application sections.



DISCUSSION

Now that the National Numeracy Strategy is well established in schools there is an acknowledged need to widen the curriculum in the early years and the re-establishnment of geometry was felt to be crucial.

Responses to the CD were favourable and many helpful comments about the format were made. The intention of disseminating research to teachers and other adults involved in early years education was welcomed as it was felt that this was a population in need of initiation into research. The prototype shown was criticised for the 'density' of research text which was not easy to use at the same time as watching the visual images. This has been amended by using only 'bullet points' on screen initially with the option to show more detail. It was suggested that a brief synopsis of each of the research sources would be a valuable guide to users.

The classroom tasks involve a variety of resources that are familiar in an early years classroom. Particular tasks showing children's uncertainty about mathematical ideas were thought to be useful and it was suggested that more information could be given on possible interactions to enhance learning. The adult interactions are implicit in the sequences shown and it was felt that it was more appropriate to suggest discussion between teachers rather than explicit actions, as this would be more likely to develop reflective teaching and be useful as development opportunities.

The use of Poleidoblocs as a classroom resource with much potential for mathematics learning was noted.

REFERENCES

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Anghileri, J. and Baron, S. (1997) 'Working with 3-D Shapes - Poleidoblocs' *Proceedings of BSRLM Conference* March 1997

Askew, M. and Wiliam, D. (1995). *Recent research in mathematics education.* London: Her Majesty's Stationery Office.