

Keele University Department of Education

ENHANCING MATHEMATICS TEACHING THROUGH NEW TECHNOLOGY: THE USE OF THE INTERACTIVE WHITEBOARD.

Background

Between April 2002 and March 2004 members of the Keele University Department of Education Interactive Whiteboard (IAW) group took part in extensive work to ascertain the rationale, practicalities, pedagogic implications and outcomes of the use of interactive whiteboards in mathematics teaching in secondary schools.

Methodology

- A team of mathematics teachers from associated schools worked with the project leader and the university staff to develop software and the appropriate pedagogic guides for topics in the mathematics curriculum for the secondary years 11-16
- These materials were then used in the schools and evaluated by the research team according to a structure based upon the findings from the literature search that had been undertaken.
- Participants were also asked to allow the research team to video-record at least one lesson being taught with IAW technology and using the developed materials. A total of 55 lessons was observed and analysed.
- Participants were also asked to complete two evaluation sheets during the course of the investigation and invited to use pupil questionnaires and two sets of attainment tests to ascertain progress being made and the impact of the IAW.

Summary of Findings

- The IAW brings with it significant gains in the presentation of data and ideas and promotes pupil engagement with learning.
- There appears to be a three stage pedagogic development in establishing effective teaching with IAW technology:
 - a. **Supported didactic** where the IAW is used to enhance traditional board focused didactic teaching
 - b. **Interactive** where the teacher recognises some of the additional benefits of the technology and endeavours to stimulate interactivity by questioning and involvement of pupils
 - c. **Enhanced interactive** where the teacher moves from the instructional to the involvement role and uses the technology to stimulate, integrate and develop interactive learning.
- Good practice to enhance interactivity involves:
 - a. Awareness of the techniques for 'manipulation' of IAW objects and their integration into presentation of concepts
 - b. Awareness of the relationship between concepts and cognitive development
 - c. Thorough planning of staged learning
 - d. Effective staff development to enhance technical and pedagogic fluency.

Publications

Publications linked to our IAW work can be found at:

<http://www.keele.ac.uk/depts/ed/iaw/>