Integrating ICT into Teaching and Learning Mathematics

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Abstract

Mathematics was one of the earlier subjects to make use of the computer in the classroom and there has been substantial research in this area at both primary and secondary level. The dynamic and symbolic nature of computer environments can provoke students to generalise and formalise and make links between their intuitive notions of mathematics and the more formal aspects of mathematical knowledge. However research has shown that these understandings do not develop spontaneously and there is a need for a teacher to support students to move between more informal knowing and the virtual world of mathematics. This presentation derives from the InterActive Education Project and is concerned with understanding how mathematics teachers can use digital tools for enhancing the learning of mathematics. The socio-cultural perspective which framed the research foregrounds the idea that all human action is mediated by tools, where tools are both material (for example, whiteboard, calculator, paper and pencil) and symbolic (for example a graphical representation, natural language). A socio-cultural perspective also recognises that students bring their own personal history of learning to any new situation and will appropriate particular mathematical tools differently. This diversity of student experience might appear to be an almost impossible challenge for the teacher, but I will argue that such diversity can be used to construct a classroom culture of inquiry in which students productively learn from each other as well as being directed by the teacher.