A Community of Practice associated with Graphics Calculators

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This report will present some results of a collaborative research project exploring the way secondary school students use graphics calculators. It builds on and complements the work of other colleagues involved in the project (Graham and Thomas, 2000). Here we will discuss how graphics calculators have affected the lives of some senior students: how the technology has helped or hindered their learning; how it has affected the mathematics they learn in mathematics classrooms and how they see the mathematics they are required to learn in other classroom contexts.

The report will be framed by theories of situated cognition (Lave 1996, Lave and Wenger, 1991, Wenger 1998) and adopt the perspective derived from this (Winbourne and Watson, 1998, Winbourne, 1999) where mathematics classrooms are seen as multiple intersections of practices and developing identities.

Students in the study attended schools in England (London) and New Zealand (Auckland). The schools were chosen for their support for graphics calculators in senior classes and for the general and systematic use of ICT in teaching and learning. Student interviews revealed a wide range of student use of graphics calculators. In particular, they revealed students' predisposition to 'see' uses for the technology in their non-mathematics lessons. This predisposition, varying slightly between the schools, was seen to be practically significant. For example, it allowed students to engage in spontaneous graphics calculator-based mathematical discussion in 'non-mathematical' contexts. It was also seen to be theoretically significant; from our perspective, we see this kind of spontaneous discussion as signifying the growing and developing mathematical practices participation in which is central to the success of these students. Such 'predispositions' then, are taken to indicate a community of practice associated with graphics calculators. We will suggest that they are thus desirable as outcomes of teaching and discuss how teachers might aim to achieve them.

References

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