Teacher behaviours in computer based mathematics – gender implications

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Mathematics curriculum policy in Australia requires teachers to use information technology as a focus and aid to students' learning and understanding of mathematics. However it is unclear how the use of technology will impact on the participation, engagement and outcomes of girls and boys (Burton & Jaworski, 1995).

In the study reported in this short oral communication the behaviours of two secondary mathematics teachers, who used computers as a resource in their mathematics lessons, were explored. The study was part of a larger ethnographic study concerning the culture of computer based mathematics in secondary coeducational classrooms. Two mathematics teachers, a year 8 and year 9 mathematics class from an urban school participated in the study. The year 8 class used computers in a laboratory for two of their five mathematics lessons each week. During the period of the study they were learning to solve multi-step equations and used *Microsoft PowerPoint* to display their understanding. The students in the year 9 classed owned laptop computers and used *Geometers' Sketchpad* to investigate and demonstrate properties of particular shapes during the period of observation.

Six computer based mathematics lessons for each class were video taped, documents collected and four students from each class and the two teachers were interviewed. Data were analysed qualitatively. Teacher behaviours were coded for the content and cognitive nature of interactions (Geiger & Goos, 1996), the attitudes and feelings about people conveyed in their behaviour (Lee, 1993), the methods used to teach with computers and ways of solving problems. Teacher behaviours were compared for interactions with girls and boys and with high and low achieving mathematics students.

Data that illustrates the way that teachers' behaviours contributed to the culture of these classrooms will be presented. Whilst each classroom was culturally different, and influenced by other factors in addition to teacher behaviour, they advantaged the learning of high achievers and boys.

Burton, L. & Jaworski, B. (Eds.) (1995). *Technology in Mathematics Teaching: A bridge between teaching and learning*. Lund: Chartwell-Bratt Ltd.

Geiger, V. & Goos, M. (1996) Number plugging or problem solving? Using technology to support collaborative learning. In Philip Clarkson (Ed.) *Technology in Mathematics Education* (Proceedings of the 19th annual conference of the Mathematics Education Research Group of Australasia, pp. 229-236). Melbourne: MERGA.

Lee, M. (1993). Gender, group composition, and peer interaction in computer-based cooperative learning, *Journal of Educational Computing Research, 9*(4), 549-577.