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A renaissance of pen-and-paper in a digital age

Day 2 – Parallel IV (10.45-11.15)

The learning and teaching of mathematical methods can be significantly enhanced with the use of a low-cost paper-based computing platform. Within this platform a smartpen and special dot paper is used in the same way as an ordinary pen and paper to provide step-by-step solutions to mathematical problems, but, with the additional, and significant benefit, in that an audio synchronized explanation of a mathematics problem can also be recorded. The recordings, once digitally published, are called pencasts, and have the further benefit that they can be paused and replayed as many times as desired.

First year undergraduate students studying mathematical methods in either mathematics or engineering programmes were given access to more than 60 pencasts throughout the year. The average size of a pencast is 5 MB, each with duration of 3 to 30 minutes. A student survey indicated that 82% of students found that the pencasts helped them identify where they could improve. To quote from one student “it is one thing reading a textbook, but actually seeing it carried out, with talking, really makes things easier to pick up and learn.” This presentation will also discuss the art of pencasting and discuss lessons learnt.

The research has demonstrated that pencasts can be an effective reusable learning resource and that pen-and-paper can be brought into the digital age.