Chalk, Talk, Digital Pens and Audience Response Systems

Combining tradition and technology to improve maths learning

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I. Aim
To enhance maths learning by facilitating student interaction and peer instruction in problem classes using Turning Point™ audience response systems—“clickers”—and PaperShow™ digital—“optical”—pen.

II. Interactive problem classes: combined Mazur/Dufresne sequences involving peer instruction
(1) Set question + 5 min.s of individual work
(2) Click answer
(3) Discuss answer with other students
(4) Re-click answer
(5) Paper-show and chalk and talk right answer

III. Click (2) answer,

\[ \sum_{n=1}^{\infty} \frac{1}{n^2} \]

The ratio test shows that the series is convergent; 2. Is divergent; 3. Can’t be established; 4. Do not know.

IV. re-click (4) answer,

\[ \sum_{n=1}^{\infty} \frac{1}{5^n} \]

1. Is convergent; 2. Is divergent; 3. Can’t be established; 4. Do not know.

V. Paper-show (5) and...

VI. Chalk and talk (5) correct answer.

VII. Student feedback
Questionnaire (31 responses from approx. 40 students attending problem classes)

VIII. Word cloud from students' written feedback

«I think the optical pen is a useful tool for interactive learning and its use improved my learning experience.»

77%

«I think clickers are a useful tool for interactive learning and their use improved my learning experience.»

65%

(#) More information on these and other Classroom Technologies can be found at the blog http://go.bath.ac.uk/ct;

(1) Image captured using Panopto™;

(2) Questionnaire designed, delivered and analysed via Google™ Forms;

(3) Word cloud produced via www.wordle.net: the word size within the cloud is proportional to its frequency within the processed text.