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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 Paper■Show™ 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,

The ratio test shows that the series   1

$$\sum_{n=1}^{\infty}\left(\frac{4}{5}\right)^n n^5$$

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

36%   41%   9%   14%

IV. re-click (4) answer,

The ratio test shows that the series   2

$$\sum_{n=1}^{\infty}\left(\frac{4}{5}\right)^n n^5$$

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

56%   36%   0%   8%

right answer

V. paper■show (5) and…

VI. …Chalk and talk (5) correct answer.

(я)

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.»

strongly agree
agree } 77%
neutral
disagree
strongly disagree
Other

0   3   6   9   12   15

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

strongly agree
agree } 65%
neutral
disagree
strongly disagree
Other

0   3   6   9   12   15

VII. Student feedback

Questionnaire(ъ) results (31 responses from approx. 40 students attending problem classes)