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## A Randomised Control Trial Of Naïve Medical Students Performing A Shoulder Joint Clinical Examination; Textbook Versus Seminar Versus Video.

General Topics / Education

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### Background

Technological advances have been hailed as a new dawn in Higher Education, with the advent of ‘massive open online courses’ and online learning. Despite this, the degree of anticipated educational revolution has yet to happen, and vital lessons have been learned – education is more than simple transactions.

### Objectives

To determine whether three teaching modalities, including traditional and more technologically advanced methods, were of equal efficacy in teaching examination of the shoulder joint to naïve medical students.

### Study Design & Methods

Sixty-seven pre-clinical medical students naïve to large joint examination completed a learning style questionnaire and were block randomised to three interventions: Textbook study, face-to-face seminar or video tutorial via online platform. All three methods taught the same technique (as described by the senior author), the video being custom made for this study. Students were assessed at baseline (pre-intervention), and days 5 and 18 post-intervention, using a standardised assessment tool (maximum score 30). Assessors were blinded to group allocation.

### Results

There was no difference between groups at baseline assessment (mean scores 2.4 for textbook, 2.8 for face-to-face, and 3.1 for video;  $p=0.267$ ). Mean post-intervention scores were 16.5 textbook, 25.5 face-to-face, and 22.4 video ( $p<0.001$ ). Use of an online portal allowed comprehensive metrics on learner-video interactions to be collected. 100% of the video group accessed the resource in the 24 hours preceding assessment. There was no decay between first and second post-intervention assessment scores in any group ( $p=0.373$ ). Preferred learning style did not affect scores ( $p=0.543$ ).

### Conclusions

Face-to-face teaching outperformed other modalities in this study, even in comparison with

a high quality custom made video. Although technology increases accessibility and removes geographic barriers it should still be seen as adjunct to, not a replacement for traditional teaching methods. Online platforms allow in depth study of learner interactions with potential for meaningful improvements.