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## **Remove the 'fear factor' from first year laboratory practicals – use videos!**

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# Remove the '*fear factor*' from first-year laboratory practicals – *use videos!*



In a previous *Reflections* article '**Supporting first year student learning in laboratory practicals**' (Green et al., 2008), the authors reported preliminary findings on the potential of instructional videos showing laboratory equipment and procedures for use in pre-practical tutorials with students. These authors indicated further development of such support was planned through the Centre for Excellence in Active and Interactive Learning (CEAIL) in Biosciences with the aim of reducing the '*fear factor*' experienced by first-year students using laboratory equipment for the first time.

The CEAIL has now been involved in producing two videos for practicals on 'Water holding capacity of meat' ('Meat') and 'Egg quality' for the Level 1 module *Composition of Foods*. Both videos demonstrate the general step-by-step procedure of the practical with particular emphasis placed on highlighting the appearance of apparatus, its operating procedure and how to record data.

A 'shooting script' was prepared by Dr Karen King, the module co-ordinator, to ensure the equipment was clearly

shown and that procedures were shown step by step. For example in the 'Meat' practical, students are required to measure the pH of small cubes of meat following treatment in different concentrations of acetic acid solution and the video clearly shows the pH electrode being lifted out of the storage solution, washing with water, excess water removal, placing the electrode into the meat cube, stabilisation of the pH reading, removal of the electrode and washing again with water, removal of excess water and replacing in the electrode storage solution. This was all necessary as students (in Queen's) have not used a pH meter before this practical.

In the 'Egg quality' practical, students use a 'spherometer' to measure the height of the egg white and egg yolk and this was clearly demonstrated on the video, including how to take a reading off the graduated scale.

The videos were filmed by Dr Joe Quinn from the CEAIL (Biosciences) on a low budget video camera and produced in visual format only i.e. with no voiceover or sound. To add explanatory information, text slides were inserted to explain each step. The 'Meat' video was 10 minutes and the 'Egg Quality' 17 minutes long.

The videos were shown in a pre-laboratory tutorial with commentary from an academic member of staff and the 'Egg quality' video was also made available to students online prior to the practical session.

## Student response

Students were asked to complete a questionnaire rating a number of statements about the 'Water holding capacity in meat' and the 'Egg quality' video and to give general comments on the ways the videos helped them carry out the practicals, which aspects they found helpful, how it helped their understanding of the practical, how it could be improved and any additional comments.

For the 'Meat' video 100% of students (n=32) found the video easy to follow, relevant and helped their understanding of what was expected in the practical, whilst the values were 92%, 100% and 92% respectively. For the 'Egg Quality' video (n= 25), 97% and 96% respectively, thought the video showed the right amount of detail and 91% and 96% respectively, would like to see the videos online before participating in the practical.

One hundred percent, (100%) (n=28) and 95% (n=21) thought the videos had helped with the procedures, 32% (n=28) thought the section on how to use a pH meter in the 'Meat' video was helpful as they had never used one before and 94% (n=31) and 100% (n=18) respectively, felt the video had helped with their understanding of the practical.