



Contribution ID: 75

Type: Oral Presentation

## Producing introductory videos for student preparation for physics practical work

*Tuesday, 26 June 2018 11:20 (20 minutes)*

Experimental work in the physics curriculum is vital to gain practical scientific skills as well as a better understanding of models and measurement. Due to increasing student numbers, limited equipment and laboratory space, students do not have unlimited time to perform experiments during practical sessions. Therefore students need to be increasingly well prepared in order to complete them successfully. Improved access to the internet has made it feasible to use introductory videos for preparation. The aim was not to reduce or replace written instructions or supervision, but rather to allow students to see the actual equipment and setup as well as measurement techniques in practice and hence allow the students to make better use of limited laboratory time. Producing the videos using professional help had significant time and cost implications, so the challenge was set to produce these internally with filming equipment available in the department. To pilot this project, short introductory videos were produced on four experiments dealing with Lissajous figures, Fourier synthesis, standing waves of a string, and diffraction of light. The demonstrator assigned to each experiment gained experience by acting as the presenter in the video to give an outline of the aim, equipment, method and measurement process. A single experiment took approximately 3 h of preparation and filming time, which was done in short segments of a few sentences at a time. It was useful to have two cameras so that an overview and close-up could be captured simultaneously. With the available filming equipment the quality video was excellent while the audio quality was merely sufficient. Editing of the videos was done using free software. The running time and resolution were limited to keep the file size to a minimum for easier access on or off campus. Anonymous feedback on the videos was collected from students e.g. initial results showed that only 39% accessed the videos off-campus, while 50% viewed them on campus and 11% not at all. It has been demonstrated that it is possible to create educational videos at low cost and the experience gained will allow improvement of quality and saving of time for future endeavours. A later phase of this project will include assessment whether the videos improve student practical work performance.

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**Session Classification:** Physics Education

**Track Classification:** Track E - Physics Education