PRE-LABORATORY VIDEOS ENHANCE STUDENT PREPARATION AND CONFIDENCE

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BACKGROUND:

Laboratory classes are an integral component of Biochemistry and Molecular Cell Biology undergraduate degrees designed to develop proficiency in technical skills, provide theory in context and promote inquiry-oriented learning. There is increasing body of evidence to suggest that pre-laboratory preparation is beneficial to student learning because students who are well prepared for their laboratory classes are reported to derive maximum benefit from their laboratory experience.

AIM:

Our aim was to introduce short videos on specific laboratory skills to assist with the pre-laboratory preparation of second and third year Biochemistry and Molecular Biology undergraduates.

INTERVENTION:

Despite the essential nature of laboratory skills optimal learning in classes is impeded by increasing student numbers and lack of engagement of students. In an effort to engage and better prepare students for their laboratory classes we used brief videos on specific laboratory techniques as pre-laboratory exercises prior to introducing new skills in the practical class. The exemplar used in the current study was a video on SDS-polyacrylamide gel electrophoresis (SDS-PAGE).

DESIGN AND METHOD:

Teaching staff developed short videos on several laboratory techniques (SDS-PAGE, pipetting, Clarke's oxygen electrode) using domestic quality equipment (webcam/video camera) and commercially available editing software. The videos were short (no more than 8-10 minutes), concise, could be employed across different units and year levels, featured the exact settings and instruments that were used in class and could be downloaded on to any mobile device and therefore available as a flexible learning tool.

Students enrolled in second and third year Biochemistry units were required to view the video on SDS-PAGE prior to attending class, and complete a quiz related to the video content, both of which were accessible on Moodle. The quiz was a formative assessment only. At the completion of the laboratory class students were invited to participate in a questionnaire which explored student feedback on a number of aspects that included functionality of the video, skills development, attitude, learning effectiveness and learning styles. The responses and numerical data were collated and analysed.

RESULTS:

In both 2nd and 3rd year levels greater than 70% of students reported that the videos reinforced the concepts of the technique while more than 60% found that the content helped integrate the theory with the practice. Data showed that > 50% of reported increased confidence in carrying out specific tasks while more than 50% of students felt they were overall more confident to carry out the class activities. Written comments from students support the numerical survey data that viewing videos prior to attending class made them confident and better prepared for the laboratory class.

CONCLUSION:

Both survey and qualitative data show that the pre-laboratory videos had a positive impact on student preparation for their practical classes.

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