The implementation of LabTutor® teaching systems in physiology practical classes

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Background

- Teaching complex biological processes can be complex
  - Limited time and resources
- Recent increases in enrolments
  - Large class sizes
  - Teaching team consistencies
PowerLab® LabTutor® teaching systems

- Developed by AD Instruments
- Student-centred, data acquisition and analysis teaching system
- Useful to simulate some experiments

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AD Instruments

- LabTutor® makes teaching easier by combining the following into one program:
  - Data analysis
  - Report completion
  - Report submission
  - Background scientific information
  - Step-by-step instructions
  - Real-time data acquisition

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LabTutor is a great introductory experiment system for first year students. (University of Sunshine Coast, Qld)

I am astonished at how easy PowerLab is to use in the large Human Anatomy and Physiology class (140 students per semester). (West Chester University, USA)

Our students find that they’re a useful way of recording. They certainly seem to enjoy using them more than they did when we used polygraphs. (Monash University, Vic)

We have found the PowerLab to be robust, versatile and simple enough for student teaching, and precise and reliable enough for research applications. (Otago School of Medical Sciences, NZ)

HLS units

- CXA161 Introduction to Human Biology
  - Education students
- CXA172 Anatomy and Physiology 1
  - HLS, Education and Science students
- CXA273 Anatomy and Physiology 2
  - HLS, Education and Science students
- CXA237 Exercise Physiology and Nutrition
  - HLS students
- Other areas – Biomechanics, Pharmacology, Bioscience, etc
LabTutor® teaching systems in HLS

- Suite of pre-prepared (simulated) experiments have been modified to suit the specific unit curriculum needs
- Provides self-guided and self-paced learning experiences
- Students can submit raw data and their analysis in report form

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<tr>
<th>Unit</th>
<th>Number of Practicals</th>
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<tbody>
<tr>
<td>CXA161</td>
<td>3</td>
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<tr>
<td>CXA172</td>
<td>5</td>
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<td>CXA273</td>
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Outcomes of LabTutor® use in HLS

- Submission of data can be used as a record of attendance at the practical (used in CXA172)
- Student learning is enhanced as students record data in an engaging environment, analyse with step by step guidance and can generate an immediate report from their experiment
  - 45% of CXA172 students found that LabTutor® assisted their understanding of nervous and muscle physiology
- Benefits to technical staff as experimental set-up is minimised
- Downfalls relate to students not reading instructions!
PowerLab® LabTutor® Experience

- Three experiments set up for you to have a hands-on experience
  - Introduction to LabTutor
  - Muscle contraction
  - Reflexes

- Discussion
  - Do you think that PowerLab® LabTutor® may be useful in your discipline?
  - What do you see as the advantages and/or disadvantages of using simulation in laboratory teaching?