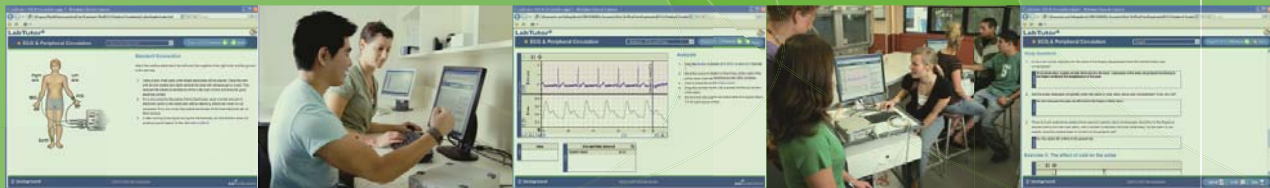


# LabTutor Case Study



**Client:** Stellenbosch University, South Africa

**Situation:** The Department of Physiological Sciences at Stellenbosch University wanted to replace their old data acquisition system with a reliable data acquisition system that empowered students to learn actively and independently. Long term cost savings were also a factor in decision making.

**Solution:** PowerLab LabTutor Teaching Systems

## PowerLab LabTutor Systems Integrate Seamlessly into Existing Curriculum and Increase Students Interest and Participation

The Department of Physiological Sciences at Stellenbosch University has chosen PowerLab LabTutor Teaching Systems to replace existing data acquisition equipment. “The combination of the Powerlab recorders and LabTutor and LabChart software will allow the Department of Physiological Sciences at Stellenbosch University to provide world class undergraduate practical classes to our students using state-of-the-art equipment. This will go a long way to enhancing the teaching experience for these students.” said Dr Rob Smith.

The Animal Physiology and Advanced Teaching Systems purchased integrated easily into the existing curriculum. Second and third year undergraduate physiology students found the PowerLab LabTutor System helpful in reinforcing scientific principles covered in theory classes. Increased student participation and interest in practicals were observed by the teaching staff. The seamless integration of PowerLab LabTutor Teaching Systems into the curriculum was greatly enhanced through training workshops carried out by ADInstruments and LASEC SA.

In addition, PowerLab LabTutor Teaching Systems provided significant time and cost savings for the department with reduced animal requirements, shorter practical set-up time and uniform practical reports submitted electronically that enabled efficient review and marking by tutors.

Over the next few years, the Department of Physiological Sciences plans to expand the number of teaching systems to cover a wider range of applications including pharmacology experiments using isolated tissue/organ baths systems. Dr Rob Smith also plans to use LabAuthor software to create and modify experiments in the near future.

## Background information

**Courses:** Second and third year Undergraduate Physiology Course.

**Educators:** Dr Rob Smith.

**Students using PowerLab LabTutor systems:** 250 second year and 180 third year undergraduate students.

**Experiments performed:** Breathing and spirometry based practicals, frog practicals, ECG, heart sounds and custom cold pressor experiment.

## Interview with Dr R. Smith

### **Please describe your role(s) at your institution. How long have you been in this role?**

Lecturer, Practical Coordinator for Undergraduate Physiology

### **What courses use LabTutor and how many students are in the course(s)?**

Physiology 214, 250 students; Physiology 314, 180 students; Physiology 244, 200 students; Physiology 344, 150 students; Physiology 354, 100 students.

### **How many PowerLabs do you have and what other ADInstruments equipment do you have?**

Animal Physiology Systems (PTB154) x 20, Human Physiology Systems (PTB263) x 4

### **When you were looking for data acquisition systems which ones did you evaluate?**

ADInstruments only.

### **What were the key factors that made you choose ADInstruments products?**

Good product range, complete package, good support at local level.

### **Can you describe the implementation of the PowerLab data acquisition system in the lab? (Laboratory setup, number of staff running labs, how the labs are run.)**

We have placed the equipment in 2 labs that were previously equipped with old DOS based data acquisition systems developed in-house. These had reached the end of their working life and could no longer be supported. The ADI teaching systems were slotted in seamlessly to the curriculum thanks to the support and training provided by the local agent (LASEC (Pty) Ltd.)

### **How long have you and/or the university been using ADInstruments data acquisition systems?**

I have been using them since they were first produced and marketed (in the UK at postgrad level and with Glaxo and Rhone-Poulenc Rorer). I have been using them for just over 2 years at Stellenbosch University.

## **What difference has PowerLab made for you, your students, and the courses you run?**

Greater participation by the students, more students involved in the pracs (esp. the human pracs), more interest in the animal practicals. We now also get more uniform prac reports from the students which has made marking easier.

## **What type of experiments are your students conducting with LabTutor systems?**

Mainly the breathing and spirometry based practicals, plus the frog practicals. We have also done ECG, heart sounds and developed a cold pressor test with the equipment.

## **Can you describe how the course was run before the use of LabTutor systems?**

The course was run in a similar manner, but with larger groups of students on each piece of equipment

## **What particular features of LabTutor software have made a big difference?**

Up to date, web based, uniform and allows the students to work at their pace, not one dictated by the fastest or slowest in the class.

## **How have LabTutor and PowerLab systems saved you time?**

Fewer set-ups time for class and quicker to mark practical reports.

## **How have LabTutor systems been cost effective?**

We have reduced animal usage with the animal physiology systems, thus saving costs. On the human side costs have increased due to the wider range of experiments carried out by the students. This is not a problem at this point in time.

## **Can you comment on the students' experience with LabTutor systems?**

They love it. Feedback has been positive and enthusiastic.

## **What features do they seem to enjoy?**

The web based format of the LabTutor software, the ability to move back and forwards in the experiment and the provision of a report at the end of the practical that they can just complete.

## **How does LabTutor help students with understanding scientific principles or learning goals?**

The background info provided is good for the students, plus the reinforcement of principles covered in the theory classes.

**What are your future plans for LabTutor? Do you intend to increase the number of systems that you use, the way you use them etc?**

I will be adding a couple more systems and extra pods over the next few years, plus we will be expanding the range of work that the systems (animal in particular) can do over the next year or so to include basic gut-bath type pharmacology for undergrad students (guinea-pig ileum, aortic rings, tracheal rings etc...).

**Workshops: Would you be interested in hosting a summer workshop in 2009? If so are there any special topics you would want to cover?**

Yes – more on the human side I think for EEG, EMG, Senses, pressure/volume loops etc...

**How many people could attend the workshop? Would you want any prerequisites for attending? ie teaching level, ownership of PowerLab systems etc**

We have place for up to 20 people to attend and work in small groups on systems. No prerequisites for attending...

**LabAuthor: Have you modified existing experiments with LabAuthor? Have you created a new experiment?**

Not yet, but will be doing so shortly...

**Support: Do have any comments you would like to make about the service from ADInstruments**

Great locally, no complaints

**Final question. Would you recommend LabTutor to other educators?**

Yes, without hesitation.

**Biography**

Dr. Rob Smith is currently a Lecturer and Practical Coordinator for Undergraduate Physiology in the Department of Physiological Sciences, Stellenbosch University. Dr Smith has been using ADInstruments data acquisition system since his postgraduate years in the UK and during his years working at Glaxo and Rhone-Poulenc Rorer.