

# LabTutor 4 Case Study



**Client:** Stellenbosch University, South Africa

**Situation:** Stellenbosch University has been using PowerLab LabTutor Systems successfully for two years. The LabTutor Experiments have engaged students and improved learning outcomes. However, educators found that administration and software updates could be time consuming, and wanted a faster way to complete these tasks.

**Solution:** Upgrade existing PowerLab LabTutor Systems to LabTutor 4 Teaching Suite, which includes LabTutor Server for single-point course management.

**PowerLab LabTutor Systems Engage Students, Save Time on Administration and Reduce Laboratory Costs**

Stellenbosch University, one of South Africa's leading universities, has chosen PowerLab LabTutor Systems as the key teaching tool for undergraduate physiology subjects for two years. Dr. Rob Smith, Senior Lecturer and Practical Coordinator for Undergraduate Physiology, says "the background info provided is good for the students, and this, along with the reinforcement of principles covered in the theory classes help the students understand the 'bigger picture' and achieve the desired learning outcomes."

Over the past two years, more than one thousand undergraduate students have used PowerLab LabTutor Systems with LabTutor 3 for human and animal physiology practical lessons. After a recent upgrade, the students now use the PowerLab LabTutor 4 Teaching Suite to record and analyze physiological data for LabTutor experiments.

Experiments undertaken include ECG, heart sounds, cold pressor test, spirometry, EMG and frog experiments. Dr. Smith is keen to implement more experiments such as exercise physiology, metabolic and guinea pig ileum experiments. Both student and staff feedback has been extremely positive, with students engaging well in practical sessions and staff enjoying "more uniform prac reports from the students, which has made marking easier."

Dr. Smith decided to upgrade his PowerLab LabTutor Systems to PowerLab LabTutor 4 Teaching Suite to save time on administrative tasks such as updating software on many different computers. "The upgrade to LabTutor 4 made the process of updating the software much easier, as only a single machine had to be updated."

# LabTutor 4 Case Study



LabTutor 4 with LabTutor Server has reduced administration time. “Lab Tutor 4 has made management of the equipment and software much easier, reducing the required time and associated expense that was needed for upgrading LabTutor 3. In addition the administration of the class has become easier with login functionality of the new software.”

The upgrade to LabTutor 4 was extremely smooth. Dr. Smith stated that “we were live and running within two hours of beginning the entire process. It was so straight forward we did not even require help from the IT experts.”

The recent official opening of the LASEC/ADInstruments teaching lab marks the long-term partnership between ADInstruments and Stellenbosch University. Dr. Smith wanted “our students to see that we are continually striving to improve and innovate, and we believe that the renaming of the teaching lab would both reflect and facilitate this.”

## Biography

Dr. Rob Smith is currently a Senior 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.

[Read the full interview with Dr. Smith](#)

## Background information

**Course:** Undergraduate Physiology courses, Stellenbosch University

**Educator:** Dr. Rob Smith, Senior Lecturer, Practical Coordinator for Undergraduate Physiology.

**Students using PowerLab LabTutor Systems:** Physiology 214, 324 students; Physiology 314, 180 students; Physiology 244, 290 students; Physiology 344, 150 students; Physiology 354, 100 students.

**Experiments performed:** Both human and animal experiments including: ECG, heart sounds, cold pressor test, spirometry and breathing, EMG and frog experiments. Exercise physiology, metabolic and guinea pig ileum experiments will be implemented in the near future.

## Interview with Dr. R. Smith

**Please describe your position at Stellenbosch University. How long have you held this position?**

Senior Lecturer, Practical Coordinator for Undergraduate Physiology

**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, Exercise Physiology system, Pharmacology baths x 10

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

Over one thousand students across five physiology subjects.

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

We are now running both human and animal physiology experiments. For the human physiology we are using the systems heavily for breathing and spirometry based practicals, and we have recently added the EMG prac to the students experimental course. We also make use of the ECG, heart sounds and a cold pressor test. We will be adding some exercise based and metabolism based practicals in the near future. From the animal side we have made extensive use of the frog experiments (nerve, skeletal muscle and heart) and will be adding guinea-pig ileum in the near future.

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

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

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

Greater participation by the students, more students involved in the pracs (especially 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.

### **For how long have you and your students used LabTutor 3?**

We have made use of LabTutor 3 for approximately 2 years.

### **What made you decide to upgrade to the LabTutor 4 Teaching Suite?**

The decision to upgrade was made on the basis of the issues we were having with keeping the LabTutor 3 software updated on numerous PC's in several locations (animal and human physiology teaching labs). The upgrade to LabTutor 4 made the process of updating the software much easier, as only a single machine had to be updated. This has resulted in a significant time saving for the staff involved, plus a considerable reduction in costs (we pay for our internet usage per Mb downloaded).

### **Was the update straightforward and easily implemented?**

The upgrade and the installation of the server software took all of an hour and a half for 15 PCs (we only had two disks available). The set-up of the server (on one of the existing old PCs in the lab) and uploading of experiments and class lists took about 30 mins, and we were live and running within two hours of beginning the entire process. It was so straight forward we did not even require help from the IT experts.

### **How does LabTutor 4 compare with LabTutor 3?**

LabTutor 4 has made management of the equipment and software much easier, reducing the required time and associated expense that was needed for updating LabTutor 3. In addition the administration of the class has become easier with login functionality of the new software.

### **Can you describe your students' experiences with LabTutor?**

They love it. Feedback has been positive with students now actually seeming to enjoy the practicals.

### **LabAuthor: Have you modified existing experiments with LabAuthor? Have you created any new experiments?**

We have "played" with the LabAuthor software, and will be using it to modify some of the existing experiments to suit local requirements (e.g. differences in animal strains used) in the near future. We are also planning to produce an experiment to allow students to investigate the serum complement system.

### **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 have recently obtained isolated organ bath systems which have been installed in the teaching lab with the animal system and we will be commissioning these by the end of 2010 and introducing more complex experiments to the 3rd year class in 2011. I am also hoping to increase the number of human experiments in the future.

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

The systems have reduced the set-up time for the classes and reduced the number of people required to help out during the classes.

### **Has the LabTutor teaching system lead to long-term cost savings?**

Whilst we have not done a comprehensive cost analysis with the new systems, it seems that we have managed to reduce costs overall by reducing the number of people working in the labs during the practical classes, plus reduce the degree of technical support required. We have also seen an overall reduction in the numbers of animals we are using.

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

The background info provided is good for the students, and this, along with the reinforcement of principles covered in the theory classes help the students understand the “bigger picture” and achieve the desired learning outcomes.

### **What are the key factors that contribute to your continuing business relationship with Lasec and ADInstruments?**

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

### **You officially opened your LASEC/ADInstruments teaching lab recently. How did you choose this new name?**

We decided that rather than just seeing the systems as equipment to be used once purchased from a supplier, that we would rather try and establish longer term partnership with the local agents (LASEC) and ADInstruments which would allow all parties to benefit from the relationship. We also wanted our students to see that we are continually striving to improve and innovate, and we believe that the renaming of the teaching lab would both reflect and facilitate this.

### **Workshops: Would you be interested in hosting workshops in the LASEC/ADInstruments lab? If so are there any special topics you would want to cover?**

We have hosted several workshops in the labs to date, and we will continue to make the facilities available to both LASEC and ADInstruments for workshops in the future. We see this as an important community interaction event that is part and parcel of the role that we play as a University department. With regards to topics to be covered, I think we would benefit from having a detailed training session on LabAuthor, and some discussions around the new Server software.

### **Final question: would you recommend LabTutor 4 Teaching Suite to other educators?**

Yes, without hesitation.