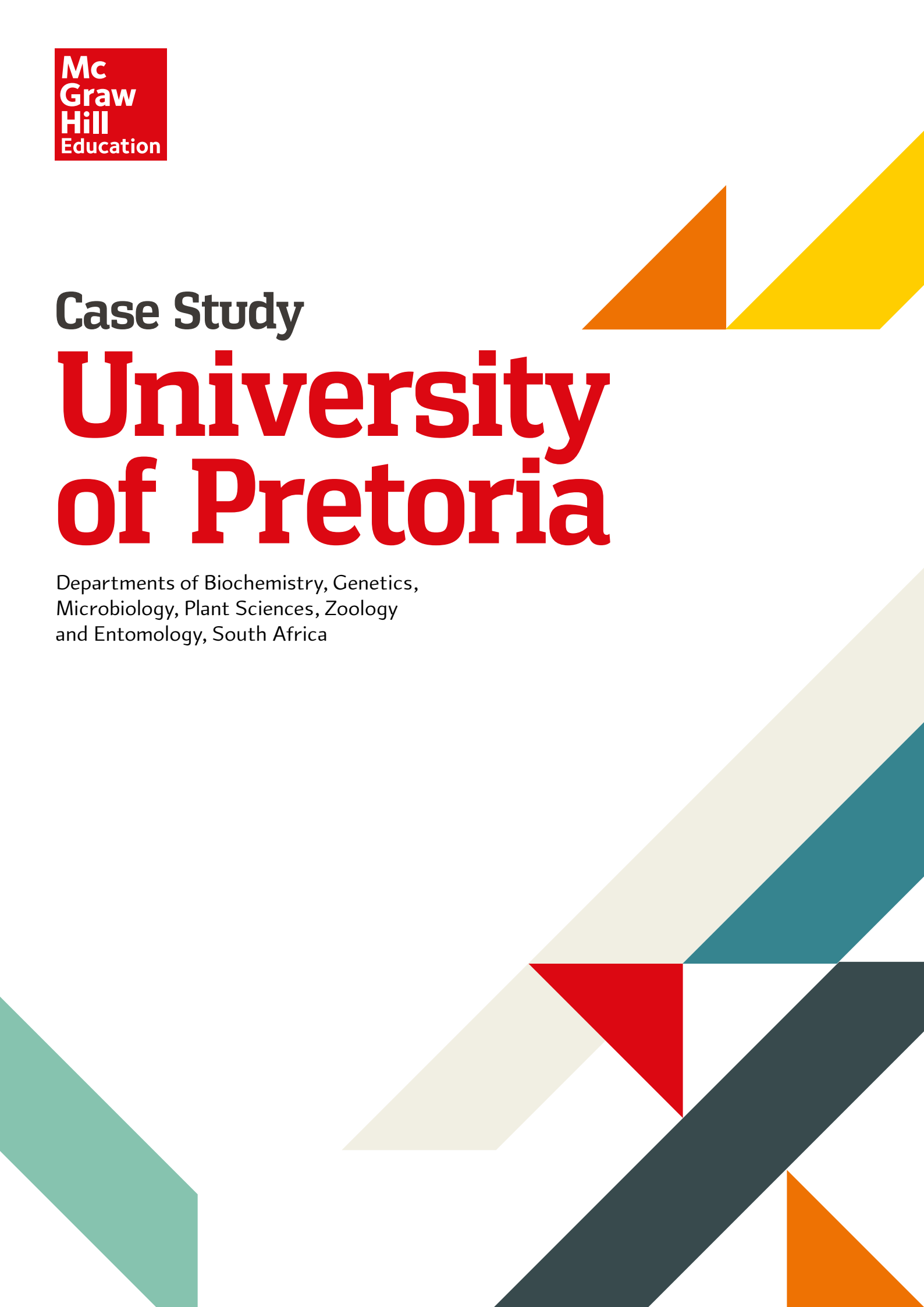


Case Study

**University
of Pretoria**

Departments of Biochemistry, Genetics,
Microbiology, Plant Sciences, Zoology
and Entomology, South Africa



About the University

The University of Pretoria (UP) currently has more than 50,000 students and has become one of the leading higher education institutions on the African continent. Established in 1908 as a branch of the Transvaal University College, it became a university in 1930 and in recent times has transformed into a multicultural, multiracial, multi-campus university that provides quality education to South Africans from all walks of life. **Now delivering courses in both English and Afrikaans, UP comprises nine faculties that offer a range of professional and more general formative qualifications, all professionally accredited.**

Case Summary

Faced with the challenge of a diverse and growing student population, the University of Pretoria improved student engagement and results with McGraw-Hill Education's adaptive learning system Connect®.



Carel Oosthuizen, lecturer

“From the students’ point of view it [Connect] enables them to self-regulate their learning and to evaluate whether their learning methods are working for them. This gives them a greater sense of responsibility for their learning which seems to improve engagement with the course.”

The Challenge

All first-year students taking biologically-based degrees in the respective faculties are required to join a Molecular and Cell Biology entry level course before they can proceed to their second semester studies. The course serves students of Botany, Genetics, Microbiology, Zoology and Entomology, and Biochemistry.

Lecturer Carel Oosthuizen summarises the challenge brought by the diversity of UP's student population:

“Students arrive at UP with tremendously varied backgrounds and experience. Many do not have any basic biology knowledge because Life Science at the Senior Certificate level is not a prerequisite for admission to BSc degrees. Some students join UP from rural areas and can sometimes be overwhelmed by the whole university experience –in some cases the population of the university is greater than the population of the student's home village. Other students may never even have used a computer before.”

Although used to handling these issues, UP was faced with an extra challenge in 2013 when student numbers for this course rose by a half from 1,200 to 1,800.

Carel Oosthuizen continues: “It was immediately obvious that the departmental team of three lecturers would struggle to mark all this extra work by hand. As a lecturing team we were also keen to keep the course fresh and stimulating for the diverse student group and so sought new methods and technologies to meet the challenges we faced.”

The Solution

The team investigated many solutions and considered offerings from various publishers, as Carel Oosthuizen explains. “Previously we used a Computer-Based Testing (CBT) system to evaluate student performance during the course, but this threw up some problems in that we can only fit 150 students in the testing lab at a time, so we had to divide students into groups, which then gave us additional work in monitoring attendance, as well as results.

“We also ran some assignments on our Blackboard system, but although this worked well, it required us to spend a lot of time setting up the tests, writing questions and managing results so it didn't meet our requirement of saving lecturers' time. But as soon as we came across the McGraw-Hill Education Connect web-based platform, and saw the potential it offered online, it was an easy decision to make and we began to use it in the first semester of 2014.”

McGraw-Hill Education Connect is an online teaching and learning space full of interactive digital tools for students and lecturers. Connect prepares students for success by helping them to test understanding as they go, building confidence and knowledge every step of the way. Lecturers can easily assign exercises and assess and report on students' progress in this integrated online resource.

“As a digital teaching and learning environment, it provides a simple connection between us and our students, making it easy for us to assign, customise and grade their work,” says Carel Oosthuizen. “From the students' point of view it enables them to self-regulate their learning and to evaluate whether their learning methods are working for them. This gives them a greater sense of responsibility for their learning which seems to improve engagement with the course.”

The Results

The reaction from staff and students alike has been very positive. Students report that they find it easy to use and in fact they enjoy the online version of assignments more than their written assignments. The video clips they can watch are particularly popular. Students like the fact that they can work at their own pace and read more about specific topics if they want to, having determined their level of understanding of the work as the system allows them to do.

Similarly the team of lecturers enjoy the simplicity of the system. The fact that it integrates seamlessly with the Blackboard Learning Management System (LMS) has been extremely useful – any work completed on the Connect website can be automatically pulled into the Blackboard LMS without the need for any further manual processes.

Critically, Connect is improving student performance and results, as Carel Oosthuizen explains: “We have analysed the relationship between various components of the module directly to the first semester test mark. It is in this test that students notoriously achieve their worst results. But pleasingly, we found a significant link between students obtaining 45%+ in the semester test and students obtaining 56%+ on their Connect assignments. This shows us that those students who are putting in the

work online, using Connect – which was just over 50% of the total – are finding that it pays dividends, giving them better marks and a better understanding of the work covered, which this helps them during the rest of the course and in their written tests.

“It is definitely useful in supporting our efforts to bridge the gap of vast diversity in prior learning and level the playing field for all our first-year students. We know from past experience that some students need more time to deal with specific components of the work, while others need to take a different approach to help them understand the course material and to gain self-regulatory learning skills.

“We are glad to finally have a system which allows us to teach first-year students about self-regulated learning so that they can see the importance of taking responsibility for their own studies. They can then build on that for the second semester and the rest of their time here at the university, which will improve their performance over a variety of critical outcomes.”

Carel and his team have been so pleased with the results so far that they now plan to pilot Connect in a second-semester animal diversity course where saving time for the lecturer is particularly vital.

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| Subject Area | Molecular and Cell Biology |
| Digital Product in Use | McGraw-Hill Education Connect |
| Featured Product | Connect & LearnSmart |
| Course Name | Molecular and Cell Biology (MLB 111) |
| Course Type | Lectures, practicals and tutorials |
| Credit Hours | 16 credits, 160 notional hours |
| Textbook in Use | Biology, Raven, 10th edition |
| Instructor Name | The teaching team includes a biochemist, Prof Jan Verschoor, a plant scientist, Ms Angelique Kritzinger, and a geneticist, Mr Carel Oosthuizen |
| Enrolment | Around 1600 students |
| Case Study Term | First semester 2014 |
| Outcomes | 11% grade improvement for 50% of cohort, positive student feedback on ease of use, positive staff feedback on ease of use and integration with LMS |