

FEATURES

Turning kids on to science

Macquarie University in Sydney has commissioned the country's largest and most comprehensive study to find out why students are not choosing to study science and technology programs at university.

Over the past four years in Australia, there has been a noticeable decline in the number of students choosing science, engineering and technology programs at university, leading to a forecasted shortage of skilled professionals in important scientific and technological areas.

Director of Public Relations and Marketing at Macquarie University Megan Etheridge explains that the year-long research project aims to determine just who is and who isn't interested in studying science and technology and what the scientific community needs in terms of skilled graduates.



Macquarie University science students Joel Bedford and Querida Hutchinson.

The results of the project will not only inform the development of science and technology programs at Macquarie University, but will be shared with other universities in the interest of addressing a national problem.

"At the same time as enrolments in our general Bachelor of Science program have been falling, there has been a very large increase in demand for our humanities program - especially our general Bachelor of Arts degree," Etheridge says.

In addition to very real concerns about future skills shortages in science and technology industries and the future of research and discovery in these areas, she says that the University is also concerned that the student body is becoming heavily weighted with humanities and business students.

"We are very keen to encourage students back into the sciences not only to balance our student body, but to provide a sound base for future research," she adds.

To conduct this study, Macquarie University has employed one of its science graduates, Madeline Raison who, in addition to a Masters degree in molecular microbiology, has worked for the marketing department of a major pharmaceutical company.

Raison is mid-way through the project, spending the first couple of months conducting a literature review and talking to stakeholders from within the University, in schools, and in industry to gather feedback on what they see as the major issues contributing to the situation.

Based on her preliminary discussions, she has designed four web-based surveys - one for senior school students, one for current Macquarie University students, one for the

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science and technology community, and one for employers of Macquarie science graduates - which will be available online until the end of August 2005.

"We are expecting up to 6,000 responses to our web surveys, with even more detailed feedback gathered in the focus groups that we will hold with representatives from the three survey groups," Raison explains.

A report will then be written and the findings presented to the Macquarie University community in a series of seminars for staff.

Etheridge and Raison have done a lot of work in involving the Macquarie University academic community in this project to ensure their support and ownership of the project so that they take up the final recommendations.

Two of these academics are Dean of the Division of Information and Communication Sciences Professor Raymond Offen, and Head of the Department of Biological Sciences Associate Professor Michael Gillings.

While noting the complexity of the problem, Offen believes that the resourcing of science teaching at high-school level in Australia and the demathemat-icising of the curriculum, particularly in physics, are major issues behind the declining interest in studying science and technology at university level.

He notes that many high-school science teachers try very hard, but are limited by the resources and the curriculum available to them.

"For example, many of our high-school physics teachers have degrees in other disciplines and have only completed short refresher courses in physics before teaching it at Year 11 and 12 level," he explains. "In addition to that, we have seen the physics curriculum demathematicised to the point where students analyse problems qualitatively rather than quantitatively and the students find this demotivating. If they are unable to be stimulated in the study of science at high school, they will never want to study it at university."

Offen is very concerned about the issues facing science and technology in Australia and warns that if things don't turn around, in 20 years time the country may end up being like an 'assembly line' using the technologies developed by the emerging powerhouses of China and India.

Gillings believes that the public profile of science over the last 20 years has changed partly because of the negative aspects of some of the products of scientific discovery, such as pollution, genetically engineered organisms and nuclear technology.

"People have blamed science for society's ills and while these technologies are the result of scientific discovery, science is about discovering what is true and not true. For example, as a result of the discovery of nuclear energy, we can produce radioactive isotopes that cure people of diseases," he explains. "But we can also produce bombs that kill people en masse. Part of the problem is that science has stood back from the ethical considerations of how its discoveries can be used."

The other problem, he thinks, is that many scientists appear unapproachable and distant and do not engage well with the public. That, he says, is the fault of individual scientists.

"Scientists are largely poorly paid, have an uncertain future and have to work really hard to get things done. No wonder kids are turned off," he says.

We are also living in a more materialistic society than was the case during the 'golden era' of science in the 1960s and 70s when everyone wanted to be a scientist or rocket engineer. These days kids are more concerned about getting a job and making lots of money, and they face a lot of parental and peer pressure to secure their future along these lines. High-achieving school leavers are flocking to courses in business and commerce as a result - these used to be the kids who studied science and technology.

Gillings says the decline in real Government funding for universities in Australia over the past 10 years has affected the quality of science teaching that universities can offer students.

"We run the risk that we won't be able to attract the best and brightest students into science and we face a real shortage of scientists and engineers in the very near future if we do not improve the number and quality of students at university," he says.

"I really want to let kids know what science is like and to show them that science is exciting and there is a lot of stuff to discover. A career in science offers a theme of intellectual activity that is unavailable in any other occupation. It actually offers the opportunity to contribute something permanent to human society.

"Everyone knows the names of Da Vinci, Newton, Darwin and Copernicus - scientists whose discoveries and ideas have changed the course of history and whose ideas live on today," he says. "There is a person sitting the Higher School Certificate this year who could be the next Da Vinci, Newton, Darwin or Copernicus. I would really hate to see that person become an accountant," he says.

If you are interested in participating in Macquarie University's online surveys, visit www.macquarieunisurveys.com/

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