

BEST COLLEGES

PUTTING TECHNOLOGY TO WORK IN HIGHER EDUCATION

NUI Galway is going with the online flow



Catherine Cronin, academic coordinator for the MSc course in software engineering and database technologies and Nuala McGuinn, adult education development officer at NUI Galway

A seismic change to university culture is honing people to think beyond pure academia. Now students are encountering entrepreneurship courses right from the start, writes **Ian Campbell**

Reacting to a new economic climate and Ireland's changing fortunes, NUI Galway is tweaking its online courses and working harder to make university research deliver a commercial return.

Collaboration skills are becoming an important part of e-learning courses, according to Nuala McGuinn, adult education development officer at NUI Galway, and the whole dynamic of web-based learning is preparing people for the workplace in a way that was impossible before.

When students in some science courses participate in online discussion forums, for example, they may be assessed as part of their course. "The discussions are linked with the learning objectives of the course module," said McGuinn, "so when students participate they are encouraged to use good academic practice and facilitators are able to assess what they contribute. Many of the students will be working in virtual teams in the future, so it makes perfect sense."

This is all about preparing students for the new world of work. Being able to collaborate and exchange information using web 2.0 technologies is an increasingly important benefit of e-learning that the traditional classroom misses out on.

"Students in lectures are busy capturing the content. With online courses the content has been pre-developed and is at their doorstep from the start. So we can focus on the value-add, the skills acquired that will enable them to work in their industry and have discussions with colleagues in other countries," said McGuinn.

NUI Galway runs a number of online learning courses that continue to evolve with increasingly sophisticated multimedia content. "Programmes like the MSc in software engineering and database technologies [MsCSED] have updated modules that have more multimedia interaction. Wikis and blogs make the learning more engaging."

McGuinn said the tech focused e-learning courses have even more appeal to businesses because the university is working hard to address their market needs. Feedback from the private sector has encouraged educators to put more emphasis on presentation skills, decision-making and problem solving. The philosophy in the college is that they're teaching life skills, especially in the undergraduate courses.

"Often they are the hardest things to teach," said McGuinn. "You can't just ask students to read a page of content and do it. You have to make it part of the pedagogical process with the tools they use online and through group learning in the classroom."

While the downturn has made companies a little more reluctant to send employees on postgrad courses, there has been growing interest from the unemployed.

Irish universities have responded to the country's economic predicament by working closely with the Higher Education Authority's Springboard jobs initiatives, a way of re-skilling people and getting them back to work.

"We started out developing online courses for busy professionals who didn't have time to go to a class. Now we find we are attracting a lot of the unemployed. The mode of delivery suits job seekers as well because it's almost a full-time job trying to find work," said McGuinn.

In another part of the Galway campus, the university's Ignite technology transfer office (TTO) is doing its bit to help Ireland turn around its economic fortunes. A sign of the times is an increased focus on commercial outcomes from Ireland's research universities, with NUI Galway typifying the new approach.

"There is a major drive from the top down in all departments and in all institutions – you must be commercially focused," said Fiona Neary, business development manager in Ignite. It was set up in 2006 to help potential start-ups take the difficult step from the laboratory to the market place.

"Up until then there weren't the people on the ground to help start-ups," said Neary. "The research was carried out and applied in certain areas,

but there were gaps in terms of grants available and there was no focus on commercialisation. Our office is dedicated to this task."

There is also a business innovation centre to nurture the new companies. "The university is an important contributor to start-up development in the region as well being a provider of innovation hubs for new enterprise," she said.

In a very practical way, Ignite facilitates the transfer of technologies to the marketplace with support and guidance around IP management and patent registration, very much inspired by American universities like Stanford and MIT which spawned clusters of start-ups. Just like the State-side model, Galway also tries to forge partnerships with local industry.

"Now more than ever, it's important to find good business partners that we can tap into," said Neary. "Combining these relationships with our own academic research will lead to the formation of successful new companies."

Set out in the NUI Galway strategic plan for 2009 to 2014 was a commitment by the university to regional and national needs. Biomedical engineering and sciences was identified as a key area, with the remit of providing a skilled labour source to the region's medical device industry as well as fostering entrepreneurship into graduate and postgraduate level training.

Galway and the West benefit from the presence of major medical technology companies, and the university has worked hard to develop relationships with its corporate neighbours. A new national programme to assist the sector is also in the pipeline, geared towards helping start-ups with business development and training. "It will be a one-stop shop for med-tech," said Neary.

There used to be very little training in business skills and commercialisation, according to Neary, but a root-and-branch change to university culture is honing people to think beyond pure academia. Now when undergraduates arrive in Galway they are confronted with entrepreneurship programmes and a hive of activity from day one.

"For a tech transfer office to be successful there has to be a continuous pipeline of commercially savvy people coming through with new ideas and the business skills to deliver them commercially," she said.



Michael Hennessy, education programmes manager, University of Limerick PRESS22

Rich content makes learning easier

Distance learning is having a profound influence on higher education, not just in the way courses are taught, but in the type of courses that are available. Michael Hennessy, education programmes manager at the University of Limerick, said the technology used in e-learning facilitates more flexible delivery models and more niche subject matter. "The content is becoming more specialised," Hennessy said. "Courses used to provide an introduction to business or to science. Now we can dig down into very specific areas. The number of courses is growing at masters as well as undergraduate level, and the topics taught are becoming more niche."

The reason is web 2.0 technologies, a suite of online tools and applications that make multimedia content readily available through a web browser. At the same time, better broadband availability has enabled more people in more places to access the internet and participate in distance learning.

"It's easy to relate broad concepts with written material, but now we are able to teach highly specialised subject matter where multimedia tools make it easier to grasp difficult concepts," Hennessy said. "You can explain how something works and show what happens when you change certain parameters. Students can see how the process is affected and how the output varies."

Another consequence is that it reverses old assumptions about distance learning as the new tools take students closer to their teachers. "Previously, distance learning was about

using educational materials that allowed you to study without needing a lecturer," he said.

"Web 2.0 technologies allow interaction with lecturers who can show students different elements of the course work in a very practical way."

Hennessy cited the example of how video and animation can be used to help students simulate laboratory work in a virtual environment. They can test different resistors, for example, and learn in a practical way about the effects of electric currents. In chemistry they can use online applications to carry out experiments, mixing different chemical compounds together to find out what the reaction will be.

"More complicated subjects are now manageable over the web," Hennessy said. "Courses are interactive and much closer to the learning experience you would get in a laboratory or workshop. It has allowed us to offer a wider choice and go beyond introductory courses."

Niche subjects have also proved useful in the economic downturn. When the recession hit with a bang in 2009 there was a slump in the numbers of people signing up for distance learning, but courses that address very specific industry and business needs are attracting interest and leading to a rise in applications.

"The MScs for business professionals are proving particularly strong," Hennessy said. "If a niche course can help an employee improve their outputs then the company is happy to pay for them to go and get the qualification."

The Six Sigma course is directly linked to their real-life workplace, for example, where students are asked to imple-

ment process improvements in their day jobs, turning theory into practice. Innovation management courses are also striking a chord with corporate customers who want to upskill employees.

Once again, there are real world elements to the curriculum that keep the course rooted to commercial reality. Students are asked to submit a proposal to Enterprise Ireland's start-up scheme to try and get funding.

The other trend, which is more personal, is where people have taken a long hard look at their careers – some from a position of unemployment – and gone back to college to take courses that coincide with Ireland's skills shortages.

This goes some way to explaining why solicitors who were badly hit by the property collapse are taking the technology commercialisation programme. "As Ireland moves towards an R&D and knowledge economy, there is scope for a range of new services to support this type of activity," Hennessy said. "A solicitor with a background in commercialisation would be of use to a company looking to protect its intellectual property."

The economy has changed and so have the graduate requirements, and the way they are taught. Distance learning means students can get access to learning materials from anywhere at any time.

"We are increasing the flexibility of courses and trying to dissolve the distinction between people who are full time and part time," Hennessy said. "Courses can be taken either way, and over a timeframe that suits the student. That's the way it should be."

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