Making a real difference to the way real life works

Research on slurry, radon gas, knives and pre-cooling will battle it out in new contest

John Walshe
Education Editor

Aisling Ni Annaidh's (below) hopes her entry The Mechanics of Stabbing will provide insights that will aid Prof Marie Cassidy (above) and her colleagues in their investigations FRED REILLY

WHAT do slurry, radon gas, knives, and pre-cooling before a big race all have in common?

The answer is that they were all subjects chosen by entrants to the first ever Making a Difference competition which is aimed at highlighting how research is changing Irish society. The competition is being run by the Higher Education Authority and the *Irish Independent*.

In all, 230 submissions were received, many of a very high quality. For instance, Beatrice Smyth from UCC is involved in a project using slurry and grass to make gas which would reduce our dependence on non-renewable fossil fuels. Orlaith Burke from UCD's School of Mathematical Sciences is working on improving radon detectors so that it will be easier to protect family homes from this silent killer.

Another interesting project seeks to come up with a way to help athletes cope with hot and humid conditions abroad when they are competing internationally. In the Olympics last year temperatures exceeded 35C on some occasions.

"Heat stress can reduce performance: but it also carries a health risk," says Joseph Costello from the Department of Physical Education and Sport Sciences at the University of Limerick.

"Pre-cooling, through the use of cold water immersion, offers the potential to improve player and team performance, using equipment that is also inexpensive and easily available (a tank, water and ice)." His research will examine the effectiveness of pre-cooling on a number of different outcome measures including psychological, biomechanical and soccer performance tests.

A further fascinating entry came from 24-year-old Aisling Ni Annaidh from Bray who called her project 'The Mechanics of Stabbing'. Two years ago 636 people were convicted of possessing weapons (excluding firearms) in Ireland, while there were 84 murder/manslaughter victims, of which one-third

involved the use of knives.

A question often asked of a medical witness is "What was the degree of force involved in the stabbing?" The answer is vital in determining the accused's intent to cause harm, and may ultimately lead to a conviction or an acquittal. However, it's a difficult question to answer as the typical response consists of vague words such as 'mild', 'moderate' or 'severe'.

This ambiguity has prompted Ireland's state pathologists Prof Marie Cassidy and Dr Marie Curtis to approach UCD to investigate the forces required to puncture and penetrate human skin. "It is our goal to replace the existing qualitative description with a quantitative scale, scientifically validated, that would eliminate uncertainty," says Aisling who is doing her PhD under the direction of Prof Michael Gilchrest and Marie Curie Fellow Michel Destrade.

"Currently, a widely used and much debated defence in stabbing cases is that the victim either 'ran into' or 'fell into' the knife. We hope that this research will provide a much-needed scientific insight into the plausibility of such a claim.

"This information is invaluable to the judicial system both in Ireland and worldwide as it will assist in the search for justice, whether through the affirmation of innocence or a confirmation of guilt," adds Aisling.

The final of Making a Difference takes place at the Helix, Dublin City University on Tuesday, May 26 at 7.45pm. Finalists will compete for two travel scholarships each worth €2,500. Tickets, which are free, are available from the Higher Education Authority at 01 2317100 or impact@hea.ie

Cool or not cool enough?

ON a recent webinar (video internet seminar) entitled *State of the Nation: Science in Ireland*, Professor Frank Gannon, director general of Science Foundation Ireland, spoke of the need to encourage students who are choosing their careers to consider science.

He referred to the work of such agencies as Discover Engineering and Science in promoting those areas throughout primary and secondary schools, and he referred also to the huge enthusiasm generated among young people by the BT Young Scientist and Technology exhibition, where secondary school students have such a good track record of going on to win in international exhibitions.

"So science is cool again?" asked Dr Sean Sanders, the webinar coordinator.

"Not cool enough," responded Prof Gannon.

"There was a comment from a respondent to our SFI survey (on what the public thinks of science and research) who said: 'If you say that you do physics, it's not a great switch on in a disco or a club!'"

"That's just the second law of thermodynamics," quipped Prof Ciaran Regan of UCD, another panelist on the webinar.

"You mean physicists go to discos?" asked Dr Sanders.

"I wouldn't know," Prof Gannon replied somewhat cagily. "Discos probably don't exist anymore."

It's a constantly evolving world, as any scientist can tell you.

The full webinar can be accessed through the SFI website

MARY O'DONNELL

PROFILE

Getting the perfect result

PARIS-BASED marketing executive Niamh Farrell has an unusual academic background. Having done one year of a Music Performance BA in DIT, she transferred to Trinity College to study a Pure Maths degree.

Her decision to study maths was driven by good tuition and sheer enjoyment.

"I had great maths teachers in school in Brussels (where she went to school aged 8-12) and I think my interest grew from then.

"I never had any problems with maths through secondary school, and I often found myself studying it when really I should have been studying other subjects – I always found it easy. When I decided that piano performance was not for me I didn't consider anything other than maths – it was always going to be either music or maths!"

Her current job is far from the realms of theorems and equations, but she enjoys it nonetheless. "I love that my job is based in Paris. I chose it because it is temporary, and gives me a chance to live outside Ireland. Every day is different and I am given a lot of responsibility which is great."

"You have to be very flexible to move from a maths degree to a job in marketing. A logical mind is useful in any position, but it can sometimes be frustrating when logic cannot make things go more efficiently because you are dependent on other people."

"I am learning a lot of things I would never have learnt if I had stayed with my nose in a maths book. I am considering going back to do further maths study after I finish this job, but I have a year and a half to decide, so who knows what will happen in that time!"