NUI MAYNOOTH
CENTRE FOR TEACHING
AND LEARNING

TEACHING FELLOWSHIPS 2012 – 2013

**CENTRE FOR TEACHING
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Peer-Teaching to Enhance the Learning Experience in the Chemistry Laboratory

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Chemistry is, in nature, an experimental discipline. The laboratory environment should be particularly effective to engage the students with the core reading material, as it puts into a practical context the theoretical principles discussed in the lectures.

In order to achieve the intended learning outcomes for each practical session, it is desirable that the students do pre-laboratory revision, by which the students read the experiments to be carried out, as indicated in the laboratory manual. They should independently research techniques and equipment to be used in the session, as well as revise the core course material related to the practical.

As the project for this fellowship, we propose to implement peer teaching in the pre-laboratory talks. Peer-teaching provides an effective approach to enhance the learning experience of the students, by means of providing a collaborative learning environment while, at the same time, encouraging independent reading and research and taking ownership of one's own work.

Students will work in groups of four, to highlight to their peers in a short "pre-lab" talk the key points of the practical session ahead with regards to i) Health and Safety ii) equipment or instrumentation, iii) chemical reactivity and mechanism iv) calculations. At the end of the presentation, the academic in charge of the laboratory will give constructive feedback to the students and will round up the pre-lab talk.

The students will use an interactive LCD touch screen display for their presentation. This technology lends itself particularly well to the teaching of Chemistry, which extensively relies in the visualization of chemical concepts, such as, for example, chemical structures. A graphical user interface like that offered by an LCD touch screen display would allow for the students to engage in a dynamic and interactive presentation, while providing the technological framework to develop problem-based exercises and enhance their peer teaching experience. While operating with essentially the same software as interactive white boards or Sympodium systems, interactive LCD touch screen displays offer a wider range of capabilities. Also, they are self-contained devices that can be mobilized to different locations.

This is an advantageous feature for the purpose of this project, as the interactive LCD touch screen display can be transported to the different laboratories where the practical sessions will take place.

To support the students during the preparation of the "pre-lab" talks, we will make available a "Pre-Lab Help Desk", by means of a dedicated teaching assistant (3 h per week), who will help with chemical queries. We initially envisage implementing this project in the 3rd year laboratories (approximately 90 students). The presentations will run for 10-12 weeks (2 per week). The Department was recently awarded a Doctoral Teaching Scholarship, and we will encourage this student, who is required to do teaching related duties for the Department, to actively engage in this project, by assisting the students in the use of the interactive device.

We will also make use of the teaching resources in the Department to produce screencasts, so as to provide additional support on concepts discussed in the lectures applicable to the experiments.

Trinidad Velasco-Torrijos graduated with a BSc in Organic Chemistry from Universidad Autonoma de Madrid (Spain) in 1998. She completed her Ph.D in the University of Bristol (UK) in 2002. She moved on to carry out postdoctoral work at Ghent University (Belgium) and University College Dublin, as a Marie Curie Fellow from 2004-2006. Trinidad was appointed as a Lecturer in Pharmaceutical Chemistry at NUI Maynooth in 2007.