

*The Higher Education Academy Physical Sciences Centre  
Professional Development Workshop*

**Research-Teaching Links in the Physical Sciences: Politics and Practice**

**The Reinvention Centre at Westwood, The University of Warwick  
Wednesday 18<sup>th</sup> March 2009**

**Provisional Programme**

10.00 - 10.20	Registration and coffee
10.20 - 10.30	Welcome and introduction <i>Lynda Thrift</i>
10.30 – 11.00	Research teaching linkages: what are they, why are they important <i>Tina Overton, Physical Sciences Centre</i>
11.00 – 11.15	Research Careers: the Thrift Report <i>Ros Roke, Executive Officer for the Vice-Chancellor, Warwick</i>
11.15 – 11.45	Outputs from the QAA Enhancement Theme on Research-Teaching Linkages <i>Simon Bates, University of Edinburgh</i>
11.45 – 12.00	The Student as Producer: the work of the Reinvention Centre <i>Paul Taylor, Warwick Chemistry and Reinvention Centre</i>
12.00 – 12.40	<b>Lunch</b>
12.40 - 14.00	<b>Sharing Case Studies</b> - 10 min case studies with time for discussion Research Mentoring: A Flexible Route to Enhancing Undergraduate Curricula <i>James Davis, Nottingham Trent University</i>  Undergraduate Research Scheme <i>Mark Baron, University of Lincoln</i>  Forensic Science Research.....get 'em young! Undergraduate and postgraduate opportunities using a Student focussed conference" <i>John Cassella, Staffordshire University</i>  'Unlocking the Oxygen Storage Capacity of Ceria' - a research-linked learning resource and activity for final year MChem students at NTU and beyond <i>Paul Martin, Nottingham Trent University</i>  Undergraduate Degrees with an Integral Research Year <i>Tony Clough, University of Surrey</i>  Training in Research Methods <i>Philip Bailey, University of Edinburgh</i>
14.00 – 15.00	Discussion session with coffee available
15.00 – 15.30	Summing up, where next
15.30	Close

## **Research teaching linkages: what are they, why are they important?**

***Tina Overton, Physical Sciences Centre***

The interplay between teaching and research is one of the defining features of Higher Education. This interplay can manifest itself in many ways and staff and students can engage at the research-teaching interface in a wide variety of ways. Several interpretations of researching-teaching linkages will be described with examples of how these interpretations can be translated into practice.

## **Research Careers: the Thrift Report**

***Ros Roke, Executive Officer for the Vice-Chancellor, Warwick***

It has been suggested that there is a perception that doctoral, post-doctoral and subsequent stages of typical research careers are increasingly been seen as not very attractive to graduates compared to other possible careers. How can this issue be tackled?

## **The Student as Producer: the work of the Reinvention Centre**

***Paul C Taylor, Warwick Chemistry and the Reinvention Centre for Undergraduate Research***

The core aim of the Reinvention Centre for Undergraduate Research at the University of Warwick and Oxford Brookes University is to 'reinvent' the undergraduate curriculum through the promotion of research-based learning. In so doing, the Reinvention Centre is attempting to re-create the notion of an inclusive academic community where learners, teachers and researchers are all seen as scholars and collaborators in the common pursuit of knowledge. The Reinvention Centre is grounded conceptually and practically in the work of Ernest Boyer (1990) and the Boyer Commission's 'Reinventing Undergraduate Education' (1999), from which the name of the Centre is taken. Through a critical engagement with Boyer's work the Reinvention Centre has developed its own concepts that are having an impact across the sector, for example the 'Student as Producer', which confronts the idea of the 'Student as Consumer' and presents students as collaborators in academic endeavours.

## **Outputs from the QAA Enhancement Theme on Research-Teaching Linkages**

***Simon Bates, University of Edinburgh***

The QAA Enhancement Theme on 'Research Teaching Linkages: Enhancing Graduate Attributes' ran during 2007-08, and spawned 9 discipline-focussed projects to survey and report back on innovations and practice in this area within these subject domains. A team from Edinburgh and St Andrews Physics Departments led the Physical Sciences project (Physics, Astrophysics, Chemistry, Forensics) and discovered a huge range of innovative practice being undertaken, across all levels of the degree programmes and all subject areas. This talk will highlight some of the findings from this project, together with the outcomes from the over-arching sector-wide project that was undertaken simultaneously by QAA. It will also look forward to how these findings are being used and implemented in guiding the new QAA Enhancement Theme of 'Graduates for the 21st Century'.

## **Research Mentoring: A Flexible Route to Enhancing Undergraduate Curricula**

***James Davis, Nottingham Trent University***

Assistive Learning and Research Mentoring is an innovative project designed to provide students with an opportunity to participate in advanced research projects at the beginning of their undergraduate studies. It aims to provide a framework that complements traditional chalk and talk teaching protocols but fosters a curiosity driven approach to learning. The programme allows extracurricular, through supervised, access to research and teaching laboratories throughout the academic semester to pursue a mini research project distinct to them. In doing, it is hoped that the key skills are reinforced through doing something real and the students are motivated to actively seek new knowledge as they pursue the project goals. A critical examination of the results from the pilot programme and an assessment of its transferability are presented.

**"Forensic Science Research.....get 'em young! Undergraduate and postgraduate opportunities using a Student focussed conference"**

***John Cassella, Staffordshire University***

A Forensic Science *student-centred conference*, which is a regionally based annual event, has proven tremendously successful over the past 3 years in the Midlands. These conferences have allowed UG and PG students to present (in poster or oral format), their research findings from their final year project work. The opportunity for students to present their finding to a peer group has facilitated cross University interaction and sharing of good research practice amongst staff for future student projects. It has facilitated incubator research which has allowed forensic providers to see a potential for collaboration with forensic science departments to increase the base of research in Forensic Science. It has also encouraged some graduates to consider and seek a research career in science. The opportunity to expose students to research at an early stage has had value-added effects upon their attitude to research and final year work generally.

**'Unlocking the Oxygen Storage Capacity of Ceria' - a research-linked learning resource and activity for final year MChem students at NTU and beyond**

***Paul Martin, Nottingham Trent University***

The learning resource covers important aspects of advanced surface science, physical chemistry and advanced techniques both experimental and computational. The activities combine research linked teaching with both a problem-based and context-based learning approach. The talk will outline this innovative case study resource and associated activities and will reflect on what has worked, and importantly, what has been learnt.

**Undergraduate Degrees with an Integral Research Year**

***Tony Clough, University of Surrey***

When we designed MPhys courses at Surrey (back in the nineties) we felt students should be exposed to as full as possible an experience of research.

The structure of these courses will be described, emphasising the incorporated Research Year. This allows students to spend a full calendar year working in a research group at one of many laboratories in the UK, Canada, the US and Europe.

**Training in Research Methods**

***Philip Bailey, University of Edinburgh***

In addition to their lecture courses, those MChem students choosing to remain in Edinburgh for their 4th year undertake a 40 credit point "Training in Research Methods" course building on the 3rd year transferable skills activities and providing preparation for the final year research project. The various components of this course emphasise practical/technical, literature, presentation, scientific writing and team working skills and bridge the gap between SCQF level 9 practical material in 3rd year and the level 11 research project in 5th year.