Using Student-Generated Content and Peer Support to Enhance Student Engagement and Learning

University of Manchester, 16th May 2012

Conference Room A/B, 2nd Floor, Schuster Building

The aim of this meeting is to share good practice with regard to ways in which students can be encouraged to take ownership of their learning and how students can learn by working with their peers. There is evidence which suggests that students' learning can be more effective when there is peer to peer interaction. Several peer-assisted learning techniques will be showcased and their effectiveness will be discussed in terms of the benefits to both the learners and also to their mentors. The workshop will also cover examples of student generated content such as the development of MCQ assessments and the writing of lab practicals. The invited speakers aim to give attendees the benefit of their experience of institutional and departmental programmes, and the student perspective will also be included. There will be opportunity for discussion with practitioners.

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There is disabled access to the conference room via the lifts. The meeting is organised by the Higher Education Group of the Institute of Physics in collaboration with the Higher Education Academy. There is no meeting fee for those in HE due to the generous grant support of the Higher Education Academy’s Discipline Workshop and Seminar Series.

Abstracts:

PASS (Peer Assisted Study Sessions) – The University of Manchester’s Approach

Marcia Ody, Teaching and Learning Manager and UK SI/PASS Certified Trainer
Dr. Maggy Fostier, Lecturer, Faculty of Life Sciences

PASS provides a group learning opportunity that uses the experience of trained higher year student volunteers (Leaders) to support and facilitate the learning of lower year students (Participants). The co-curricular sessions are voluntary and regularly timetabled enabling students to informally review material. The Leaders support students to find solutions to their problems themselves, through facilitated discussion and guided questioning.

PASS supplements core teaching activity (e.g. lectures and tutorials). The scheme supports active learning in an informal, friendly and fun environment. Whilst most PASS schemes traditionally support first year students, there is a growing number of schemes being developed for higher years.

This presentation will provide an introduction to the University of Manchester’s approach, exploring the aims and benefits as well as highlighting initial considerations for implementation.

What happens when you let students write their own MCQ assessments: a case study using Peerwise

Simon Bates, Ross Galloway, Physics Education Research Group, University of Edinburgh

I will present details of the implementation of PeerWise, a freely-available, online tool through which students can create their own multiple choice assessments and answer those created by their peers. We have integrated PeerWise into our introductory year 1 physics courses for the past two years, and this talk will introduce the system briefly and then discuss the necessity of good quality scaffolding activities for students prior to them working with the system independently. I will present quantitative data that shows a correlation between enhanced PeerWise activity and end-of-course attainment, for students of various abilities. I will also present details of final year undergraduate project work undertaken in our group to classify the quality of questions submitted by students. In contrast to other published studies, we find only a small percentage of submissions are questions based around factual recall, with a substantial fraction demonstrating higher order cognitive skills.

Student generated content and peer review in the laboratory setting.

Chris Dewdney, University of Portsmouth

Portsmouth has recently started a new degree in Applied Physics. The development of the degree has been supported by HE STEM and IOP. As part of the HE STEM funded project four students were employed for two weeks to assist in the development and testing of undergraduate laboratory practicals for use at level 4. I will discuss a number of observations on this process and their implications. The laboratory setting is also a natural environment for the use of "Action learning sets" and peer review. I will discuss some initial steps taken to formalise the use of peer learning and review in the laboratories.
Stimulating authentic learning experiences through a Peer Learning programme: An analysis of Irish undergraduate physics students

Jennifer Johnston, National Centre for Excellence in Mathematics and Science Teaching and Learning (NCE-MSTL), Physics & Energy Dept., University of Limerick, Ireland

Research supports the concept of involvement in college, the greater the student’s involvement, the greater the amount of student learning and personal development (Astin 1999; Bloom 1974; Whitman 1988). There is strong evidence from international research that Peer Learning, when implemented successfully, is effective. Peer Learning can be easily incorporated into the present structure of teaching sciences. It is cost effective and provides students with the opportunity to take responsibility for their own learning.

This presentation will focus a model of Peer Learning implemented in tutorials and support tutorials in Introductory Physics utilising undergraduate Peer Leaders at the University of Limerick. The Peer Learning programmes were evaluated through mixed methods. This presentation presents findings of the implementation and set up, lessons learnt from these ongoing projects, along with essential elements that need to be considered when utilising Peer Learning in physics.

Three Case Studies in Student Generated Physics Learning Content

Sam Nolan, University of Durham

Every educator learns from experience: teaching a subject deepens our understanding and appreciation of it. Therefore many see the creation of student generated learning content as essential in enhancing the student’s learning experience. However there are many risks associated with this approach: e.g.

- Will the content be correct?
- Will the content be accessible?
- How will the student react if the materials are criticised?

This talk will look at three case studies in student generated content in physics at Durham University. In the first, a student editable glossary of scientific vocabulary is used with the student to overcome the barrier to learning created by subject specific language. In the second case study, students who are veterans of the laboratory class are employed to develop interactive screen experiments to be used as pre-laboratory tasks. In the final case study, a 4th Year undergraduate has created innovative GCSE lesson plans which link core school curriculum topics to outreach materials at the cutting edge of scientific research. The advantages and disadvantages of these approaches will be evaluated and contrasted with more traditional teaching approaches.

Peer to peer tutorials – broadening the skills of undergraduate physicists

Peter H Sneddon, School of Physics and Astronomy, University of Glasgow

It is widely acknowledged that when a student reaches the end of their time at university, they need to be able to do more than just demonstrate a grasp of course curricula. They need a broad base of skills that can be turned to a variety of uses. One way that this skills-base has been broadened at the University of Glasgow’s School of Physics and Astronomy is through the use of “Peer to Peer (P2P) tutorials”.

P2P tutorials see honours students acting as tutors for students in years 1 and 2. Their role is to assist the less experienced students with their revision of coursework, as well as help them integrate into the School by providing a perspective of life as a physics student more relevant than anything an academic member of staff could give. In the scheme, the tutors demonstrate communication and teaching skills, as well as enhancing their own understanding and confidence in their own knowledge of the core concepts of the subject.
In this presentation, the results of an extensive evaluation exercise of the P2P will be discussed, focussed on the views of the tutors themselves, what they felt the benefits of the scheme was to them and how they felt their skills were improved.

**Using Peer-Assisted Learning in Maths and Physics in HE in Sweden and Russia.**

**Elena Luchinskaya,** Physics Department, Lancaster University/ Leeds Metropolitan University

In this presentation the opportunities for implementing a peer-tutoring system in mathematics and physics higher education in two contrasting settings are explored. The first setting is a traditional classroom environment with a teacher-centred educational process and the second one is a higher education environment where a range of student-centred teaching and learning methods has already been introduced. This study is part of an on-going collaboration between Sweden (University West) and the UK (Lancaster University).

To evaluate the students’ experience after a series of peer-assisted learning (PAL) sessions a questionnaire was distributed and in-depth interviews with the peer tutors were conducted. The analysis of the impact of PAL on the students’ learning experience showed that the majority of students positively evaluated their PAL experience. The students felt that they were more actively engaged with and more in control of the PAL process compared to traditional tutorials.

PAL evaluation from the academic staff perspective is also discussed. Our study demonstrated that the size of the groups, the timing and the number of PAL sessions are crucial for successful PAL implementation. The presentation concludes with a number of recommendations for using PAL in a variety of educational settings.

**Students asking for more work? Surely not! - Radio survey of the Milky Way**

**Samuel Richards and Glen Rees,** University of Hertfordshire

As students of the University of Hertfordshire, we get the opportunity to use the facilities at the Bayfordbury Observatory, which has six optical telescopes, a 115m baseline radio interferometer and a 4.5m radio dish. However, if students are not motivated to make the most of these facilities, they will inevitably go to waste. We will take a brief, yet hopefully entertaining look at what motivated us to take on more work, a concept that would reduce most students to tears. Using the 4.5m radio dish and in a solid 26hrs of observing, we carried out a full survey of the Milky Way’s disk that is visible from the Northern Hemisphere and created velocity-longitude plots. This project furthered our understanding of the galaxy in which we live and is one that can be used by future students as either a template for observations or as archival data.

**The Colorado Learning Assistant Program: transforming undergraduate education, and K12 Teacher recruitment and preparation in Science Technology Engineering and Mathematics.**

**Noah Finkelstein,** University of Colorado, Boulder

In response to substantial evidence that many U.S. students are inadequately prepared in science and mathematics, we have developed an effective and adaptable model that improves the education of all students in introductory undergraduate science technology engineering and mathematics (STEM) courses and increases the numbers of talented STEM majors becoming certified to teach in pre-college environments. We report on the Colorado Learning Assistant model and discuss its effectiveness at a large research university. Since its inception in 2003, we supported roughly 1,000 undergraduate Learning Assistants, have increased the pool of well-qualified K–12 STEM teachers by a factor of approximately 3, engaged scientists significantly in the recruiting and preparation
of future teachers, and improved the introductory college courses so that students’ learning gains are typically double the traditional average.

Next IOP HEG Meetings -

*Next sessions likely to be:* The Teaching of Thermodynamics (December), Outreach and the IOP Schools Outreach Support Network, Problem Solving