

LEARNING OUTCOMES AND CURRICULUM DEVELOPMENT IN PHYSICS

STEERING COMMITTEE MEETING 29 SEPTEMBER 2004

Present:

Professor Adrian Lee (AUTC)	Chair
Dr David Mills	Project leader
Dr Manju Sharma	Project Leader
Associate Professor Les Kirkup	Team member
Dr Michelle Livett	Team member
Associate Professor Richard Newbury	Team member
Dr Judith Pollard	Team member
Professor Marjan Zadnik	Team member
Associate Professor Bill Zealey	Team member
Dr Maria Hunt	Team member
Ms Michelle Scoufis	Team member
Mr Alberto Mendez	Project Officer
Dr Peggy Spratt	AUTC secretariat

Apologies

Associate Professor Michael Prosser	Team member
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AGENDA ITEMS

1.0 Overview of the morning's discussion

Dr Sharma gave an overview of the discussion that had taken place with the team during the morning. Writing has started on the project report and the team leaders, Manju Sharma, David Mills and Alberto Mendez will liaise with the working parties.

2.0 Report on Data Collection

Alberto Mendez reported on the data collection. All 34 institutions returned the questionnaires and much of the data from that source has been analysed.

From this initial survey, 9 institutions were chosen for in-depth study. The institutions chosen were selected in order to represent the variety of institutions across the higher education sector. The in-depth study involved interviews with Heads of Schools, separate focus groups with first year mainstream, first year service, third year and post-graduate students. Staff in Teaching and Learning units assisted with these focus groups. Interviews with graduates and employers are planned for October.

3.0 General Discussion re Stage 1.

Professor Lee asked the project team to identify results in the data analysis that have really stood out and/or are likely to influence the outcome. He pointed out that the report needs to engage directly with any issues that are identified and that strategies for tackling such issues should be considered at an early stage. The team identified the following:

- The response rate of 100% was exceptional and the project team members have been well received by departments;
- The large number of new approaches to teaching physics being taken in the sector, such as research-led teaching and learning and the use of electronic resources;
- Links with other disciplines such as applied degrees, medical degrees, material sciences and forensic science;
- The age of the academic community, many of whom are approaching retirement so there will be a lot of young staff coming into teaching;
- The rapid rate of change in the discipline which means that nearly all staff are regularly involved in developing courses; and
- Some departments are very small so they must have problems offering the range of units necessary for a full degree. If this trend continues, sharing strategies will be important.

The last point in particular led to some discussion which included:

- Academics regularly share in research and aspects of this model should be applicable to teaching and learning;
- Collaboration at the 'chalkface' needs to be considered although there are issues of competition between universities for EFTSU, particularly for honours and post-graduate students; and
- What strategies can be used to engage staff who show no interest in teaching.

Professor Lee mentioned the Teaching and Learning Performance Fund which is evidence of the importance placed by Government on teaching and learning. The funding that will be distributed through this fund will provide a very tangible incentive to universities to invest in strategies to enhance teaching and learning.

Professor Zadnik said that the emphasis now placed on teaching for promotions would be another incentive. In his University, promotions are now withheld if teaching is not of an acceptable standard.

Another strategy suggested was to encourage the Institute of Physics to put more emphasis on teaching quality in their course accreditation. It was pointed out that the Institute of Engineers is much tighter in its accreditation requirements and this might be a good model, especially as many Physics Departments teach engineers.

4.0 Discussion – Stage 2

Dr Mills circulated a paper on the Carrick Institute and indicated that the team would re-work the Stage 2 submission to change some of the emphasis and to revise the budget.

The major budget item is the project officer salary which, together with on-costs, has increased by about \$13,000 since the proposal was first submitted in 2003. The team noted that it will not be possible to proceed to Stage 2 unless they can employ a project officer with relevant knowledge and experience.

4.1 Dissemination Strategies

The team agreed that 'local context' will be important in devising dissemination strategies as involvement of people at the institutional level will encourage ownership and greater take up of the stage 1 results.

Building on and strengthening existing networks is going to be important. AIP education and Uniserve Science were mentioned in this context.

Strategies such as publications, colloquia, resources website, a brochure/catalogue to show academics what is available and engagement of staff through staff development courses were mentioned. It will be important that any strategies are carefully targeted..

There was discussion about the importance of having rewards for good teaching and collaboration. One suggestion was encouragement for time release of key staff so they could dedicate themselves to acting as change agents.

Dr Pollard mentioned the National Science Foundation model that has a long history of funding projects. Their dissemination effort is concentrated on the most successful projects.

Other suggestions included:

- Attaching status to teaching and learning workshops;
- Encourage staff, departments and institutions to use/approve study leave provisions to enhance teaching and learning;
- Develop post-graduate research proposals in the area of Physics education; and
- Provide time release for staff who want to expand their teaching experience and use these vacancies to give teaching experience to post-graduate students who aspire to academic careers.

While all these suggestions were noted, the team noted that more thought should be given to the matter of bringing about systemic change.

Professor Lee asked the project team to come up with reasons why the project should proceed to stage 2. The following suggestions were put forward:

- Stage 1 of the project has shown that some very good things are happening in physics and it is important to share these;

- The results from stage 1 go beyond physics as links with other disciplines continue to develop. It will be important to think about and plan for this;
- Departments are adapting now to rapid change as a result of new disciplines like nanotechnology so the time is right for incorporating the results of stage 1;
- Many of the current cohort of academic staff will be retiring in the near future so the project is timely in terms of influencing the next generation of university teachers;
- It is important to connect with employers and high school teachers, both to tell them what physics has to offer and to find out what they are looking for in university physics courses;
- The personal communication that will be possible through stage 2 will do more to bring about change than publication of the report from stage 1;
- The team wants to set in train a process for sustainable change and will watch with interest for the AUTC projects on dissemination in order to capitalise on their findings;
- It is important to build on the networks that have been set up. The project has a contact person at each institution and has been proactive in providing summaries and engaging departments. Departments have responded with feedback.

The Steering Committee meeting concluded at this point but the project team continued with further discussion.