Final CALT report on 2013 University Teaching Development Grant

Recognising good learning opportunities: using and extending the Outreach Certificate

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Overview

The University of Otago's Division of Science developed a Science Outreach Certificate as a way for undergraduate and postgraduate students to gain recognition for outreach work, and related community-engaged learning and teaching activities (CELT), that they voluntarily undertake whilst studying at the University. This supports the overarching goals of the University's Teaching and Learning Action Plan (Interim 2011–2012 plan, Goal 2). There are more than 90 students from Sciences registered on the scheme and considerable interest from students and staff in other Divisions to work with Sciences to extend this application. Senior staff in the Division of Sciences have agreed that in principle the system should be extended to other Divisions. This provides an exceptional opportunity for research to evaluate several aspects of its outreach provision and after much debate three main objectives were chosen:

Objective 1: enable CELT practitioners develop a better understanding of what university teachers and students, in Sciences, gain from their outreach and related CELT activities

Objective 2: Support the migration of the Outreach Certificate to other Divisions and research its implementation there

Objective 3: Start the process of documenting the range of outreach and related CELT activities taking place in the University of Otago.

Introduction

Engaging in CELT has been shown internationally to enhance the acquisition of Graduate Attributes: students acquire skills in communication, team work, personal organization, planning, and time management, that are not necessarily learned in formal classwork. Researchers involved in a local CELT projects, such as those run by Marine Science and Chemistry, identified benefits to postgraduate learning, suggesting improvements in confidence, interdisciplinary perspectives and cultural understanding. International

experience in outreach, service learning and related CELT activities (see in particular http://www.servicelearning.org/bibliographies) suggests the benefits also relate to the disciplinary learning and understanding undertaken by students at university. These additional skills fit well with the university's graduate profile, and crucially, are the skills employers look for. In order to make this skill acquisition explicit for employers, and to demonstrate the value of this extra work from the Division's perspective, the Science Outreach Certificate (SOC) was initiated as an extension of a fledgling system in the Chemistry Department.

There appeared to be many unknowns in this field of enquiry since the many aspects of outreach at Otago had not been fully evaluated; it was not known whether student participants or Otago University staff value the experience, although we were aware that perceptions of the value of CELT are diverse. There were also a range of technical and developmental issues to address, extending the on-line administration of the Outreach Certificate to other Divisions and to determine the benefits, or otherwise, of the programme to students, staff, employers and the University.

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Objective 1:

After initial focus groups involving student participants were used to design interview processes. The semi-structured interviews were conversation-like, and whilst the researcher asked particular questions of all participants, the direction of the conversation was led by participants' comments. Questions attempted to elicit facts about their community engagement (where, when, what, with whom) and perceptions of benefit, of the role of the SOC, and of key reasons for students to be involved.

University staff members known to be community-engaged in one way or another were also approached, to support our exploration of how the practice is perceived. Nineteen participants volunteered to take part in semi-structured interviews, variation in this sample group was notable in terms of participants' role in the university, the different Divisions and departments represented, and near-even gender split. A common set of questions to elicit how interviewees made sense of their educational practices were devised. At any point during an interview, interviewees could divert conversation in a direction meaningful to them. On occasion the interviewer also needed to ask a range of unstructured questions or prompts to elicit a greater sense of how interviewees responded to community engagement on a personal level and in their educational practices.

Objective 2:

A series of meeting were held with invited members of departments from outside of Science. At these meeting the SOC was outlined to staff holding a variety of roles in other Divisions. Feedback from ensuing meetings within departments seem to indicate a positive reception of the idea yet an acknowledgement that the actual requirements will need tailoring to existing programmes.

Objective 3:

A questionnaire designed to collect data about CELT projects taking place within the Division and circulated to a wide variety of the projects. This data was then analysed with a view to a graphical representation that could be queried in an on-line environment. This part of the project was an initial process and thus the process is seen as on-going but represents the outcome from several cycles of presentation and critique from CELT practitioners in the wider special interest group.

Outputs so far

Due to the extended nature of this project outputs will continue to be generated over the next year. Currently one paper from ***Objective 1*** 'Higher education students' perspectives on what they give and gain during community engagement' is under review, with the journal Teaching in Higher Education. Another paper 'How university teachers conceptualise community engagement' is being prepared for submission to a European based higher education journal. A third paper is in planning that draws on data from both student and staff interviews.

For ***Objective 2*** The initial visualisation from this objective may be viewed at http://hedc.otago.ac.nz/hedc/celt/ (password is celt2014). A paper is planned for a European CELT journal as part of the process for the conference presentation (see below).

Outputs for ***Objective 3*** are very much in the hands of others outside the Division of Sciences. However, it seems likely that similar certificate schemes will be taken up at some stage, in addition the conversations involved in the process have brought new members into the wider Special Interest Group that the researchers are a part of.

Conferences/presentations

Data from Objective 1 will be presented at the meeting of the Science SIG of NZARE during SciCon 2014 and as part of an invited contribution to the Science Education for New Civic Engagement (SENCER) summer institute at the University of North Carolina in August.

The outcomes and processes used in Objective 2 will be presented at the 31st annual ascilite conference (http://ascilite2014.otago.ac.nz/) in Dunedin during Nov 2014.

A presentation of some or all of the Objectives will be presented as part of the next HEDC "Spotlight on Teaching and Learning" Colloquium.

Results and Implications

These results are a general summary of the findings reported in the two papers from Objective 1 mentioned above:

Initial analysis of the student data identified five emergent themes: self-reflection, knowledge and learning, CELT at the University, networks and employment pathways. Further analysis showed that these could be identified as belonging to three overarching key themes:

- relationships (how students regarded the relationship between them and community);
- learning (student perceptions of the learning that they achieve);
- networks (student perceptions of the nature and functioning of the social and learning networks that develop during and after community engagement).

Students appreciate aspects of their learning that are enhanced by their CELT experiences, their perceptions focus on rediscovering or restructuring basic knowledge and enhancing academic skills such as presentational or communication abilities. Beyond these straightforward learning attributes, students recognise their increased self-efficacy and both empathy with and broader responsibility towards wider society. Students also recognise some personal benefits that accrue from community engagement, particularly those that relate to networks or to their increased ability to, or tendency to, network. Educationally speaking, all of these changes could be described as learning but students do not necessarily identify these changes as learning, nor do they necessarily identify the contribution made by the community towards them, which is in contrast with some of the staff conceptions of CELT (see below). Notions of co-construction of knowledge, central to social constructivism theories and higher order learning, are not widely understood or appreciated within this student group in terms of their CELT. Another result, that also provides a possible explanation for aspects of these perceptions, is that students may, in general, be viewing their community-engagement as an expert-novice interaction, with them in the position of expert.

Similarly, many of the University staff interviewed saw CELT as an expert-novice interaction, but also invoked the view of universities as 'critic and conscience' of society. This recognition moves the activity beyond CELT as a service component of staff employment and into the role of a science advocate who is a member of society and who at the same time is being informed by society. As mentioned above, students show awareness of this but don't recognise the learning that they are doing in such cases, pointing to a possible disparity between staff organising the activity and the students taking part in it. Activities involving this type of role in line with the Universities own expectations of students taking a deep approach to learning, however, they lack the aspect of reflection and self awareness that could make it such a powerful educational activity. Some staff do recognise the value of CELT to developing an active learning approach which encourages students to be aware of their learning and development. This approach to CELT appears to be of great value to students and their graduate attributes; the literature suggests active learning as being more likely to dispose students towards lifelong learning and a more societal engagement and that 'participatory learning' is the most conceptually complete understanding of how university students develop graduate attributes.

Yet to embed community engagement as pedagogy in the University requires more than a minority of committed staff; objective three identified a vast amount of independent CELT within the Division of Sciences that can be described as advocacy with little CELT as active learning pedagogy. Interviewees noted that while their conception of community engagement was as an active and morally-just approach to pedagogy and highly beneficial to students, university and community, they identified a number of challenges to establishing and maintaining such an approach. In the first instance, they described how building and maintaining relationships with community partners had placed demands on their workloads. If the effort and professional development involved in establishing community engagement as pedagogy is not institutionalised within University systems the likelihood of pedagogical transformation will be reduced, even if the outcome of diverse learning opportunities for students is widely accepted. The workload demands created by developing community relations and partnerships, while meaningful and intrinsic to learning and teaching for some staff, may continue to discourage others.

Such workload demands are a challenge that the University will need to address given the increasing requirements by funding bodies and the National Science Challenges for scientists to communicate with communities. It should be seen that the potential for rich, diverse and high quality learning by community-engaged university students involved in activities around National Science Challenges will be best achieved when the community is well-established as a partner in community-engaged learning and teaching rather than as a recipient. In turn, this may require university teachers to re-evaluate their own role in supporting the educational development of their students in wider context, for example by thinking about questions such as:

- How do university teachers perceive the student-teacher relationship at university? Is it an expert-novice (or teacher-centred) relationship?
- How far from the ‘ideal’ student-centred learning paradigm are universities in New Zealand?