



Teaching for Learning Network

Self-efficacy Questionnaire

Rationale

An important aspect of the pedagogy program being carried out at the Department of Plant Sciences, University of Cambridge, is assessment of the impact of evidence-based development of small-group teaching practices. Evidence has been collected to indicate changes that will have the most positive impact on student learning but it is also imperative as part of any research program, to have a robust system for analysis of the effects of those changes. To this end, a range of assessments which span academic achievement, attitudes to specific supervision practices and also the self-efficacy beliefs of students, will be compared before and after implementation of these changes.

A large body of evidence will be gained from comparisons of academic grades and practice-value gaps associated with supervisions. However, the overall aims of any academic course should include an increase in the confidence of a student to be successful in that particular academic field. The Natural Sciences tripos at the University of Cambridge includes courses at the Department of Plant Sciences. The overall aim of this degree course is to produce graduates of the quality sought by industry, the professions, and the public service, and to provide academic teachers for the future. This must surely require that students complete their degree with a high level of confidence in a range of academic abilities and transferable skills.

Procedure

Self-efficacy beliefs lie on several different levels, varying in psychological character from general self-efficacy which appears to be interchangeable with self-confidence in one's competence broadly defined; to domain self-confidence to perform the tasks involved in pursuing a career; and to more narrowly defined domain confidence to perform specific tasks (Lucas, 2005). With this in mind the plant sciences survey contained a range of self-efficacy questions to include general scientific self confidence and also domain specific questioning. The domain specific questions were chosen to range from theories that are generally perceived (by teachers) to be hard for students, to those that are normally easily integrated. In addition, questions were tailored to query student self-efficacy beliefs associated with a number of threshold concepts identified within the course. One question was chosen to test students for the "halo effect" whilst giving survey answers. This question was based on a topic that had not been covered as part of the course. Submission of a



confident score for this question would indicate lack of thought from students or, a disinclination to admit their failings.

Data Collection and Analysis

This survey could be used at the beginning of the academic year and repeated at the end just after completion of exams. Ostrakon is used as online survey software, managed by Caret at the University of Cambridge. This software sends out an email to students with links to an online questionnaire. Ostrakon outputs reports summarising the results as a PDF or HTML file, or as raw data for analysis in Excel (2003). SPSS can then be used to carry out T-tests as required.

Impact, Engagement and Application

The data produced from this type of questionnaire gives a simple overview of how confident students are with a range of different aspects of academic study. Unusually low self-efficacy levels for a specific item indicates an area in which additional support may need to be provided. This may occur for a general item such as communication skills or a specific topic in the course that students find troublesome. Therefore analysis of change in self-efficacy levels before and after completion of a course will demonstrate how teaching during the year benefits student self-efficacy, and where additional pedagogical initiatives should be directed.