Accreditation: Guidance for final year projects

The type of project

The project must be the pinnacle of the course, drawing on and extending the students' experience at previous levels. It should be an independent, first-hand experience of performing science, where students can (1) frame their research within the context of existing knowledge, (2) develop and test ideas or hypotheses to explain observations, (3) execute and manage objectives, (4) critically analyse data and (5) communicate the results of their study with reference to information sources.

Many types of level 6 projects can be devised that can fulfil the criterion for a capstone experience (e.g. laboratory or field-based, pedagogic, computer-based, socio-biological and biogeographical research). There may also be different approaches such as a biotechnology-business study. The important factor in deciding whether these represent a capstone project is the presence of independently sourced information that is critically analysed. For guidance, some examples other than traditional laboratory or field projects include the following.

1) Informatics projects. These may use computer-held, information databases that are ecological, molecular, physiological or taxonomical in nature, which can be investigated using software to identify trends or relationships or processes. In this type of project the data already exists in one form but it has to be found, manipulated and analysed so that conclusions may be reached.

2) Science education projects. These may create new ways of imparting knowledge and will include analysis of the reaction to, or success of, a particular pedagogic approach or method.

3) Questionnaire-based projects. These may find out what is known or not known, acted on, or understood about a process or treatment. They may test an idea by asking and analysing the answer to questions. A hypothesis is required, with ethical or other matters considered and response data generated and analysed.

This guidance note is cautious about use of the word "dissertation" as it is used differently in higher education institutes. It may for example be a term used to describe the submitted written report following a period of laboratory/field research or it could be used to describe a literature review. Panel members will need to be confident about how an applicant uses the term and may need to specifically seek clarification when considering an application.

Literature-based reviews of a topic do not qualify as a capstone project if critical analysis of data is absent. Although students are expected to write literature reviews of subjects, this activity alone is not considered sufficient for the student to demonstrate the attributes

needed to perform a project. Accordingly, literature-based projects should include data mining, analysis and hypothesis testing in addition to a literature review.

An example of a literature-based project that meets the Society's criteria is meta-analysis. These use statistical techniques to combine results from independent researchers; they are frequently applied for example when investigating multiple studies on the clinical effectiveness of a healthcare intervention. It is important to distinguish meta-analysis from a critical analysis of a series of research papers, where there is no manipulation or analysis of data, that is what is expected from a literature review. If students are being offered meta-analysis projects it is likely that they will have received appropriate education in the statistical methods appropriate.

Extent of the project

The project is expected to be an "extensive" piece of work, and the Society interprets this to mean that it should be equivalent to, at least, a quarter of final year full-time study (30-credit points or more). The project need not be limited to one module, although this is probably the most common way it can be delivered.

Individual or group projects

Independent work is an important aspect of the capstone project. Independence is demonstrated easily when a project is performed individually, but this does not necessarily mean that projects performed in a group setting fail to meet this criterion. It is possible for a number of students to follow the same line of enquiry, or be using the same methods, or be co-supervised, or perform a group environmental study, but they each generate and analyse data independently so that unique reports are produced. In which case, the projects meet the accreditation criterion.

It is important to understand that team working does not mean that every member of a team does exactly the same tasks. On the contrary, team working (as emphasised by employers) involves individuals with their own areas of expertise combining on a group-based task with the individuals' contributions clear.

Examples of projects that are "individual" and *do* meet the criteria, but have a team ethos are where students:

- investigate the same receptor but with a different antagonist
- study an enzyme but under different conditions
- use a DNA database but investigate different mutations
- work on the same medicine but from different angles such as research and development, health and safety, or patient information
- investigate the same environment but from different perspectives.

Projects that would *not* meet the criteria are those where students all work together generating just one set of data, submitted as one written report.

Range and choice

It is likely that an institution will provide a range of project types for their students. It is a requirement for accreditation that all projects offered to students meet the accreditation criteria. This ensures that all students can demonstrate the threshold levels for the learning outcomes associated with the project. The process for the allocation of projects should be clearly stated, matching the career aspirations of the students and their ability. Where a choice of project type is available, this process should ideally ensure that all students who wish to undertake a laboratory or field-based project should be able to do so. This position can be achieved by an institution by ensuring that the range of projects offered have equal status, and are equally relevant to the students and the programme

NB: To be read in conjunction with the Accreditation Handbook