

## **Some Issues of Interest from British, Dutch and American Documentation**

### **UK**

The UK's Quality Assurance Agency for Higher Education publishes a variety of 'Benchmark Statements' that are designed to help institutions of higher education to design educational programmes that have regard to the needs of educational quality and the needs of industry (and indeed society), in terms not only of their aims and content but of the key skills to be developed by students. These Benchmark Statements are not prescriptive, but it is expected that British institutions will have regard to the guidance contained within them when developing their degree programmes. In the QAA's own words (common text in the Preface to all Benchmark Statements),

“Subject benchmark statements provide a means for the academic community to describe the nature and characteristics of programmes in a specific subject or subject area. They also represent general expectations about standards for the award of qualifications at a given level in terms of the attributes and capabilities that those possessing such qualifications should have demonstrated . . . Subject benchmark statements allow for flexibility and innovation in programme design and can stimulate academic discussion and debate upon the content of new and existing programmes within an agreed overall framework.”

There is a considerable array of social science Benchmark Statements, and to review them all would add little to the notes below, which relate to the integrated Benchmark Statement on Engineering (all sub-fields, first and second cycles) and the two Benchmark Statements on Business and Management subjects (one each for first and second cycles).

### **Quality Assurance Agency for Higher Education (2006) *Subject Benchmark Statement: Engineering, Mansfield, QAA.***

The Engineering Benchmark refers to three core elements of engineering education – scientific principles, mathematics and what is termed 'realisation'. All engineering degrees should address these areas.

It is in relation to 'realisation' that the issues of creativity and design in engineering education are addressed, indeed the QAA defines 'realisation' as the key element that distinguishes engineering from the natural sciences.

The benchmark statement distinguishes between the first and second cycles, and, as will also be seen below in the discussion of Dutch documentation, does so with reference to primarily qualitative judgement-based criteria.

Based on the three core elements of engineering degrees noted above, the QAA suggest that we can distinguish the second cycle qualification from the first in two ways:

- 1) In respect of depth and focus – by allowing specialisation in narrower fields (MSc programmes)

2) In respect of depth and breadth (by which is meant increasing industrial applicability of learning – MEng programmes)

Thus, from our perspective, the key distinguishing element will most likely to relate to issues of **depth**, although we will also need to bear in mind the issues of specialisation and of increased industrial applicability as we prepare our module materials.

With direct reference to the role of capstone projects, the Benchmark Statement notes that all engineering graduates should follow a programme of study where (p 7)

“For students to achieve a satisfactory understanding of engineering the expectation is that they will have significant exposure to hands-on laboratory work and substantial individual project work. The curriculum should include both design and research-led projects, which would be expected to develop in graduates both independence of thought and the ability to work effectively in a team.”

This characterisation seems to allow for significant flexibility in the shape of capstone projects, although further guidance is provided on second-cycle degrees, which should provide for (p 7)

“ . . . students to have greater capacities for independent action, accepting responsibilities, formulating ideas proactively, dealing with open-ended and unfamiliar problems, planning and developing strategies, implementing and executing agreed plans, leading and managing teams where required, evaluating achievements against specification and plan, and decision making.”

Again, it is critical to note the emphasis on *greater capacities*, i.e. first cycle students will also display these attributes, just in a less-well-developed manner.

**Quality Assurance Agency for Higher Education (2007) *Subject Benchmark Statement: General Business and Management, Mansfield, QAA.***

With direct reference to the role of capstone projects, the Benchmark Statement notes that all first cycle graduates in the fields of business and management should have followed a programme of study which will allow them to demonstrate (p 4)

“Ability to conduct research into business and management issues, either individually or as part of a team for projects/dissertations/presentations. This requires familiarity with and an evaluative approach to a range of business data, sources of information and appropriate methodologies, and for such to inform the overall learning process.”

Once again, as in the case of engineering subjects, there is scope for students to work either individually or in teams and there appears to be a message that research based on analysis of secondary sources is acceptable.

**Quality Assurance Agency for Higher Education (2006) *Subject Benchmark Statement: Master's Degrees in Business and Management, Mansfield, QAA.***

This Benchmark Statement distinguishes between first cycle and second cycle programmes in the business and management subjects as outlined below (pp 1-2)

“Master’s degrees add value to first degrees by developing in individuals a critically aware understanding of management and organisations, and assist them to take effective roles within them. The purpose of these degrees is fourfold:

- The advanced study of organisations, their management and the changing external context in which they operate
- Preparation for and/or development of a career in business and management by developing skills at a professional or equivalent level, or as preparation for research or further study in the area
- Development of the ability to apply knowledge and understanding of business and management to complex issues, both systematically and creatively, to improve business and management practice
- Enhancement of lifelong learning skills and personal development so far as to be able to work with self-direction and originality and to contribute to business and society at large.”

Once again, as with engineering there is a suggestion that the second cycle is to be distinguished from the first primarily as a consequence of **depth** of learning (advanced study).

With direct reference to the role of capstone projects, the Benchmark Statement notes that all second cycle students in the fields of business and management should follow a programme of study where (p 7)

“There should be integration between theory and practice by a variety of means according to the type of degree and mode of delivery . . . A dissertation or project can be particularly important in this context.”

This again suggests (as with the Engineering Benchmark) that the second cycle in some way requires increasing industrial applicability of learning.

## NETHERLANDS

Work has been undertaken in the Netherlands by a group of technical universities to enhance and operationalise the Dublin Descriptors with a view to improving their own educational offerings. This work has been summarised in the document cited below.

**Meijers, A et al (2005) *Criteria for Academic Bachelor's and Master's Curricula*, 2<sup>nd</sup> ed., Eindhoven University of Technology.**

These Dutch criteria for first and second cycle degree programmes were developed inductively from analysis of documentary sources (policy documents etc.) and of actual degree programmes (initially those offered at the Eindhoven University of Technology). The criteria have subsequently been subjected to a cycle of testing and revision (including at other institutions in Delft and Twente) and have now been adopted by all three Universities. Partial acceptance of the criteria has also been achieved in Nijmegen. As the criteria have been developed within the technical university sector (based on analysis of engineering and management provision etc.) they are of interest as regards the work of the Capstone Project Team, although the seven 'sets' of criteria developed (below) are unlikely to be applicable in subject areas such as humanities, which lack the necessity for clear empirical underpinning.

The seven 'sets' of criteria, which are fully elucidated over pp 10-22, address,

1. Disciplinary competence
2. Competence in research
3. Competence in design
4. Systematic methodological knowledge / skills
5. Intellectual skills
6. Communication and co-operation competences
7. Awareness of cultural / spatial / temporal context

Each 'set' of criteria is further broken down into two sub-sets – one sub-set for the first cycle and one sub-set for the second. The degree of detail provided is considerable, and this is a significant source of information and ideas for the Capstone Project Team.

To summarise here however, the Dutch partners see the distinction between the first and second cycles in a similar way to the QAA, i.e. with the focus being on issues of depth (extension) and the degree to which graduates are able to readily engage in the application of their skills and knowledge, expressed as follows,

“The Master's competences should be interpreted as an extension of the Bachelor's competences . . . Master's competences mostly have an attitude aspect. It is not sufficient for a Master to know or to be able to do something – he or she must also have the attitude to use that knowledge or skill in relevant settings.” (p 6)

## USA

Further to the distribution of the American article on Capstone assessments (Berheide, 2007) in Barcelona, a number of the articles and papers cited therein had been gathered and considered. Some of these were wholly pertinent to the work of the Capstone Project Team, some partly relevant and some not.

The single most important thing to note is that in the USA the ‘capstone’ may or may not involve a dissertation / thesis / project. Sometimes it does, but a ‘capstone’ can also be what we would more commonly regard as an ‘integrating module’ and can be assessed by a variety of means, including formal examinations (such integrating modules certainly used to be standard in Scottish Universities, although less-so now). The concept of ‘capstones’ seems to be loose and the term ‘senior thesis’ seems to be in regular use, although again this is far from universal.

Below are notes that relate to the key issues to have been drawn-out from these papers. References are arranged

### **Weisler, S *et al* (2006) *Senior Thesis Assessment Project*, Hampshire College.**

This source was not listed on Berheide’s (2007) reading list, but may in fact provide the most relevant information of all of the American sources reviewed, and records the results of a small project undertaken by four institutions in the USA which had involved developing a common assessment framework for theses in four subject areas (cognitive sciences, humanities, natural sciences, social sciences). Although this project involved humanities and was solely focused on assessment, the overlap with the work of the Capstone Project Team is palpable. It will probably make most sense to make contact with this team in order to open discussions on potential Atlantis bid ideas in the first instance.

The Senior Thesis Assessment Project was based on an examination of 81 theses across the four subject areas and the four institutions, and involved developing and refining a common assessment framework. The main conclusion of the project was that the common assessment framework developed

“ . . . appears to work well for all research-based disciplines (although something different will be needed to evaluate creative and autobiographical writing, along with other creative and performing arts.” (p 12)

In other words, the conclusion is supportive of the Capstone Project’s approach in terms of its focus on empirical subjects and its exclusion of humanities etc. from the outset.

**The final version of the common assessment framework developed can be found on pp 3-4 of the file “SeniorThesis.pdf” which is distributed with this document and which has been uploaded on to the Moodle site.**

**Banta, T (2004) *Assessing Outcomes of Undergraduate Research Programs*, in Assessment Update 16:4, pp 3-15.**

In this brief editorial piece, Banta defines a range of generic Learning Outcomes, as below, which overlap with those identified as part of the Capstone Project:

1. Communication skills
2. Disciplinary expertise
3. Critical thinking abilities
4. Knowledge of the process of doing research

This core list is supplemented by a set of attributes that one would wish to develop in students, as part and parcel of doing a Capstone Project:

- Initiative
- Self-discipline
- Confidence
- Integrity
- Perseverance
- Passion

**Jervis, K and Hartley, C (2005) *Learning to Design and Teach an Accounting Capstone*, in Issues in Accounting Education 20:4, pp 311-339.**

Jervis and Hartley define the purpose of first cycle Capstone modules as being,

“ . . . to integrate the curriculum, thereby allowing students to make connections between course content, skills learned, and applied contexts . . . A second purpose is to provide students with an opportunity to reflect upon their college experience. Finally, a third purpose is to prepare students for graduate work and for the professional workplace.” (p 313)

They further expand upon this statement purpose with a list of ten ‘goals’ for Capstone modules, of which the first eight may be of most interest for our purposes, with numbers nine and ten of tangential rather than core interest. This list of ten goals is reproduced overleaf from p 314 of the article for easy reference.

Finally, the authors make a note in relation to methods of assessment for Capstone modules (p 320) which were found to be (in order of frequency, at least as regards accounting-related Capstones in the US)

1. Viva voce
2. Individual dissertation
3. Group project

This has similarities to our own findings in relation to Capstones in general in Europe.

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**EXHIBIT 1**  
**Senior Year Experience Goals (Cuseo 1998) Used as**  
**Capstone Course Goal Survey Items (Henscheid 2000)**

1. Promoting the coherence and relevance of *general education*.
2. Promoting integration and connections between *general education* and the *academic major*.
3. Fostering integration and synthesis *within the academic major*.
4. Promoting meaningful connections between the *academic major* and *work (career)* experiences.
5. Explicitly and intentionally developing important student *skills, competencies, and perspectives* that are tacitly or incidentally developed in the college curriculum (for example, leadership skills and character and values development).
6. Enhancing awareness of and support for the key personal *adjustments* encountered by seniors during their *transition from college to postcollege* life.
7. Improving seniors' *career* preparation and *preprofessional* development, that is, facilitating their transition from the academic to the professional world.
8. Enhancing seniors' preparation and prospects for *postgraduate education*.
9. Promoting effective *life planning and decision making* with respect to practical issues likely to be encountered in adult life after college (for example, financial planning, marriage, and family planning).
10. Encouraging a sense of *unity and community* among the senior class, which can serve as a foundation for later *alumni networking* and future *alumni support of the college*.

**Kelly, M and Klunk, B (2003) *Learning Assessment in Political Science Departments: Survey Results*, in Political Science and Politics, Vol 36, July, pp. 451-455.**

In a project that involved the analysis of undergraduate education in 213 political science departments in the US, the following skills were listed (p 452) as being those which are key to the assessment of first cycle students. The list is presented in rank order, with reference to the *frequency* of occurrence rather than to *weight* or *emphasis* attached to them.

- 1) Writing skills (57.1 %)
- 2) Critical thinking (55.7 %)
- 3) Knowledge of main subject theories/analytical approaches (54.0 %)
- 4=) Knowledge of theories/analytical approaches *in specific subfield(s)* (46.0 %)
- 4=) International dimensions (46.0 %)
- 6) Design/conduct research (40.8 %)
- 7) Reading skills (36.3 %)
- 8) Quantitative approaches (35.5 %)
- 9) Normative approaches (31.3 %)
- 10=) Presentations skills (30.7 %)
- 10=) Information technology skills (30.7 %)
- 12) Ethnic/gender/cultural dimensions (26.5 %)
- 13) Practical experience (22.2 %)
- 14) Knowledge of theories/analytical approaches *in related subject areas* (15.6 %)
- 15) Other (8.0 %)

**PLEASE SEE MORIARTY (OVERLEAF) FOR COMPARISON**



**Moriarty, L (2006) *Investing in Quality: The Current State of Assessment in Criminal Justice Programs*, in Justice Quarterly, 23:4, pp 409-427.**

The work of Moriarty builds on the findings of Kelly and Klunk above, and provides the reader with comparative data from the analysis of undergraduate education as delivered through 122 criminal justice programmes in the US. Moriarty used a broadly similar research instrument as Kelly and Klunk, although the original list of fifteen variables had been amended to sixteen by the inclusion of two new elements (interpersonal skills and general management skills) and the removal of the 'international' criterion. The following skills were listed (p 421) as being those which are key to the assessment of first cycle students in criminal justice. The list is again presented in rank order, with reference to the *frequency* of occurrence rather than *weighting* attached to these.

- 1) Critical thinking (95.9 %)
- 2) Writing skills (88.7 %)
- 3) Knowledge of main subject theories/analytical approaches (87.6 %)
- 4) Knowledge of theories/analytical approaches *in specific subfield(s)* (74.2 %)
- 5) Interpersonal communication skills (70.1 %)
- 6) Ethnic/gender/cultural dimensions (69.1 %)
- 7) Normative approaches (66.0 %)
- 8=) Presentations skills (54.6 %)
- 8=) Information technology skills (54.6 %)
- 10=) General management and administration (49.5 %)
- 10=) Practical experience (49.5 %)
- 10=) Reading skills (49.5 %)
- 13) Quantitative approaches (44.3 %)
- 14) Design/conduct research (41.2 %)
- 15) Knowledge of theories/analytical approaches *in related subject areas* (36.1 %)
- 16) Other (10.3 %)

**Rowles, C et al (2004) *Toward a Model for Capstone Experiences: Mountaintops, Magnets, and Mandates*, in Assessment Update 16:1, pp 1-15.**

The paper by Rowles *et al* provides the reader with information on an attempt to develop a generic framework for Capstone experiences at Indiana University – Purdue University Indianapolis (IUPUI) i.e. across 20 academic schools that serve a student population of approximately 30,000. As a consequence, the framework in question was very general indeed, as it had to cover arts and humanities as well as subjects with an empirical basis. As can be seen from the title, the authors classified Capstones as *Mountaintops* (essentially interdisciplinary modules), *Magnets* (basically disciplinary modules) and *Mandates* (where the module had been designed to meet the agenda of e.g. a professional body).

In essence, the endpoint reached was that the initial goal (of commonality) was only met in a very general way and that,

“Firstly there could be no overly prescriptive plan for capstone experiences, given the programmatic diversity of the campus. Second, the culture, values, structure and financial operations of the campus support decentralized, discipline-based decision-making, and these conditions would need to be respected in the development of capstones.” (p 13)

Hopefully the more modest aspirations of the Capstone Project Team, to develop a common framework, that can subsequently be amended for application in a variety of national settings and empirical subject areas, will result in greater success than in the case of IUPUI.

That said, there was some interesting evidence of truly interdisciplinary Capstones being implemented (and working!) at IUPUI presented by the authors which, as noted above, they refer to as *Mountaintop* modules (p 13).

“Mountaintops refer to capstone experiences that are interdisciplinary or multidisciplinary, in which students from two (or more) disparate majors ascend to the capstone experience from different, unique disciplinary perspectives, coming together at the summit; essentially, this is a capstone experience that makes use of the rich diversity of disciplines . . . Students in English were paired with computer technology students to envision, develop, present, and evaluate Web-based projects, cross-pollinating one another’s learning with their respective disciplinary expertise. This capstone mirrored the approach in real-world organizational settings, in which individuals from differing points of view must work together and apply specific expertise in the execution of a project.”

### **Further Reading Undertaken**

Antal, K *et al* (eds) (2006) *Generation: Dissemination of Results and Best Practices from Raising the Profile of Erasmus Mobility*, Budapest, Tempus Public Foundation.

Assessment Update 16:1 (Jan-Feb 2004), Special Issue on *Capping off the Curriculum*.

Bachand, D *et al* (2006) *A Monitoring Report to the Higher Learning Commission on Program Assessment*, General Education Assessment and Diversity, Saginaw Valley State University.

Berheide, C (2007) *Doing Less Work, Collecting Better Data: Using Capstone Courses to Assess Learning*, in Peer Review, 9:2, pp. 27-30.

Beyer, C (2001) *Assessment in the Majors*, University of Washington.

Department of Sociology (2006) *Assessment of Undergraduate and Graduate Programs in Sociology*, University of Wisconsin Milwaukee.

Leach, M and Lang, G (2006) *The Not so Stony Path to Program Assessment and, Along the way, Transforming a Senior Capstone Seminar in Anthropology*, University of North Dakota.