Socrates Erasmus Curriculum Development

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Capstone Module Project

Report on Phases 1 – 5

Data Gathering & Data Analysis

October 2006 – September 2007

November 2007 – *post-Barcelona* - FINAL

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INTRODUCTION

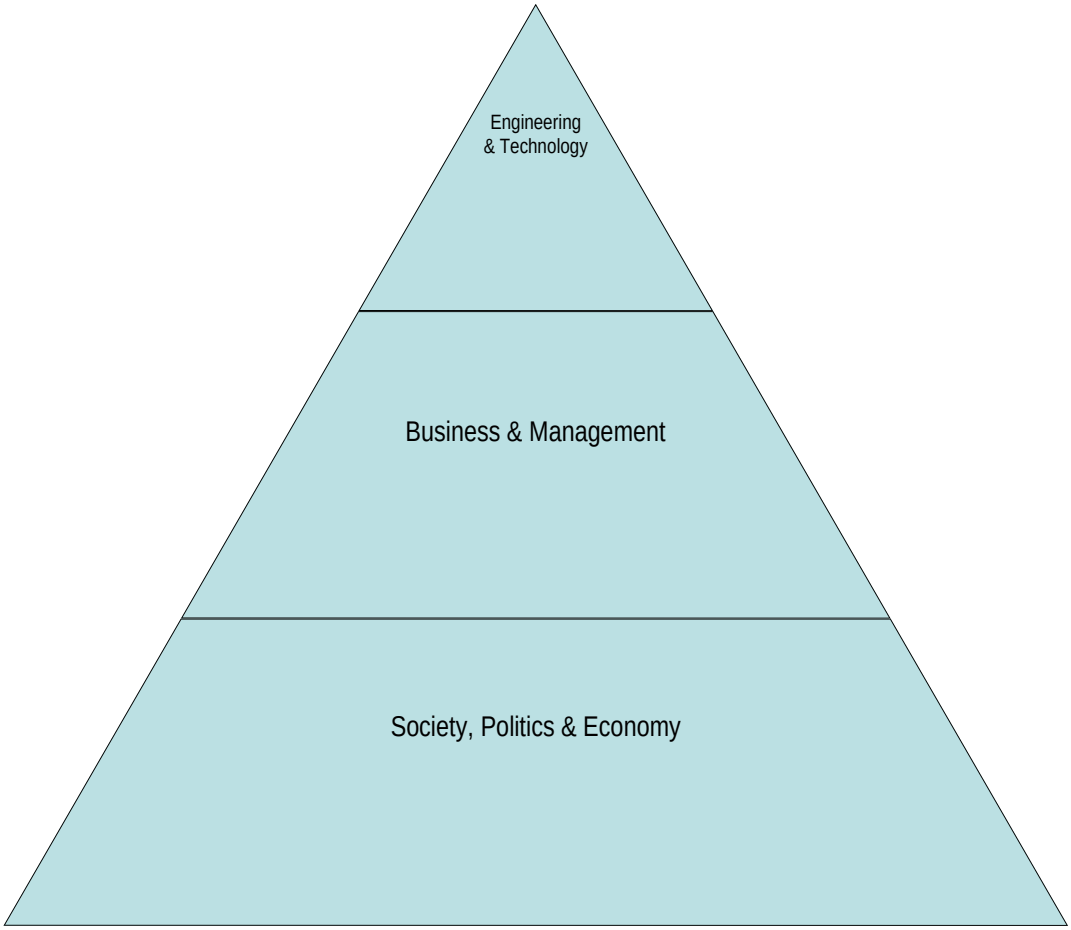
The 'Capstone Module – The Culmination of the European Degree' is a Euro-module project funded by the European Commission under its Socrates Erasmus (now Lifelong Learning) Programme. The grant holder and lead partner is Glasgow Caledonian University and there are seven other partner institutions involved in the project, drawn from across Europe (for further information please see page four).

In definitional terms, a 'capstone' is commonly defined as "A crowning achievement; a culmination" (Wordnet). A Capstone module (which is often described variously as a dissertation / thesis / research project / final project etc.) is found across most subject areas in most Universities in most Member States, as an integral part of first-cycle and second-cycle qualifications, e.g. Silbergh has noted that, "More or less regardless of the educational system, at an advanced level of your undergraduate studies you will be faced with the prospect of writing a dissertation for the first time" (Silbergh 2001). The Capstone module acts as an integrative and culminating module and is clearly central to the student being able to demonstrate the high-level skills and knowledge required to earn a degree-level qualification.

The Capstone module forms an important part of the heritage of higher education in Europe. As moves towards developing common quality assurance procedures and content in Europe continue (EAQAHE 2005; Tuning 2006) the project team successfully argued in bidding for European Commission support that now was an appropriate time to develop further *common* approaches to the administration, supervision and assessment of the Capstone module for both first-cycle and second-cycle qualifications across a range of disciplines and in a variety of educational systems. It is this broad goal which informs the shape of this project.

Furthermore, Universities have traditionally developed their structures along subject-specific lines, thus mono-disciplinary work has been (and, according to authors such as Max-Neef 2005, remains) the basis of most aspects of University life, despite the fact that there are many well-known examples of academic developments being made through multi-, pluri- inter- and trans-disciplinary approaches to addressing problems. Thus, in this project the partners sought to work within an inter-disciplinarity / trans-disciplinarity context, to overcome the limits of their own individual disciplines and engage together in the search for what a European Capstone Module may look like, how it could be supervised and how it could be assessed. The focus on working in an inter- / trans-disciplinary manner was led by a desire to be able to achieve concrete outputs based on the '*practical advantages*' (see Max-Neef, 2005) that can be reaped from working within a 'weak trans-disciplinary' (or inter-disciplinary) fashion. Consequently, contributors to the project represent business and management, engineering and technology and social science subjects. Although these subjects may appear disparate, they all have in common the requirement for students to engage with the empirical world, making it easier to work across subject boundaries than would have been the case with non-empirical subjects such as theology.

This shared empirical basis means that Capstone module projects conducted in these subject areas will all tend to include reference to theory, reference to research methods, the development of hypotheses, the gathering of empirical data etc. Furthermore, these three subject areas are further inter-related as per the diagram overleaf which shows that engineering and technology activities happen within an organisational and managerial context, which in turn exists within a socio-politico-economic context. Thus, there are both methodological links and 'real world' inter-relationships between the subject areas selected (engineering and technology, business and management and social sciences).



EUROPEAN CONTEXT

For the project to be successful in terms of identifying areas of commonality and developing generic guidance across Europe, it was logically necessary to also engage a wide variety of partners, in terms of educational system mix.

Despite progress made in line with the Bologna process, according to recent research commissioned by the European Commission and published by the European University Association (Tauch and Rauhvargers, 2002), higher education provision in Europe is at

present best described as consisting of five different groupings, which are as shown in the table below:

Grouping	State
Anglo-Saxon	United Kingdom, Ireland, Malta
Baltic	Estonia, Latvia, Lithuania
Central & Eastern European	Hungary, Bulgaria, Czech Republic, Poland, Slovakia, Slovenia, Romania
Nordic	Denmark, Sweden, Norway, Finland, Iceland
Western & Southern European	Italy, Greece, Cyprus, Spain, Portugal, France, Netherlands, Belgium, Germany, Austria, Switzerland, Lichtenstein

Thus, in order to gain full representation from all groupings, it was essential that the Capstone Module project partnership consisted of *at least one contributor from each grouping* in order that adequate respect is paid to the diversity of different European educational traditions in the development of the Euro-module, as shown below:

PARTNER	SYSTEM	GROUPING
Glasgow Caledonian University	UK (Scottish)	Anglo-Saxon
Alytus College	Lithuanian	Baltic
University of Chemical Technology and Metallurgy	Bulgarian	Central & Eastern
University of Aarhus (HIBAT) Lahti University of Applied Sciences	Danish Finnish	Nordic
Technological Educational Institute of West Macedonia Institute Polytechnic of Porto – School of Engineering Technical School of Industrial Engineering of Terrassa	Greek Portuguese Spanish	Western & Southern

The partnership has proved to be stable, robust and coherent. The grouping matured quickly to the extent that disagreements could be aired and resolved quickly and without relations being strained. Different partners took the lead in relation to specific administrative aspects of the work undertaken, but all were fully engaged in the academic work of the Project.

AIM & OBJECTIVES

Given the educational context for the Capstone Project, its main **aim** was *"To develop a generic capstone module that can be applied across disciplinary boundaries and across national educational systems, for both 1st and 2nd cycle qualifications, to enhance quality and student exchange possibilities."*

In order to achieve this aim, the following objectives were pursued:

1. determining what a Capstone module involved in both 1st & 2nd cycle qualifications. This approach meant that the team needed to carefully consider issues of potential overlap and reach conclusions in regard to the differences between the 1st and the 2nd cycle, with reference to the Dublin Descriptors (Joint Quality Initiative, 2004);

2. undertaking a programme of action-informed data gathering followed by analysis, reflection and debate by partners drawn from a range of disciplines and educational systems;

3. devising appropriate generic (not discipline-specific) descriptors of the Capstone module for both 1st & 2nd cycles;

4. preparing appropriate generic guidance on how a European Capstone Module can be supervised (1st & 2nd cycle);

5. developing generic guidance on how this European Capstone Module can be assessed, in accordance with national and European quality frameworks;

6. implementing and evaluating the Module and disseminating findings.

PROJECT TASKS AND TIMELINE

The pursuit of the aims and objectives set out on the previous page involves a twelve-stage process, with the bulk of work taking place over academic sessions 2006/2007 and 2007/2008. The production of this interim report concludes the efforts for academic session 2006/2007 (Stages One – Five). The full range of tasks to be undertaken, together with the original planned timescale is reproduced in the table below. Minor deviations from the original timescale occurred during the course of 2006/2007. Overall however the Project is on-track.

Stage of project	***Outputs by end of stage***	***Activities for output***	***Dates of activities***	
			Start	Complete
1. Meeting 1 – Glasgow (project start-up)	- Agreed membership of sub-groups. - Finalised questionnaire (based on previous work at LAMK and GCU). - Agreement on sampling. - Detailed plan of action.	- All co-ordinators to respond to structured request for information from Project Co-ordinator in advance of meeting in Glasgow.	October 2006	October 2006
2. Data gathering (in home institutions)	- Full set of existing Capstone module documentation from across each institution. - Full set of completed questionnaires from all Programme Leaders. - Semi-structured interviews with a sample of Programme Leaders (1 from each of business, social sciences and engineering).	- Attendance at Meeting 1 in Glasgow. - Contacting all Programme Leaders in home institution with request to complete quantitative questionnaire and submit documentation. - Conducting qualitative interviews with Programme Leaders from each of business, social sciences and engineering.	October 2006	January 2007

3. Data Analysis 1 (in home institutions)	- Quantitative dataset from questionnaires. - Initial coding of data from documentary analysis. - Initial coding of interview data.	- Processing of quantitative data from questionnaires. - Devising coding categories for qualitative analysis by e-mail exchange within the partnership. - Reading and coding documentation gathered. - Coding interview transcripts.	January 2007	April 2007
4. Meeting 2 – Alytus (Data Analysis 2, monitoring and coordination)	- Idea of patterns to have emerged from business, social science and engineering data. - Idea of issues emerging from the data overall. - Evaluation of progress to date. - A detailed plan for the next phase of the project.	- Sharing of data analysis by e-mail prior to meeting. - Sub-group meetings to determine patterns of data in business, social sciences and engineering. - Main group meeting to integrate sub-group findings, monitor progress and plan.	May 2007	May 2007
5. Writing of Interim Report (in home institutions)	- A report on findings by institution. - A report on findings by subject area.	- Attendance at Meeting 2 in Alytus. - Institutions to prepare a summary institutional report based on findings presented in Alytus. - Sub-groups to prepare reports on business, social sciences and engineering.	June 2007	September 2007
6. Meeting 3 – Terrassa (synthesis of findings, planning & monitoring)	- A synthesised overall report on findings. - Evaluation of progress to date. - A detailed plan for the next phase of the project, including identification of which partners will lead on preparing handbooks, which on module descriptors etc.	- Circulation of institutional and sub-group reports around the whole group. - Project Co-ordinator to chair whole group and synthesise all findings into a single overall report. - Co-ordination meeting to monitor progress and plan.	October 2007	October 2007
7. Writing Handbooks/ Guidance etc (home institutions)	Draft set of European Capstone Module documentation (module descriptors, assessment guidance, module handbooks, supervision guidelines etc.)	- Attendance at Meeting 3 in Terrassa. - Circulation of overall report. - Institutions to work in sub-groups to produce defined Capstone module documents.	October 2007	January 2008

8. Meeting 4 – Porto (finalisation of documentation & monitoring)	- Final set of draft European Capstone Module documentation. - Evaluation of progress to date. - A detailed plan for the implementation phase of the project.	- Circulation of draft European Capstone Module documentation (assessment and supervision guidance, module handbooks etc.) around whole group. - Discussion and agreement on final shape of documentation. - Co-ordination meeting to monitor progress and plan.	January 2008	January 2008
9. Implementation (in home institutions)	- Students attached to the European Capstone Module on pilot programmes in each institution. - Staff and students trained re. European Capstone Module in each institution.	- Attendance at Meeting 4 in Porto. - Copying of finalised documentation in each institution. - Distribution of documentation to pilot programmes. - Internal seminars with staff and students.	January 2008	August 2008
10. Evaluation & Review (in home institutions)	- Completion of Capstone module by pilot groups. - Evaluation of and reports on pilot student groups. - Evaluation of and reports on pilot staff groups.	- Analysis of student module evaluation reports. - Analysis of staff module evaluation reports. - Report to whole group by each institution on modifications.	September 2008	September 2008
11. Meeting 5 – Herning (overall self-evaluation & planning of European dissemination)	- Finalisation of European Capstone Module documentation. - Final review of project. - Detailed planning of dissemination.	- Circulation of institutional evaluation reports around whole group. - Discussion and agreement on modification of documentation. - Co-ordination meeting to evaluate project and plan pan-European dissemination.	September 2008	September 2008
12. Dissemination, external evaluation, reporting	- Beginning pan-European dissemination. - External review of project. - Final report.	- Attendance at Meeting 5 in Porto. - Each partner to engage with its partners etc as per dissemination plan. - Appointment of appropriate external evaluator.	October 2008	November 2008

METHOD – PHASES 2-5

As can seen from the foregoing it was key to the Capstone Module Project that it began by reviewing and evaluating the variety of pedagogical approaches employed in supervising and assessing Capstone modules across eight countries in Europe, representing all five main groupings of educational tradition, in the fields of engineering and technology, business and management and social sciences. Moreover, Capstone modules in use for both first and second cycles were to be examined, although not Doctoral dissertations (which were excluded).

The first step in evaluating current practice was to gather information on both the formal, codified practices described in institutional documentation (module handbooks, module descriptors, assessment grids, feedback forms etc.) and then to supplement this information with opinion data gathered from key staff involved in managing Capstone modules. It is worth mentioning at this point that the project team did not aim to undertake a large-scale, pan-European survey or such like with a view to drawing conclusions about which they were statistically confident. The Capstone Module Project is, after all, a curriculum development project rather than a research study. What resulted however was a snapshot of practice in the eight partner Universities, which provided an interesting and illuminating overview of the diversity of practice in Europe at a given point in time and also gave the team a sense of where good quality exemplars could be found in relation to this or that dimension of Capstone supervision / assessment practice, to help in the preparation of materials for the European Capstone Module that they are developing.

The first task that the team undertook was to identify the population of Capstone modules with which they were dealing. To do this the team first calculated the number of degree programmes on offer that would contain such Capstone modules, a total of 248,

a large number given that only eight institutions were involved. The total population of degrees with Capstone modules across the eight partners (i.e. sum of all first and second cycle degree programme, across all subject areas) is as shown in the table below:

PARTNER	SYSTEM	GROUPING	POPULATION
Glasgow Caledonian University	UK (Scottish)	Anglo-Saxon	91
Alytus College	Lithuanian	Baltic	12
University of Chemical Technology and Metallurgy	Bulgarian	Central & Eastern	46
University of Aarhus (HIBAT)	Danish	Nordic	24
Lahti University of Applied Sciences	Finnish	Nordic	13
Technological Educational Institute of West Macedonia	Greek	Western & Southern	14
Institute Polytechnic of Porto – School of Engineering	Portuguese	Western & Southern	33
Technical School of Industrial Engineering of Terrassa	Spanish	Western & Southern	15

Although it was known that the exact number of Capstone modules in use may vary from the number of degree programmes (e.g. some degrees may have more than one module or the same module may be shared by several programmes) this measure was used as an approximation for population size as it would have proved prohibitive in terms of time and cost to identify individual modules in the first instance.

The second task that the team undertook was to gather and analyse Capstone documentation from within their own institutions, to establish the baseline position vis-à-vis codified practices. To enable them to do this efficiently, effectively and consistently, a documentary analysis matrix was developed (to be found in Appendix 1), which was informed by the contents of the **Dublin Descriptors** (*op. cit.*) and by the work

of the **Tuning Project** (*op. cit.*). This documentary analysis matrix was developed through several iterations and had to be appropriate to all institutions, educational systems and subject areas, a far from straightforward task.

To supplement the data gathered from documentation, the third task undertaken by the project team was the development of a questionnaire (based on one previously used by Lahti University of Applied Sciences and their partners in Finland), to gather both quantitative and qualitative data. The purpose of the questionnaire was:

- to begin to gather academic staff opinions on non-codified aspects of Capstone assessment and supervision;
- to identify areas where the actual operation of Capstone modules in practice diverges from the formal position;
- to identify any issues which the project team may have overlooked in their original plans.

This questionnaire was then distributed to key personnel involved in managing first and second cycle degree programmes in business and management, engineering and technology and social sciences in each institution. The questionnaire developed is to be found within this Report as Appendix 2.

Having developed by now a good sense of Capstone practices, the project team then sought to follow-up the questionnaire with unstructured qualitative interviews with at least one key member of staff in each subject area (business and management, engineering and technology and social sciences) as a means of eliciting 'softer' data on professional opinions and academic practices and indeed advice on issues that the partnership ought to be cognisant of in taking their work forward. In undertaking this exercise the project team had already collected and analysed the Capstone documentation

from their institutions and had available the questionnaire results, thus allowing for free discussion with professional colleagues. Interviewees had been invited to participate at the time of distributing the questionnaire and were therefore a self-selecting group. This was however in keeping with the qualitative objective of this exercise to gather perceptions and opinions from informed and interested individuals. An example of an anonymised transcript of such an interview is to be found in Appendix 3 to this Report.

Data analysis followed, with the bulk of the work undertaken in subject-specific working groups convened at the project team's meeting in Alytus, Lithuania in the late Spring of 2007. In a deviation from the original work plan, business and management and social sciences were treated as a single grouping. A smaller than predicted dataset from the social sciences (in part because of common modules being adopted across several degree programmes) meant that the team felt there was little to be gained from analysing the data from this group separately, given discrepancies in sample size. Each working group drew initial conclusions, reported in the interim report to the European Commission early in the summer of 2007. The data was then subjected to further analysis over the summer of 2007, resulting in the preparation of this report, discussion of it in draft form in the Autumn of 2007 and its finalisation.

The remainder of this report is, therefore, given over to discussion of the data gathering exercise, presentation and analysis of results and the drawing of conclusions to inform the production of the European Capstone Module.

DATA GATHERING

As noted above, partners collected 1st cycle and 2nd cycle Capstone documentation in their own institutions, across the subject areas of Business and Management, Engineering and Technology and Social Sciences (as appropriate) and then supplemented this baseline data with questionnaires to staff and with interviews to gather opinions and to finesse understanding.

The scope of the work undertaken can be seen in the table below.

Partner	Matrices			Questionnaires			Interviews		
	Bus	**Eng**	**Soc**	**Bus**	**Eng**	**Soc**	**Bus**	**Eng**	**Soc**
GCU	28	31	4	6	2	3	3	1	2
HIH	7	4	n/a	2	2	n/a	2	2	n/a
TEI	4	7	1	4	7	1	4	7	1
EUETIT	n/a	8	n/a	n/a	3	n/a	n/a	1	n/a
IPP – ISEP	1	11	2	1	3	0	1	1	1
LAMK	7	7	n/a	5	8	n/a	3	0	n/a
UCTM	n/a	16	n/a	n/a	0	n/a	n/a	1	n/a
AC	12	0	n/a	6	3	n/a	0	0	n/a
Sub-totals	*59*	*84*	*7*	*24*	*28*	*4*	*13*	*13*	*4*
TOTALS	**150**			**56**			**30**		

Matrices

A huge amount of existing documentation was collected, which had to be collated, read and analysed, with results being recorded on the documentary analysis matrix. There are, naturally, limits on the analysis that can meaningfully be undertaken in relation to an activity of this type. This was not a theory-driven research project designed to generate statistically significant results as a result of hypothesis-testing, but a census of 'what exists' to help the project team in developing their module materials. Nevertheless, of a potential population of 248, some 150 sets of documentation (e.g. student handbooks,

staff handbooks, module descriptors etc. – please see the matrix appended to this Report for further examples) were gathered, which represented a sample of some 60%.

A particular limitation occurred in relation to data analysis with regard to the first and second cycles. In the case of two partners, their engineering and technology materials are integrated for both cycles and it was therefore impossible to disaggregate the results in this way, desirable though that would have been. It is possible for such results to be disaggregated for the business, management and social sciences group but this has not been done for the sake of consistency.

Documentary analysis results are therefore recorded on the following pages in three sets:

a. business, management and social sciences;
b. engineering and technology;
c. an overall summary of the full sample of 150.

In reading the matrices, please note that as the intention of this project is to generate Capstone module materials, two issues are of paramount importance:

1. Results that indicate a central tendency – where between one-third and two-thirds (34 – 66%) of Capstone module documents do contain certain information, it also means that a considerable minority do not (and vice versa), and that we are dealing with a situation where there is divergence in practice. Given the project aim to respect national educational traditions, the team do therefore have to take special care when considering these areas. Such instances have been highlighted using **bold text** to ensure ease of identification.
2. Results which show a low frequency of particular information appearing in the sample of Capstone documentation scrutinised (15% or less). In such instances it

is worth the team considering whether or not this information is indeed central to their aims. These instances have been highlighted using *italicised text* and the principal source(s) of the information are listed in order to identify which partner(s) are best-placed to provide information for these sections of the Capstone module documentation, where the decision was made that such materials should be included.

Questionnaires & Interviews

Following the collection of documentation, confidential questionnaires were distributed in each partner institution, seeking additional information (quantitative and qualitative) from the leaders of degree programmes. Some 56 questionnaires were returned voluntarily, 28 from those leading business, management and social science degrees and 28 from those leading engineering and technology programmes, across both first and second cycles. The questionnaire used can be seen as Appendix 2 to this Report. The results from this questionnaire are shown after the matrices, and again compare results for the business, management and social science sample, the engineering and technology sample and overall results, as appropriate. The findings from open-ended questions are shown here as well as the basic numerical data.

A number of unstructured interviews were also conducted with willing volunteers from the programme leader group (30 in total), which elicited further qualitative opinion data, which was recorded in note form and later transcribed. To save space, one example of such an interview transcript is appended to this Report. The interview data was used to inform the commentary throughout the analysis section. Finally, the data analysis itself was begun at the project partner meeting in May 2007, subsequently amended following the arrival of late data by D. Silbergh, who also drafted the analysis section for consideration by partners at their meeting in October 2007. This final version was prepared following that meeting.

DOCUMENTARY ANALYSIS FINDINGS – BY SUBJECT AREA

Business / Management / Social Sciences

Sample size in the case of business, management and social sciences was **66** sets of Capstone documentation gathered and analysed across the eight partners. In this sample of documentation there were **24 areas of divergence** and **8 areas where information appeared with low frequency**.

	Section 1 - General Info	Frequency (present)	Percentage (present)
1	Module title?	65	98 %
2	Module level clearly articulated?	65	98 %
3	Responsible Faculty / Department named?	65	98 %
4	Responsible staff named (module leader)?	63	95 %
5	Credit points (national and/or ECTS) stated?	61	92 %
6	Dates / Semesters module runs stated?	66	100 %
7	**Does module contain research methods?**	**30**	**45 %**
8	**Relationship with research methods articulated?**	**42**	**64 %**
9	Number of hours of preparatory classes for this module stated clearly?	19	29 %
10	Typical number of hours of staff supervision time stated clearly?	21	32 %
11	**Typical number of hours of student effort stated clearly?**	**31**	**47 %**
12	Information on topic choice clearly stated?	54	82 %
13	**Information on topic approval clearly stated?**	**43**	**65 %**
14	Clear learning and teaching strategy provided?	60	91 %

15	**Nature of module output?**	**Individual 31 (47 %)**		**Group 7 (11 %)**	**Either 28 (42 %)**
16	Number of module outputs?	One output 53 (80 %)		Multiple 12 (18 %)	Either 1 (2 %)
17	Language allowed for module outputs?	Home 45 (68 %)		Other only 0	Either 21 (32 %)
18	**Type of project students are expected to undertake? (*as many as apply*)**	Theory-supported empirical (traditional) 66 (100%)	Secondary source-based review 58 (88 %)	Conceptual / theoretical 57 (86 %)	**Product-focused 26 (39 %)**
19	**Students required to work with outside organisations (e.g. businesses)?**	**Must = 13 Option = 14 Total = 27**		**20 % 21 % 41 %**	
20	**Institution helps students make contact with such organisations?**	**28**		**42 %**	
21	Formal agreement between institution and any such organisations?	22		33 %	
22	*Students able to conduct a capstone project at a partner institution (e.g. on Erasmus exchange)?*	*8*		*12 %*	
	Aarhus (1st), Kozani (1st)				
23	*Reference to Diploma Supplement / Europass?*	*7*		*11 %*	
	Aarhus (1st), Kozani (1st)				
24	*Clear guidance on health & safety procedures, insurance arrangements etc?*	*7*		*11 %*	
	Glasgow (1st), Kozani (1st)				
	Section 2 – Aims / Learning Outcomes / Competences / Skills (developed from Tuning)	**Frequency (present)**		**Percentage (present)**	
25	Clear definition of what a capstone module is?	63		95 %	
26	Module has an explicit requirement for analysis and synthesis?	64		97 %	
27	Reference to: “Organisation and planning”?	65		98 %	

28	Reference to: "Information management skills (retrieve & analyse info. from different sources)"?	55	83 %
29	**Reference to: "Problem solving"?**	**36**	**55 %**
30	**Reference to: "Decision-making"?**	**41**	**62 %**
31	Reference to: "Critical and self-critical abilities"?	51	77 %
32	Reference to: "Interdisciplinarity" (individual or team)?	18	27 %
33	*Reference to: "Potential to work in an international context"?*	*3*	*5 %*
	Aarhus (1st), Glasgow (1st)		
34	**Reference to: "Capacity for applying knowledge in practice"?**	**30**	**45 %**
35	**Reference to: "Capacity to adapt to new situations"?**	**28**	**42 %**
36	**Reference to: "Capacity for generating new ideas (creativity)"?**	**35**	**53 %**
37	**Reference to: "Potential to work autonomously"?**	**39**	**59 %**
38	Reference to: "Project design and management"?	45	68 %
39	*Reference to: "Initiative and entrepreneurial spirit"?*	*10*	*15 %*
	Aarhus (1st), Glasgow (2nd), Lahti (2nd), Porto (2nd)		
	Section 3 – Supervision	**Frequency (present)**	**Percentage (present)**
40	Information available on how supervisors are allocated?	58	89 %
41	Information available on when supervisors will be allocated?	54	82 %
42	How many people (typically) are involved in supervising a capstone project? (*number*)	1 = 12 2 = 27 3 = 15 4 = 7 Missing = 5	18 % 41 % 23 % 11 % 8 %
43	**People external to the institution involved in supervision?**	**28**	**42 %**
44	**Recommended timetable for supervision meetings?**	**37**	**56 %**

45	*Formal contract document / agreement between student(s) and supervisor(s)?*	*9*	*14 %*
	Glasgow (1st)		
46	**Formal mechanism to resolve disagreements over supervision?**	**42**	**64 %**
47	Formal document for recording supervision meetings?	17	26 %
48	**Formal progress reports submitted as the student's work progresses?**	**41**	**62 %**
49	Students provided with formal guidance on ethical conduct?	47	71 %
50	**Students provided with formal guidance on plagiarism?**	**42**	**64 %**
51	Students provided with formal guidance on institutional policy on copyright?	13	20 %
52	Standard style guide in use for producing written outputs?	49	74 %
	Section 4 – Assessment	**Frequency (present)**	**Percentage (present)**
53	Assessment guidelines clearly detailed?	60	91 %
54	Local marking criteria clearly explained?	47	71 %
55	Detailed information available on the assessment process?	46	70 %
56	Information regarding use of External Assessors (other institution or company) available?	21	32 %
57	*Information regarding professional accreditation available? (where relevant)*	*3*	*5 %*
	Glasgow (2nd), Lahti (2nd)		
58	Oral defence / viva voce used as part of assessment?	45	68 %
59	Students provided with a clear definition of what constitutes a fail / pass / merit mark etc?	60	91 %
60	**Students provided with information on grading *within* fail / pass / merit categories?**	**37**	**56 %**
61	**Students provided with an explanation of ECTS grading?**	**40**	**61 %**
62	Students provided with a feedback sheet (or other means of feedback) that explains their mark?	45	68 %

63	Students provided with clear information regarding late submission and/or non-submission?	50	76 %
64	Students provided with full details about any appeal procedures that may exist?	52	79 %
65	**Students provided with details re. '*formalisation of award*' (i.e. after passing but before graduation)**	**39**	**59 %**
	Section 5 – Evaluation	**Frequency (present)**	**Percentage (present)**
66	**Formal mechanism in place for module evaluation and improvement?**	**31**	**47 %**
67	As capstone modules come at the end of study, is student feedback gathered?	14	21 %
68	**Do staff have the opportunity to evaluate and improve capstone modules on an annual basis?**	**32**	**48 %**
69	*Do persons external to the institution have the opportunity to comment on capstone modules?*	*7*	*11 %*
	Aarhus (1st), Glasgow (1st)		

DOCUMENTARY ANALYSIS FINDINGS – BY SUBJECT AREA

Engineering & Technology

Sample size in the case of engineering and technology was **84** sets of Capstone documentation gathered and analysed across the eight partners. In this sample of documentation there were **23 areas of divergence** and **9 areas where information appeared with low frequency**. The engineering and technology sample does therefore represent a slightly more coherent / less polarised grouping, despite larger sample size.

	Section 1 - General Info	Frequency (present)	Percentage (present)
1	Module title?	84	100 %
2	Module level clearly articulated?	84	100 %
3	Responsible Faculty / Department named?	84	100 %
4	Responsible staff named (module leader)?	56	67 %
5	Credit points (national and/or ECTS) stated?	66	79 %
6	Dates / Semesters module runs stated?	65	77 %
7	**Does module contain research methods?**	**35**	**42 %**
8	Relationship with research methods articulated?	23	27 %
9	*Number of hours of preparatory classes for this module stated clearly?*	*8*	*10 %*
	Glasgow		
10	Typical number of hours of staff supervision time stated clearly?	17	20 %
11	**Typical number of hours of student effort stated clearly?**	**34**	**40 %**
12	Information on topic choice clearly stated?	80	95 %
13	Information on topic approval clearly stated?	65	77 %
14	**Clear learning and teaching strategy provided?**	**48**	**57 %**

15	Nature of module output?	Individual 67 (80 %)		Group 1 (1 %)		Either 14 (17 %)	
16	**Number of module outputs?**	**One output 38 (%)**		**Multiple 44 (%)**		**Either 1 (%)**	
17	Language allowed for module outputs?	Home 43 (51 %)		Other only 0		Either 39 (46 %)	
18	**Type of project students are expected to undertake? (*as many as apply*)**	Theory-supported empirical (traditional) 81 (96 %)	**Secondary source-based review 46 (55 %)**	Conceptual / theoretical 69 (82 %)	Product-focused 74 (88 %)		
19	**Students required to work with outside organisations (e.g. businesses)?**	**45**		**54 %**			
20	**Institution helps students make contact with such organisations?**	**43**		**51 %**			
21	Formal agreement between institution and any such organisations?	17		20 %			
22	Students able to conduct a capstone project at a partner institution (e.g. on Erasmus exchange)?	28		33 %			
23	*Reference to Diploma Supplement / Europass?*	*7*		*8 %*			
	Kozani						
24	Clear guidance on health & safety procedures, insurance arrangements etc?	28		33 %			
	Section 2 – Aims / Learning Outcomes / Competences / Skills (developed from Tuning)	**Frequency (present)**		**Percentage (present)**			
25	Clear definition of what a capstone module is?	79		94 %			
26	Module has an explicit requirement for analysis and synthesis?	60		71 %			
27	**Reference to: "Organisation and planning"?**	**43**		**51 %**			
28	**Reference to: "Information management skills (retrieve & analyse info. from different sources)"?**	**41**		**49 %**			
29	**Reference to: "Problem solving"?**	**43**		**51 %**			
30	*Reference to: "Decision-making"?*	*11*		*13 %*			
	Lahti, Porto						

31	**Reference to: "Critical and self-critical abilities"?**	**34**	**40 %**
32	*Reference to: "Interdisciplinarity" (individual or team)?*	*13*	*15 %*
	Porto		
33	Reference to: "Potential to work in an international context"?	0	0 %
34	Reference to: "Capacity for applying knowledge in practice"?	66	79 %
35	Reference to: "Capacity to adapt to new situations"?	16	19 %
36	Reference to: "Capacity for generating new ideas (creativity)"?	74	88 %
37	**Reference to: "Potential to work autonomously"?**	**31**	**37 %**
38	**Reference to: "Project design and management"?**	**55**	**65 %**
39	**Reference to: "Initiative and entrepreneurial spirit"?**	**52**	**62 %**
	Section 3 – Supervision	**Frequency (present)**	**Percentage (present)**
40	Information available on how supervisors are allocated?	59	70 %
41	**Information available on when supervisors will be allocated?**	**52**	**62 %**
42	How many people (typically) are involved in supervising a capstone project? (*number*)	1 = 32 2 = 1 3 = 8 4 = 9 Missing = 34	38 % 1 % 10 % 11 % 40 %
43	**People external to the institution involved in supervision?**	**44**	**52 %**
44	Recommended timetable for supervision meetings?	21	25 %
45	*Formal contract document / agreement between student(s) and supervisor(s)?*	*13*	*15 %*
	Glasgow		
46	Formal mechanism to resolve disagreements over supervision?	15	17 %
47	Formal document for recording supervision meetings?	22	26 %

48	Formal progress reports submitted as the student's work progresses?	22	26 %
49	Students provided with formal guidance on ethical conduct?	28	33 %
50	Students provided with formal guidance on plagiarism?	28	33 %
51	*Students provided with formal guidance on institutional policy on copyright?*	*9*	*11 %*
	Lahti		
52	Standard style guide in use for producing written outputs?	57	68 %
	Section 4 – Assessment	**Frequency (present)**	**Percentage (present)**
53	Assessment guidelines clearly detailed?	67	80 %
54	Local marking criteria clearly explained?	66	79 %
55	**Detailed information available on the assessment process?**	**49**	**58 %**
56	*Information regarding use of External Assessors (other institution or company) available?*	*11*	*13 %*
	Glasgow, Porto		
57	Information regarding professional accreditation available? (*where relevant*)	0	0 %
58	Oral defence / viva voce used as part of assessment?	75	89 %
59	**Students provided with a clear definition of what constitutes a fail / pass / merit mark etc?**	**38**	**45 %**
60	**Students provided with information on grading *within* fail / pass / merit categories?**	**37**	**44 %**
61	**Students provided with an explanation of ECTS grading?**	**42**	**50 %**
62	Students provided with a feedback sheet (or other means of feedback) that explains their mark?	28	33 %
63	Students provided with clear information regarding late submission and/or non-submission?	61	73 %
64	**Students provided with full details about any appeal procedures that may exist?**	**49**	**58 %**
65	**Students provided with details re. '*formalisation of award*' (i.e. after passing but before graduation)**	**31**	**37 %**

	Section 5 – Evaluation	Frequency (present)	Percentage (present)
66	Formal mechanism in place for module evaluation and improvement?	14	17 %
67	*As capstone modules come at the end of study, is student feedback gathered?*	*13*	*15 %*
	Glasgow, Lahti		
68	**Do staff have the opportunity to evaluate and improve capstone modules on an annual basis?**	**31**	**37 %**
69	*Do persons external to the institution have the opportunity to comment on capstone modules?*	*8*	*10 %*
	Lahti		

DOCUMENTARY ANALYSIS FINDINGS – OVERALL

Total sample size in total was **150** sets of Capstone documentation gathered and analysed across the eight partners. In the overall sample there were **28 areas of divergence** and only **6 areas where information was limited**.

	Section 1 - General Info	Frequency (present)	Percentage (present)
1	Module title?	149	99 %
2	Module level clearly articulated?	149	99 %
3	Responsible Faculty / Department named?	149	99 %
4	Responsible staff named (module leader)?	119	79 %
5	Credit points (national and/or ECTS) stated?	132	88 %
6	Dates / Semesters module runs stated?	131	87 %
7	**Does module contain research methods?**	**65**	**43 %**
8	**Relationship with research methods articulated?**	**65**	**43 %**
9	Number of hours of preparatory classes for this module stated clearly?	27	18 %
10	**Typical number of hours of staff supervision time stated clearly?**	**69**	**46 %**
11	**Typical number of hours of student effort stated clearly?**	**65**	**43 %**
12	Information on topic choice clearly stated?	134	89 %
13	Information on topic approval clearly stated?	108	72 %
14	Clear learning and teaching strategy provided?	108	72 %

15	**Nature of module output?**	**Individual** **98 (65 %)**	Group 8 (5 %)	Either 42 (28 %)
16	**Number of module outputs?**	**One output** **91 (61 %)**	**Multiple** **56 (37 %)**	**Either** **2 (1 %)**
17	Language allowed for module outputs?	Home 88 (59 %)	Other only 0	Either 60 (40 %)

18	Type of project students are expected to undertake? (*as many as apply*)	Theory-supported empirical (traditional) 147 (98 %)	Secondary source-based review 104 (69 %)	Conceptual / theoretical 126 (84 %)	Product-focused 100 (67 %)

19	**Students required to work with outside organisations (e.g. businesses)?**	**72**	**48 %**
20	**Institution helps students make contact with such organisations?**	**65**	**43 %**
21	Formal agreement between institution and any such organisations?	25	17 %
22	Students able to conduct a capstone project at a partner institution (e.g. on Erasmus exchange)?	36	24 %
23	*Reference to Diploma Supplement / Europass?*	*14*	*9 %*
24	Clear guidance on health & safety procedures, insurance arrangements etc?	35	23 %
	Section 2 – Aims / Learning Outcomes / Competences / Skills (developed from Tuning)	**Frequency (present)**	**Percentage (present)**
25	Clear definition of what a capstone module is?	142	95 %
26	Module has an explicit requirement for analysis and synthesis?	124	83 %
27	Reference to: “Organisation and planning”?	108	72 %
28	**Reference to: “Information management skills (retrieve & analyse info. from different sources)”?**	**96**	**64 %**
29	**Reference to: “Problem solving”?**	**79**	**53 %**
30	**Reference to: “Decision-making”?**	**52**	**35 %**
31	**Reference to: “Critical and self-critical abilities”?**	**85**	**57 %**
32	Reference to: “Interdisciplinarity” (individual or team)?	31	21 %

33	*Reference to: "Potential to work in an international context"?*	*3*	*2 %*
34	**Reference to: "Capacity for applying knowledge in practice"?**	**96**	**64 %**
35	Reference to: "Capacity to adapt to new situations"?	44	29 %
36	Reference to: "Capacity for generating new ideas (creativity)"?	109	73 %
37	**Reference to: "Potential to work autonomously"?**	**70**	**47 %**
38	Reference to: "Project design and management"?	100	67 %
39	**Reference to: "Initiative and entrepreneurial spirit"?**	**62**	**41 %**
	Section 3 – Supervision	**Frequency (present)**	**Percentage (present)**
40	Information available on how supervisors are allocated?	117	78 %
41	Information available on when supervisors will be allocated?	106	71 %
42	How many people (typically) are involved in supervising a capstone project? (*number*)	1 = 44 2 = 28 3 = 23 4 = 16 Missing = 39	29 % 19 % 15 % 11 % 26 %
43	**People external to the institution involved in supervision?**	**72**	**48 %**
44	**Recommended timetable for supervision meetings?**	**58**	**39 %**
45	*Formal contract document / agreement between student(s) and supervisor(s)?*	*22*	*15 %*
46	**Formal mechanism to resolve disagreements over supervision?**	**67**	**45 %**
47	Formal document for recording supervision meetings?	39	26 %
48	**Formal progress reports submitted as the student's work progresses?**	**63**	**42 %**
49	**Students provided with formal guidance on ethical conduct?**	**75**	**50 %**
50	**Students provided with formal guidance on plagiarism?**	**70**	**47 %**
51	*Students provided with formal guidance on institutional policy on copyright?*	*22*	*15 %*

52	Standard style guide in use for producing written outputs?	106	71 %
	Section 4 – Assessment	**Frequency (present)**	**Percentage (present)**
53	Assessment guidelines clearly detailed?	127	85 %
54	Local marking criteria clearly explained?	113	75 %
55	**Detailed information available on the assessment process?**	**95**	**63 %**
56	Information regarding use of External Assessors (other institution or company) available?	32	21 %
57	*Information regarding professional accreditation available? (where relevant)*	*3*	*2 %*
58	Oral defence / viva voce used as part of assessment?	120	80 %
59	**Students provided with a clear definition of what constitutes a fail / pass / merit mark etc?**	**98**	**65 %**
60	**Students provided with information on grading *within* fail / pass / merit categories?**	**74**	**49 %**
61	**Students provided with an explanation of ECTS grading?**	**82**	**55 %**
62	**Students provided with a feedback sheet (or other means of feedback) that explains their mark?**	**73**	**49 %**
63	Students provided with clear information regarding late submission and/or non-submission?	111	74 %
64	Students provided with full details about any appeal procedures that may exist?	101	67 %
65	**Students provided with details re. '*formalisation of award*' (i.e. after passing but before graduation)**	**70**	**47 %**
	Section 5 – Evaluation	**Frequency (present)**	**Percentage (present)**
66	Formal mechanism in place for module evaluation and improvement?	45	30 %
67	As capstone modules come at the end of study, is student feedback gathered?	27	18 %
68	**Do staff have the opportunity to evaluate and improve capstone modules on an annual basis?**	**63**	**42 %**
69	*Do persons external to the institution have the opportunity to comment on capstone modules?*	*15*	*10 %*

REPORTS FROM STAFF INVOLVED IN CAPSTONE PROJECTS – Questionnaire and Interview Data

NB sample size (semi-structured questionnaires) was 56 in total, of which exactly half (28) were completed by academic staff with a background in business / management / social sciences and exactly half by colleagues with a background in engineering and technology. Questionnaire data was supplemented by information drawn from thirty unstructured interviews that were conducted following the collection of documents and the distribution of questionnaires.

1. Number of outputs typically associated with Capstone modules

Number	Business & Social Sciences	Engineering & Technology	OVERALL
1 output	7 instances (25 %)	1 instance (4 %)	8 instances (14%)
2 outputs	16 instances (57 %)	11 instances (39 %)	27 instances (48 %)
3 outputs	5 instances (18 %)	14 instances (50 %)	19 instances (34 %)
4 outputs	*	2 instances (7 %)	2 instances (4 %)

As can clearly be seen from the table above, in general there are more outputs associated with the average engineering and technology Capstone project than in the other subject areas.

The range of Capstone outputs listed by staff (unprompted) included:

1. Written thesis / dissertation
2. Research proposals
3. Interim reports on progress
4. Products and other practical outputs
5. Viva voce / presentations
6. Student learning logs / reflective exercises

The range of output options was associated with both the business, management & social science group and the engineering & technology group and where multiple outputs were concerned (in the majority of cases) there was a good deal of diversity in terms of how these were combined, e.g. see example below from the business / management / social science sample:

Combinations of assessments (business, management & social science)	Frequency
Written thesis only	7 (25 %)
Written thesis + learning log	1 (4%)
Written thesis + practical output	1 (4%)
Written thesis + research proposal	1 (4%)
Written thesis + viva voce / presentation	13 (46 %)
Written thesis + viva voce / presentation + reflection	1 (4%)
Written thesis + viva voce / presentation + practical output	3 (11%)
Written thesis + viva voce / presentation + research proposal	1 (4%)

THE KEY AREA THAT IS PRESENT IN ALL CAPSTONE MODULES IS THE WRITTEN REPORT, with viva voce and/or presentation also very important and, in engineering and technology, products and other practical outputs, which accounts for the predominance of there being three Capstone outputs in these subjects.

2. Relative weight attached to assessed outputs from dissertation / thesis / research project modules

The relative weighting attached to outputs varied considerably across institutions and subject areas. For a sense of the spread, please see table below. Engineering subjects are slightly less dependant on the written word when assessing, but only slightly so.

Output	Business & Social Sciences	Engineering & Technology
Written thesis / dissertation	20% of overall mark – 1 instance 37.5% of overall mark – 1 instance 50% of overall mark – 1 instance 60% of overall mark – 3 instances 65% of overall mark – 1 instance 70% of overall mark – 3 instances 75% of overall mark – 2 instances 80% of overall mark – 7 instances 90% of overall mark – 1 instance 100% of overall mark – 3 instances	30% of overall mark – 2 instances 35% of overall mark – 1 instance 40% of overall mark – 3 instances 50% of overall mark – 7 instances 60% of overall mark – 6 instances 70% of overall mark – 2 instances 80% of overall mark – 2 instances 90% of overall mark – 1 instance 100% of overall mark – 3 instances
Research proposals	20% of overall mark – 1 instance 25% of overall mark – 1 instance	
Interim reports on progress	20% of overall mark – 1 instance	5% of overall mark – 1 instance
Products and other practical / problem-solving outputs	20% of overall mark – 2 instances 37.5% of overall mark – 1 instance 40% of overall mark – 1 instance	20% of overall mark – 10 instances 30% of overall mark – 1 instance 40% of overall mark – 3 instances 50% of overall mark – 3 instances
Viva voce / presentations	10% of overall mark – 2 instances 20% of overall mark – 9 instances 25% of overall mark – 2 instances 30% of overall mark – 2 instances 35% of overall mark – 1 instance 50% of overall mark – 1 instance	10% of overall mark – 8 instances 20% of overall mark – 6 instances 30% of overall mark – 4 instances 40% of overall mark – 3 instances 50% of overall mark – 1 instance 60% of overall mark – 2 instances
Learning logs / reflections	10% of overall mark – 1 instance	

3. Student instruction in research methodologies and methods, information searching, data analysis, writing up research results etc.

The table below gives an overview of the manner in which students are supported as regards research methods in order to undertake their dissertation. There is a good deal of similarity across the business etc. and technological groupings. Please note that multiple forms of support are common. As so few *optional* modules are used, it can be assumed that the vast majority of students are receiving support in relation to their understanding and use of research methods, although up to a fifth of the engineering and technology group may not be.

Research Methods Support	Business & Social Sciences	Engineering & Technology	OVERALL
In dissertation module	12 instances (43 %)	10 instances (36 %)	22 instances (39 %)
Compulsory method module	20 instances (71 %)	13 instances (46 %)	33 instances (59 %)
Optional method module	2 instances (7 %)	5 instances (18 %)	7 instances (13 %)
Via the supervisory process	13 instances (46 %)	22 instances (79 %)	35 instances (63 %)
None	*	1 instance (4 %)	1 instance (2 %)

4. Use of external supervisors to help guide students' progress through their dissertation / thesis / research project module

External Supervisors Used	Business & Social Sciences	Engineering & Technology	OVERALL
Always	1 instance (4 %)	2 instances (7 %)	3 instances (5 %)
When appropriate	10 instances (36 %)	14 instances (50 %)	24 instances (43 %)
Not used	17 instances (61 %)	12 instances (43 %)	29 instances (52 %)

As can be seen from the table above, there are again few differences between the findings by subject area. As far as **reasons** for the use of external supervisors are concerned, the following were cited by respondents:

- Capstone project practically-based and being undertaken in an external organisation (11 instances);
- To draw on specialised expertise not held within the institution (3 instances);
- Non-academic experts have tacit professional knowledge that is hard for academics to replicate (1 instance);
- (Internal) academic staff over-stretched and cannot supervise (1 instance).

Following on from the above, the actual **roles** of external supervisors (where used) tend to include:

- Providing general advice and support to students (10 instances);
- Helping with project design / making sure focus is relevant from a non-academic (user) point of view (2 instances);
- Performing *exactly* the same role as an internal supervisor would (1 instance);
- Helping to develop student's contextual understanding (1 instance);
- Helping to integrate student into an external organisation when the project is taking place there (1 instance);
- Assisting the student by commenting on draft materials being prepared for assessment (1 instance).

Finally, **assessment** is of course itself one area in which persons external to the institution are used, but this issue is dealt with separately below.

5. External participation in the assessment process

Externals Assess	Business & Social Sciences	Engineering & Technology	OVERALL
Always	2 instances (7 %)	2 instances (7 %)	4 instances (7 %)
Sometimes	9 instances (32 %)	13 instances (46 %)	22 instances (39 %)
Never	*	4 instances (14 %)	4 instances (7 %)

Once again, there is no clear pattern differentiating practices in the business, management and social science and engineering and technology fields. There are however a range of ways in which external persons can be involved in the assessment process (other than as External Examiner), which are as outlined below:

- In an advisory capacity to internal academic staff (5 instances);
- In an advisory capacity in relation to practical aspects of the work (1 instance);
- External supervisor has full responsibility for marking practical aspects of the work (1 instance);
- Ability to change grade awarded to work as a whole in a marginal way (3 instances);
- External supervisor works with other internal / external examiners as an equal partner (1 instance);
- To be totally responsible for the marking of Capstone work (1 instance).

6. Types of support typically provided to students undertaking a dissertation / thesis / research project module

Formal Support (Business & Social Sciences)	Instances Offered	How often (typically) this support available	Instances student engagement with support compulsory
Lectures	22 (79 %)	No typical pattern – e.g. at start of module (2), once per week (1), once per month (2), 3 meetings in total (1), 8 meetings in total (1) etc.	11 (50 %)
Staff-led seminars	14 (50 %)	No typical pattern	11 (79 %)
Supervisory meetings	23 (82 %)	Varied e.g. weekly (4), monthly (4), when needed (4) etc.	14 (61%)
Guest speakers	1 (4 %)	Occasional	0
Peer-support sessions	6 (21 %)	No typical pattern	3 (50 %)
Electronic support[1]	18 (64 %)	In response to student need in all instances	6 (33 %)
Other (*placement*)	1 (4 %)	Throughout duration of compulsory placement	1 (100 %)

Once again, the tables above and below show fairly similar patterns of support offered to students attached to business and social programmes when compared with those on engineering and technological degrees. It is worth noting the strong emphasis placed on attending supervisory meetings by staff.

Formal Support (Engineering & Technology)	Instances Offered	How often (typically) this support available	Instances student engagement with support compulsory
Lectures	15 (54 %)	No typical pattern – once per week (2) plus range of total number of supervisory meetings from as low as 2 to as high as 12	4 (27 %)
Staff-led seminars	13 (46 %)	No typical pattern	9 (69 %)
Supervisory meetings	24 (86 %)	Varied e.g. weekly (1), fortnightly (1), when needed (5) etc.	20 (83 %)
Guest speakers	4 (14 %)	On demand in 3 of the 4 instances	1 (25 %)
Peer-support sessions	7 (25 %)	No typical pattern	1 (14 %)
Electronic support	18 (64 %)	In response to student need	7 (39 %)
Other (*paper-based materials*)	1 (4 %)	In response to student need	*

[1] Electronic support may include the use of internet forums, chat rooms etc, often (although not necessarily) within a Virtual Learning Environment such as Blackboard, Moodle or Web CT

7. When assessing a dissertation / thesis / research project, how much emphasis do staff PERSONALLY attach to various criteria – BUSINESS, MANAGEMENT & SOCIAL SCIENCES

NB rated on a scale of 1-5 where 1 = very important; 2 = important; 3 = of some importance; 4 = of minor importance; 5 = of no importance; N/A = not applicable

Rank	Criterion	Weighted Mean
1	Producing recommendations that help to solve practical problems	1.6
2	Acquaintance with appropriate academic literature	1.7
3 =	Overall coherence of written outputs	1.9
3 =	Referencing / citation	1.9
3 =	Personal development on the part of the student	1.9
4 =	Generating primary research findings	2.0
4 =	The ability to synthesise information from a variety of sources	2.0
4 =	The use of grammatically correct written language	2.0
5 =	Oral defence of the work undertaken (*viva voce*)	2.1
5 =	Critical self-reflection on the learning process by the student	2.1
6 =	Knowledge of research methodologies and methods	2.2
6 =	Practical application of appropriate research methods	2.2
7 =	Use of appropriate techniques of data analysis	2.4
7 =	Using empirical findings to test or to build theory	2.4
7 =	The layout and appearance of written outputs	2.4
7 =	The development of inter-personal skills on the part of the student	2.4

NB **all** criteria have a weighted mean of 2.4, none below the point of 2.5. Interestingly, "Producing recommendations that help to solve practical problems" was ranked as the single most important assessment criterion by academic staff.

When assessing a dissertation / thesis / research project, how much emphasis do staff PERSONALLY attach to various criteria – ENGINEERING & TECHNOLOGY

NB rated on a scale of 1-5 where 1 = very important; 2 = important; 3 = of some importance; 4 = of minor importance; 5 = of no importance; N/A = not applicable

Rank	Criterion	Weighted Mean
1	Knowledge of research methodologies and methods	1.3
2	Acquaintance with appropriate academic literature	1.4
3 =	Practical application of appropriate research methods	1.6
3 =	The ability to synthesise information from a variety of sources	1.6
3 =	The use of grammatically correct written language	1.6
4	Overall coherence of written outputs	1.7
5 =	Use of appropriate techniques of data analysis	1.9
5 =	Referencing / citation	1.9
6 =	Producing recommendations that help to solve practical problems	2.0
6 =	The layout and appearance of written outputs	2.0
7 =	Generating primary research findings	2.1
7 =	Personal development on the part of the student	2.1
8	Oral defence of the work undertaken (*viva voce*)	2.2
9	Critical self-reflection on the learning process by the student	2.3
10	The development of inter-personal skills on the part of the student	2.5
11	Using empirical findings to test or to build theory	2.6

NB **two** criteria have a weighted mean of 2.5 / 2.6. In general, a wider spread of results than for business etc, with more emphasis placed on 'traditional' academic criteria in the case of the engineering and technology staff's views of assessment.

Additional assessment criteria in use were also noted by some staff, listed as below, all of which were rated as VERY IMPORTANT:

- Student abilities to reflect and self-criticise their work on completion
- Student abilities to self-direct their learning
- Time management on the part of students
- Layout and appearance of non-written outputs such as plans, illustrations etc.

FINALLY, staff provided a range of other comments on Capstone modules, the principal of which are noted below, in no particular order:

- Some design and development projects in the engineering and technology field are not well-suited to the application of scientific methods – NB THIS IS A VALID POINT, MENTIONED MORE THAN ONCE

- That in general there is a need for students to be better-supported by staff when doing Capstone work, but that staff need to be incentivised to do this

- Management of Capstone processes is generally challenging, but keen to learn more about how it is done in other institutions (encouraging for this project)

- Projects should truly be “Capstones” i.e. the student should lead up to this throughout their whole degree

INSTITUTIONAL REPORTS – BY EDUCATIONAL GROUPING

1) Anglo Saxon (Glasgow Caledonian University, Scotland, UK)

According to Tauch and Rauvargers (2002) the Anglo-Saxon educational grouping tends to be characterised by variety and complexity in educational provision. As a member of this grouping, Glasgow Caledonian University can be said to belong to the 'Scottish' sub-group, which is distinctive in many ways from that found in England.

In terms of Capstone modules, GCU materials gathered included:

Module Descriptors / Student Handbooks / Staff Handbooks / Supervision Guidance for Staff and Students / Assessment Guidance for Staff and Students / Feedback Forms / Programme Handbooks / Project Schedule Forms

The manner in which Capstone modules are managed at GCU is best characterised as diverse, but this is as much a facet of the scale of the institution (91 degree programmes identified) as anything else. Within the separate Schools of the University there is a greater degree of standardisation as regards the management of Capstone modules.

Specific information in relation to the Capstone module at GCU includes:

- Typical use of the name "Dissertation" or "Project" to describe these modules.
- Typical module size of 20 ECTS (1st cycle).
- Typical module size of 30 ECTS (2nd cycle).

- Research methods material typically delivered in a separate but related module (most Schools), but integrated into the Capstone module in the case of Engineering, Science and Design.

- Supervision arrangements vary significantly between Schools but tend to be similar within them.

- Students in the Built & Natural Environment School can undertake Capstone modules abroad, but otherwise they cannot. Theses to be submitted in English.

- Students are required to undertake individual work for Capstone modules, not group work.

- Significant flexibility regarding the type of projects that can be undertaken (e.g. traditional theory-supported empirical / based on secondary sources / conceptual – theoretical / product-focused).

- Students can work with outside organisations and industrial supervisors can have an input to supervision in these circumstances (all Schools).

- Viva voce used, but in different ways – sometimes it is mandatory, sometimes on a case-by-case basis. Academic External Examiners are always used and industrial External Examiners as appropriate.

- Students are not provided with information on the ECTS grading scheme.

- Students are able to provide feedback on Capstone modules for quality improvement but in practice they tend not to as it is their final piece of work.

- Capstone modules are evaluated and improved annually by staff as part of the regular quality system, with input from External Examiners.

Finally, specific areas where GCU Capstone modules provided information not widely available throughout the generality of modules examined included:

- Clear definition of the number of hours of preparatory classes required to undertake a Capstone module.

- Information on Health & Safety and insurance for Capstone modules.

- Reference to undertaking Capstone module and developing the skills needed to work in an international context.

- Reference to undertaking Capstone module and developing skills of initiative / entrepreneurialism.

- Information setting out a 'contract' between student and supervisor, establishing guidance on roles and responsibilities.

- Information on the input of External Examiners to the assessment process.

- Information regarding the relationship of Capstone modules to professional accreditation.

- Information on the gathering and use of student feedback on Capstone modules for quality improvement.

- Information on external input to the evaluation of Capstone modules for quality improvement.

2) Baltic (Alytus College, Lithuania)

According to Tauch and Rauvargers (2002) the Baltic educational grouping tends to be characterised as well-advanced in relation to the implementation of Bologna reforms and, as a member of this grouping, Alytus College can be said to be typical.

In terms of Capstone modules, Alytus College materials gathered included:

Module Descriptors / Student Handbooks / Staff Handbooks

Alytus College offers a variety of 1st cycle degree programmes and the manner in which Capstone modules are managed there is best characterised as diverse, with different degree programmes having different assessment schemes for their final project within the business and management and engineering and technology groupings as well as across them (although this occurs within a coherent quality system).

Specific information in relation to the Capstone module at Alytus College includes:

- Use of the name “Final Thesis” to describe these modules.
- Typical module size of 7 ECTS (1st cycle).
- Research methods typically integrated within Capstone modules.
- Students recommended to work with outside organisations where applicable and external supervisors used.

- Significant flexibility regarding the type of projects that can be undertaken (e.g. traditional theory-supported empirical / based on secondary sources / conceptual – theoretical / product-focused).

- Students are required to submit progress reports as they proceed with their work.

- Students are provided with information on the ECTS grading scheme.

3) Central & Eastern (University of Chemical Technology & Metallurgy, Bulgaria)

According to Tauch and Rauvargers (2002) the Central & Eastern European educational grouping tends to be characterised by ongoing reform to become Bologna-compliant. As a member of this grouping, UCTM can be said to be rather more advanced than most and its educational provision is already akin to that found throughout the rest of Europe.

In terms of Capstone modules, UCTM materials gathered included:

Module Descriptors / Student Handbooks / Supervision Guidance

The manner in which Capstone modules are managed at UCTM is best characterised as highly regularised, with one main set of documentation in use to guide projects across various degree programmes, across both first and second cycles. This is of course possible given the relatively specialised mission of the institution.

Specific information in relation to the Capstone module at UCTM includes:

- Use of the name “Diploma Thesis” to describe these modules.
- Typical module size of 8 ECTS (1st cycle).
- Typical module size of 20 ECTS (2nd cycle).
- Typical supervision arrangements of one hour formal supervision per European credit.

- Limits of six students supervised per member of staff (three 1st cycle and three 2nd cycle).

- Topics usually set by staff rather than by students.

- Students able to undertake Capstone module abroad and submit theses in other languages.

- Significant flexibility regarding the type of projects that can be undertaken (e.g. traditional theory-supported empirical / based on secondary sources / conceptual – theoretical / product-focused).

- An expectation that students will work with outside organisations and external supervisors used.

- Viva voce used.

- Students are provided with information on the ECTS grading scheme.

- Capstone modules evaluated and improved annually.

4) Nordic

According to Tauch and Rauvargers (2002) the Nordic educational grouping is largely reformed and Bologna-compliant, without the various systems that comprise this grouping having lost their own specific identity, and characterised by ongoing continuous improvement in educational provision.

4a) University of Aarhus, Herning, Denmark

As a member of the Nordic grouping, the University of Aarhus can be said to be reformed in Bologna terms and committed to ongoing continuous improvement in educational provision.

In terms of Capstone modules, Aarhus materials gathered included:

Module Descriptors / Staff Handbooks / Student Handbooks / Supervision Guidance for Students / Assessment Guidance for Students / Feedback Forms

The University of Aarhus sample was of 1st cycle programmes only, but across a wide variety of programmes in the business and management and engineering and technology fields. The key thing to note from an overall assessment of the Aarhus findings is that there is significantly more diversity in the management of Capstone modules in the business and management area than in the engineering and technology area, where a relatively standardised approach is adopted.

Specific information in relation to the Capstone module at Aarhus includes:

- Use of the name “Bachelor Thesis” to describe the module in most cases.
- A variable position as regards the development of research methods, depending on programme of study.

- A flexible approach – individual and group projects allowed, depending on degree programme and submission of work in languages other than Danish permitted (business and management degrees).

- Flexibility regarding the type of projects that can be undertaken (e.g. traditional theory-supported empirical / based on secondary sources / product-focused).

- Students are, on the whole, required to work with outside organisations, from where external supervisors are often drawn.

- Viva voce typically used, as are External Examiners.

- Students are typically provided with verbal feedback on their Capstone project.

- Students are provided with information on the ECTS grading scheme.

- Staff and External Examiners evaluate Capstone modules on an annual basis for quality improvement.

Finally, specific areas where Aarhus Capstone modules provided information not widely available throughout the generality of the modules examined in the project included:

- Information on undertaking Capstone modules at exchange partner institutions.

- Information on Capstone modules and Diploma Supplement / Europass.

- Information on Health & Safety and insurance in relation to Capstone modules.

- Reference to undertaking Capstone module and developing the skills needed to work in an international context.

- Reference to undertaking Capstone module and developing skills of initiative / entrepreneurialism.

- Information on external input to the evaluation of Capstone modules for quality improvement.

4b) Lahti University of Applied Sciences, Finland

As a second member of the Nordic educational grouping, Lahti University of Applied Sciences can also be said to be reformed in Bologna terms and committed to ongoing continuous improvement in educational provision.

In terms of Capstone modules, materials gathered from Lahti University of Applied Sciences included:

Module Descriptors / Student Handbooks / Staff Handbooks / Supervision Guidance for Staff & Students / Assessment Guidance for Staff & Students / Feedback Forms

As discussed earlier in this Report, a previous related study on Capstone modules in Finland had been undertaken by Lahti University of Applied Sciences and partners. This clearly shows through when examining the arrangements in place for the management of Capstone modules there, as similar evidence of good practice is to be found across subject areas and cycles. That is not to state that a 'standard' approach has been adopted but it is very clear that all Capstone modules have regard to a common quality system, although key issues such as the number of assessed outputs and the authority of external supervisors in relation to assessment etc. are determined with regard to degree programme.

Specific information in relation to the Capstone module at Lahti University of Applied Sciences includes:

- Use of the name "Thesis" to describe the module.
- Typical module size of 15 ECTS (1st cycle).
- Typical module size of 30 ECTS (2nd cycle).

- A flexible approach – individual and group projects allowed, depending on degree programme and submission of work in languages other than Finnish permitted.

- Significant flexibility regarding the type of projects that can be undertaken (e.g. traditional theory-supported empirical / based on secondary sources / conceptual – theoretical / product-focused).

- Students are either recommended or required to work with outside organisations, depending on degree programmes and external supervisors are usually used, as part and parcel of a supervisory team of three or four.

- Students are provided with information on the ECTS grading scheme.

- Students are able to receive written feedback on their Capstone project.

- Students feed information into staff evaluations of Capstone modules undertaken on a regular basis for quality improvement.

Finally, specific areas where Lahti Capstone modules provided information not widely available throughout the generality of the modules examined in the project included:

- Reference to undertaking Capstone module and developing the skills of decision-making.

- Reference to undertaking Capstone module and developing skills of initiative / entrepreneurialism.

- Guidance on institutional policy on copyright.

- Information regarding the relationship of Capstone modules to professional accreditation.

- Information on the gathering and use of student feedback on Capstone modules for quality improvement.

- Information on external input to the evaluation of Capstone modules for quality improvement.

5) Western & Southern

According to Tauch and Rauvargers (2002) the Western & Southern European educational grouping tends to be characterised as a grouping where ongoing reform in the educational systems has been boosted by the Bologna process and where changes at a European level are being used as a means of implementing further changes at the domestic level.

5a) TEI West Macedonia, Greece

As a member of the Western & Southern grouping, TEI West Macedonia can be said to be one of those Greek institutions (the TEIs) that have been able to extend their areas of activity in recent years as part of ongoing change in the system. TEI West Macedonia is undoubtedly a shining example of an institution which has fully integrated European policy into its own processes.

In terms of Capstone modules, TEI West Macedonia materials gathered included:

Module Descriptors / Student Handbooks / Staff Handbooks / Assessment Guidance for Students / Seminar Materials

TEI West Macedonia offers a wide range of degree programmes in the engineering and technology and business and management fields, across both 1st and 2nd cycles. The institution has previously undertaken work on 'Europeanising' the information provided to its students and this shows in analysing materials from there. The general manner in which Capstone modules are managed at TEI West Macedonia can be characterised as involving the application of common quality procedures throughout the institution although each degree programme has scope to shape its own Capstone module.

Specific information in relation to the Capstone module at TEI West Macedonia includes:

- Use of the name “Diploma Thesis” to describe the module.
- Variable module size of 15 - 30 ECTS (1st cycle).
- Module size of 12 ECTS (2nd cycle).
- Research Methods usually included as part of the Capstone module.
- Supervision arrangements typically involve one supervisor only, although sometimes two are involved.
- Students can do Capstone modules abroad, but following the ‘home’ module and are supervised remotely. Final work is submitted in Greek.
- Students can work on Capstone modules both individually and in groups.
- Significant flexibility regarding the type of projects that can be undertaken (e.g. traditional theory-supported empirical / based on secondary sources / conceptual – theoretical / product-focused).
- Students sometimes work with outside organisations, but must make the links themselves and seek approval from the institution. External supervisor may have some limited input in this situation.
- Viva voce compulsory for all students.
- Students are provided with information on the ECTS grading scheme.

- Students are typically provided with verbal feedback on their Capstone project.

- Student feedback is sometimes gathered at the end of the Capstone process and staff can evaluate this as part of quality improvement, but this is not a formal requirement.

Finally, specific areas where West Macedonia Capstone modules provided information not widely available throughout the generality of the modules examined in the project included:

- Information on undertaking Capstone modules at exchange partner institutions.

- Information on Capstone modules and Diploma Supplement / Europass.

- Information on Health & Safety and insurance in relation to Capstone modules.

5b) IPP-ISEP, Portugal

Also a member of the Western and Southern educational grouping, IPP-ISEP have again largely reformed their activities in recent years as part of ongoing change in the European and national systems, with greater integration of the School (ISEP) into the parent organisation (IPP) being one of the main outcomes from this process.

In terms of Capstone modules, ISEP materials gathered included:

Module Descriptors / Supervision Guidance for Staff and Students /
Assessment Guidance for Staff and Students

ISEP is a specialised engineering and technology institution within IPP, but in relation to this project Capstone modules were examined across the whole institution, i.e. including business and management and social science subjects as well. The manner in which Capstone modules are managed in Porto is best-described as flexible, within an overall quality policy. Each degree programme has in place arrangements for Capstone modules that are suited to their own needs and flexibility is evident within Schools as well as across them.

Specific information in relation to the Capstone module at IPP includes:

- Typical use of the name “Project” to describe the module.
- Variable module size of 4 - 18 ECTS (1st cycle).
- Variable module size of 8 – 60 ECTS (2nd cycle).
- Research methods material typically delivered in a separate but related module but integrated within the Capstone module in some cases.

- Supervision arrangements tend to involve teams of staff of between two and four in number, with four being most commonly reported.

- Students cannot do Capstone modules abroad and work is submitted in Portuguese, with the exception of the area of Human Resources (1st and 2nd cycle) where work can be submitted in other languages.

- Students can work on Capstone modules both individually and in groups.

- Flexibility regarding the type of projects that can be undertaken (e.g. traditional theory-supported empirical / conceptual – theoretical / product-focused).

- Practices in relation to working with outside organisations are variable – in some cases students are required to do so, in others permitted to and in other cases disbarred from doing so. Each degree programme tends to have its own arrangements in this regard.

- Viva voce is a standard part of the assessment of Capstone modules at IPP.

- Students are not provided with information on the ECTS grading scheme.

- Student feedback is not generally gathered at the end of the Capstone process / fed into an ongoing quality improvement process.

Finally, specific areas where IPP Capstone modules provided information not widely available throughout the generality of the modules examined in the project included:

- Reference to undertaking Capstone module and developing the skills of decision-making.

- Reference to developing the skills of interdisciplinary working through the Capstone module.

- Reference to undertaking Capstone module and developing skills of initiative / entrepreneurialism.

- Information on the input of External Examiners to the assessment process.

5c) EUETIT, Catalonia, Spain

As the third member of the Western and Southern educational grouping, EUETIT have had a similar experience to ISEP. They have again largely reformed their activities in recent years as part of ongoing change in the European and national systems, with the key outcome being unification of the College of Industrial Engineering (EUETIT) with the Technical School of Industrial Engineering and Aeronautics of Terrassa (ETSEIAT), to form a new unit within the parent organisation (UPC) which is now the largest engineering School in Spain.

In terms of Capstone modules, EUETIT materials gathered included:

Module Descriptors / Staff Handbooks / Supervision Record Sheets

The manner in which Capstone modules are managed at EUETIT is best characterised as relatively regularised across the 1st cycle, to which the majority of information gathered pertained. As EUETIT is a specialist centre for engineering and technology education within The Technical University of Catalonia, all of the information set out below relates to Capstone modules in this subject field.

Specific information in relation to the Capstone module at EUETIT includes:

- Use of the name “Final Project” to describe the module, which leads to the production of a “Dissertation”.

- Typical module size of 18 ECTS (1st cycle).

- Flexibility regarding the type of projects that can be undertaken (e.g. traditional theory-supported empirical / conceptual – theoretical / product-focused).

- Students typically submit their dissertation in Spanish, but there is scope for exchange students to submit work in English.

- Students typically have one supervisor.

- Students may however work with outside organisations, where appropriate, and may have an external supervisor in these circumstances.

- Viva voce used in the majority of instances.

- Students are provided with information on the ECTS grading scheme.

- Capstone modules at EUETIT often contain a significant design element.

CONCLUSIONS

Following the completion of phases 1 – 5 of the European Capstone Module Project the data analysis process has enabled the project team to draw a number of conclusions, in relation to the nature and shape of extant Capstone modules within the eight educational partner institutions involved (and thereby the five European educational traditions) and within the business and management, engineering and technology and social science fields.

A synopsis of the analysis (by subject matter) prepared at the team's meeting in Lithuania in Spring 2007 follows and the report then concludes with a number of general observations about the work undertaken thus far.

Business / Management / Social Sciences

In relation to availability of materials, most Capstone modules in this subject grouping have detailed module descriptors as well as handbooks and assessment guidance for students (including clear definition of pass / fail / merit etc.). Approximately half of the modules examined also had staff handbooks, supervision guidance notes for students, separate assessment guidelines for staff and specific feedback forms available, although it is known that the students often fail to collect their feedback as the Capstone module comes at the end of their degree. Only eight modules (from a sample of sixty-six) had specific supervision guidance notes available for staff.

With the exception of one instance, all modules examined contained all of the basic information which one would expect to find i.e. module title, module leader named, credit points, period of time over which module runs, when supervisors will be allocated etc. and in the majority of cases the learning and teaching strategy and information on approval of Capstone topic is also available.

In about one-third of cases, group work is allowed in Capstone projects and, although approximately 80% of instances examined show one module output as the standard, this is in part a result of the large GCU sample where this is the norm. The questionnaire data gives a better sense of the diversity of the situation as regards the number and nature of module outputs than the documentary analysis for this reason.

The ability to submit theses etc. in a language other than that of the nation in which an institution is based was evident in about one-third of cases. Again, this figure is affected by the size of the GCU sample (English only) but a review of the summary institutional reports demonstrates that half of the institutions do have procedures that allow for the submission of work in foreign languages. Most institutions also provide students with an explanation of the ECTS grading scheme, which is also beneficial to note from a 'European' point of view, but few allow Capstone modules to be undertaken in partner institutions on Erasmus exchange.

There is a great degree of flexibility in terms of the type of Capstone projects that can be undertaken, with about two-thirds of Capstone modules examined allowing for the submission of 'traditional' 'secondary-only' and 'conceptual' pieces of work and with about one-third of the modules examined also allowing for a 'product (or practical problem) based' approach to be taken. In relation to the latter, although students are not often *required* to work with outside organisations when completing their Capstone (one-fifth of instances) they are *permitted* to in a further one-fifth of cases examined.

The skills that are most commonly stated as being developed in Capstone modules in the business and management / social science fields include:

- Analysis and synthesis;
- Organisation and planning;
- Information management;
- Critical and self-critical skills;
- Project design & management.

Overall however, although many of the 'Tuning' skills are being developed through Capstone projects, this is not necessarily evident to the students, as recording of this in documentation is not as widespread as it could be across the sample of European partners concerned.

Engineering and Technology

In relation to availability of materials, all Capstone modules in this subject grouping provide students with at least basic module materials e.g. detailed module descriptors.

The engineering and technology grouping also tends to require individual work by students in the majority of cases, although there is more scope for group work on Capstone projects than in the other subject areas, probably as a result of the fact that it is more common for students to be involved in undertaking a part of a large project under the guidance of staff.

One area where there is a clear difference from business / management / social science is in relation to the number and type of outputs required from a Capstone project in engineering and technology. As a general rule, students in this field are usually expected to produce more than one piece of work (the modal situation) and in three-quarters of instances examined are required to generate some form of *product*. Given that students are so often involved in producing physical artifacts, often involving use of equipment and sometimes independently, it was surprising that issues of health and safety etc. were not addressed more thoroughly in the engineering and technology documentation. One further difference which emerged from the data gathered was that students are less likely to be able to submit work based solely on secondary sources than in the other subject areas.

The ability to submit work in a language other than that of the nation in which the institution is based was also more prevalent in the engineering and technology grouping, with approximately one-half of instances examined having mechanisms to

allow for this, which is encouraging. Additionally, one-third of the examples of Capstone modules from this grouping allow for students to undertake their Capstone on Erasmus exchange at partner institutions, a considerably higher figure than in the case of business and management / social sciences.

About half of students are *required* to work with outside organisations as part of their Capstone module (and more are *permitted* to do so), which is again considerably higher than for the business and management / social science grouping.

Finally, in terms of the Tuning skills, the engineering and technology documentation was very similar to that from the other subject areas, i.e. although many of these skills are being developed through Capstone projects, this fact is not necessarily evident to the students as recording of it in documentation is not as widespread as it could be. Skills which are mentioned particularly rarely are:

- Decision-making
- Working in an international context
- Working autonomously
- Adaptability

Again, when devising the European Capstone Module, attention will have to be paid to these issues to ensure that students are encouraged to develop an awareness of the full range of skills that are being developed when undertaking their Capstone work.

General Conclusions

Initial data analysis undertaken in Lithuania and reported in the 'Interim Report' submitted in early July suggested that Capstone module in engineering and technology were more similar across Europe than in business and management and the social sciences. This matched initial expectations on the part of the project team, who had anticipated this as a logical extension of the existence of a diversity of 'national' academic traditions in social scientific fields which is not replicated in the largely unified academic traditions of the natural sciences and related subjects.

Following further, deeper analysis however, although this pattern does exist in a very slight way, it could not be said to be as strong as expected. In terms of the documentary analysis, there were 28 areas of divergence across the whole sample, with the business and management and social science grouping showing 24 areas of divergence. In comparison, the engineering and technology grouping showed 23 areas of divergence (albeit across a larger sample), suggesting that this grouping is only *slightly* more unified than the business / management / social science group.

Thus, the main conclusion that can be derived from the work undertaken so far is that although there are differences between national traditions and although there are differences between subject areas, the project team have, in the final analysis, found there to be a far greater degree of overlap and similarity as regards the nature of Capstone modules than had ever been expected (i.e. 41 areas of convergence, 28 of divergence). From the project team's perspective this is indeed a welcome finding, as it will hopefully ease the production of a Capstone product to be applied across Europe.

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Appendix 1 – Documentary Analysis Matrix

CAPSTONE PROJECT – INITIAL DOCUMENTARY ANALYSIS MATRIX

Record No.

Name of Institution:

Name of Degree(s)

Level: First Cycle ☐ Second Cycle ☐ Both ☐

Area of Study: Business ☐ Technology ☐ Social Sciences ☐

Materials available?

- Module Descriptor ☐
- Student Handbook ☐
- Staff Handbook ☐
- Supervision Guidance (staff) ☐
- Supervision Guidance (students) ☐
- Assessment Guidance (staff) ☐
- Assessment Guidance (students) ☐
- Feedback forms ☐
- Other (please explain) ☐

Q	Section 1 - General Info	In students' material?	Notes/Comments e.g. module title = dissertation? thesis?
1	Module title?	☐	
2	Module level clearly articulated?	☐	
3	Responsible Faculty / Department named?	☐	
4	Responsible staff named (module leader)?	☐	
5	Credit points (national and/or ECTS) stated?	☐	
6	Dates / Semesters module runs stated?	☐	
7	Does module contain research methods?	☐	

Appendix 1 – Documentary Analysis Matrix

	Section 1 - General Info	In students' material?	Notes/Comments e.g. module title = dissertation? thesis?
8	If not, is relationship with research methods module articulated?	☐	
9	Number of hours of preparatory classes for this module stated clearly?	☐	
10	Typical number of hours of staff supervision time stated clearly?	☐	
11	Typical number of hours of student effort stated clearly?	☐	
12	Is information on topic choice clearly stated?	☐	
13	Is information on topic approval clearly stated?	☐	
14	Is a clear learning and teaching strategy provided?	☐	
15	Nature of module output?	Individual ☐	Group ☐ Either ☐
16	Number of module outputs?	One output ☐	Multiple ☐ Either ☐
17	Language allowed for module outputs?	Home ☐	Other ☐ Either ☐
18	Type of project students are expected to undertake? (*NB please check as many boxes as apply*)	Theory-supported empirical (traditional) ☐	Secondary source-based review ☐ Conceptual / theoretical ☐ Product-focused ☐
19	Are students required to work with outside organisations (e.g. businesses)?	☐	
20	Does the institution help students make contact with such organisations?	☐	
21	Is there a formal agreement between institution and any such organisations?	☐	
22	Are students able to conduct a capstone project at a partner institution (e.g. on Erasmus exchange)?	☐	
23	Is there a reference to Diploma Supplement / Europass?	☐	

Appendix 1 – Documentary Analysis Matrix

	Section 1 - General Info	In students' material?	Notes/Comments e.g. module title = dissertation? thesis?
24	Is there clear guidance on health & safety procedures, insurance arrangements etc?	☐	
	Section 2 – Aims / Learning Outcomes / Competences / Skills (developed from Tuning)	**In students' material?**	**Notes/Comments (where relevant)**
25	Is there a clear definition of what a capstone module is?	☐	
26	Does the module have an explicit requirement for analysis and synthesis?	☐	
27	Is there reference to: "Organisation and planning"?	☐	
28	Is there reference to: "Information management skills (retrieve & analyse info. from different sources)"?	☐	
29	Is there reference to: "Problem solving"?	☐	
30	Is there reference to: "Decision-making"?	☐	
31	Is there reference to: "Critical and self-critical abilities"?	☐	
32	Is there reference to: "Interdisciplinarity" (individual or team)?	☐	
33	Is there reference to: "Potential to work in an international context"?	☐	
34	Is there reference to: "Capacity for applying knowledge in practice"?	☐	
35	Is there reference to: "Capacity to adapt to new situations"?	☐	
36	Is there reference to: "Capacity for generating new ideas (creativity)"?	☐	
37	Is there reference to: "Potential to work autonomously"?	☐	
38	Is there reference to: "Project design and management"?	☐	
39	Is there reference to: "Initiative and entrepreneurial spirit"?	☐	

Appendix 1 – Documentary Analysis Matrix

	Section 3 – Supervision	**In students' material?**	**Notes/Comments (where relevant)**
40	Is information available on how supervisors are allocated?	☐	
41	Is information available on when supervisors will be allocated?	☐	
42	How many people (typically) are involved in supervising a capstone project? *Enter number.*		
43	Are people external to the institution ever involved in supervision?	☐	
44	Is there a recommended timetable for supervision meetings?	☐	
45	Is there a formal contract document / agreement between student(s) and supervisor(s)?	☐	
46	Is there a formal mechanism to resolve disagreements over supervision?	☐	
47	Is there a formal document for recording supervision meetings?	☐	
48	Are formal progress reports to be submitted as the student's work progresses?	☐	
49	Are students provided with formal guidance on ethical conduct?	☐	
50	Are students provided with formal guidance on plagiarism?	☐	
51	Are students provided with formal guidance on institutional policy on copyright?	☐	
52	Is a standard style guide in use for producing written outputs?	☐	
	Section 4 – Assessment	**In students' material?**	**Notes/Comments (where relevant)**
53	Are assessment guidelines clearly detailed?	☐	
54	Are local marking criteria clearly explained?	☐	
55	Is detailed information available on the assessment process?	☐	

Appendix 1 – Documentary Analysis Matrix

	Section 4 – Assessment	**In students' material?**	**Notes/Comments (where relevant)**
56	Is the information regarding use of External Assessors (other institution or company) available?	☐	
57	Is the information regarding professional accreditation available *(where relevant*)?	☐	
58	Is oral defence / viva voce used as part of assessment?	☐	
59	Are students provided with a clear definition of what constitutes a fail / pass / merit mark etc?	☐	
60	Are students provided with information on grading *within* fail / pass / merit categories?	☐	
61	Are students provided with an explanation of ECTS grading?	☐	
62	Are students provided with a feedback sheet (or other means of feedback) that explains their mark?	☐	
63	Are students provided with clear information regarding late submission and/or non-submission?	☐	
64	Are students provided with full details about any appeal procedures that may exist?	☐	
65	Are students provided with details re. '*formalisation of award*' (i.e. after passing but before graduation)	☐	
	Section 5 – Evaluation	**In students' material?**	**Notes/Comments (where relevant)**
66	Is there a formal mechanism in place for module evaluation and improvement?	☐	
67	As capstone modules come at the end of study, is student feedback gathered?	☐	
68	Do staff have the opportunity to evaluate and improve capstone modules on an annual basis?	☐	
69	Do persons external to the institution have the opportunity to comment on capstone modules?	☐	

EUROPEAN UNION CAPSTONE PROJECT 2006-2008

PROGRAMME LEADER QUESTIONNAIRE

We would appreciate it if you were able to provide your name and contact details etc. below, in case members of the research team need to contact you about your responses. Please note that all information gathered will be treated as confidential. Should you have any queries about this questionnaire, please contact .

Name _____

Email _____ **Telephone** _____

I am responsible for leading the following degree programme:

_____

8. Which of the following higher education institutions do you work for (please tick)?

Aarhus University - Institute of Business and Technology	Denmark	
Alytus College	Lithuania	
Glasgow Caledonian University	UK	
Instituto Superior de Engenharia do Porto, Porto Polytechnic Institute	Portugal	
Lahti University of Applied Sciences	Finland	
Technical School of Industrial Engineering of Terrassa, UPC	Spain	
Technological Educational Institute of West Macedonia	Greece	
University of Chemical Technology and Metallurgy	Bulgaria	
OTHER (please complete)		

9. The following table relates to the relative weight attached to assessed outputs from dissertation / thesis / research project modules (e.g. written work plus product plus oral examination = 3 outputs).

Please Complete the Blank Space	Assessment Weighting Attached to this Output
Output 1 is a	%
Output 2 is a	%
Output 3 is a	%
Output 4 is a	%

10. Do your students receive instruction in research methodologies and methods, information searching, data analysis, writing up research results etc (please tick)?

Yes – as part of their dissertation / thesis / research project module	
Yes – in separate compulsory module(s)	
Yes – in separate optional module(s)	
Yes – as part of the supervisory process	
No	

11. Do you use external supervisors to help guide the students' progress through their dissertation / thesis / research project module (please tick)?

Yes – always	
Yes – if appropriate	
No	

IF YOU HAVE ANSWERED "YES" TO QUESTION 4 PLEASE COMPLETE QUESTIONS 5 – 8, OTHERWISE PLEASE PROCEED DIRECTLY TO QUESTION 9 ON THE NEXT PAGE.

12. If external supervisors are used, please give a more detailed account of the reasons *why* they are used and what kind of expertise they have which higher education institutions don't.

13. If external supervisors are used, please give a more detailed account of their roles and tasks.

14. Do external supervisors participate in the assessment process? (please tick)

Yes – always	
Yes – sometimes	
No - never	

15. What authority do external supervisors have as regards grading? If some, then how much?

16. How many of the following types of support would typically be provided to students on your degree programme as they undertake their dissertation / thesis / research project module?

Type of Formally Arranged Support	**Is it offered? (delete as appropriate)**	**How often (typically) would this support be available to students?**	**Is student engagement with this support compulsory?**
Lectures	Yes / No		Yes / No
Staff-led seminars	Yes / No		Yes / No
Supervisory meetings	Yes / No		Yes / No
Guest speakers	Yes / No		Yes / No
Peer-support sessions	Yes / No		Yes / No
Electronic support[2]	Yes / No		Yes / No
Other (please specify) _____	Yes / No		Yes / No

[2] Electronic support may include the use of internet forums, chat rooms etc, often (although not necessarily) within a Virtual Learning Environment such as Blackboard, Moodle or Web CT

17. When assessing a dissertation / thesis / research project, how much emphasis would you personally attach to each of the following?

Please rate on a scale of 1-5 where 1 = very important; 2 = important; 3 = of some importance; 4 = of minor importance; 5 = of no importance; N/A = not applicable

Acquaintance with appropriate academic literature	
Knowledge of research methodologies and methods	
Practical application of appropriate research methods	
Generating primary research findings	
Use of appropriate techniques of data analysis	
Using empirical findings to test or to build theory	
Producing recommendations that help to solve practical problems	
The ability to synthesise information from a variety of sources	
The use of grammatically correct written language	
The layout and appearance of written outputs	
Overall coherence of written outputs	
Referencing / citation	
Oral defence of the work undertaken (*viva voce*)	
Personal development on the part of the student	
The development of inter-personal skills on the part of the student	
Critical self-reflection on the learning process by the student	

If there are any other criteria which are used to assess dissertations / theses / research projects please complete the chart below, again using the rating scale above.

a)	
b)	
c)	
d)	

18. Finally, are there any other comments that you would like to make in relation to the management of the dissertation / thesis / research project process?

Thank you for taking the time to complete this questionnaire. Please now return it to in the envelope provided. If you are interested in design / supervision / assessment issues associated with dissertations / theses / research projects, the team would be very keen to undertake a short follow-up interview at which the topics addressed in this questionnaire can be discussed in greater depth. Should you be interested in sharing more of your thoughts with the research team, please contact , tel. , e-mail .

Interview – Capstone Project 16th May 2007

Interviewee: Xxx Xxx

Title: Associate Dean Quality – An Engineering & Technology School

Q. **Regarding evaluation of your programme, are there formal mechanisms in place for continuous evaluation and improvement?**

A. The School has the Annual Programme Analysis (APA) which is both retrospective and forward looking. This is a process which uses reflection and lets us see what works and does not work. We are able to implement a process of continuous improvement and identify SMART objectives by looking at the experiences and feed back of both students and staff. It is necessary for the school to be able to respond to internal and external changes and be able to enhance the teaching experience at the same time.

The School has worked very hard to align documentation as regards LTAS for all programmes. This maintains consistency of methods and ease of their use. This also has the added effect of stimulating discussion for LTAS improvements. Our process of improvement is driven by the APA and also the feed back brought to the Student Consultative Committees by student reps. These are used in conjunction with the APA findings by the Associate Dean to produce an annual report for the board. This obviously feeds into effective constructive alignment of assessment and results in a more equitable system for all students on all programmes. This also has an added benefit in that it is easier to justify marks (to students and externals) given if there is a clear marking scheme showing the split of marks awarded for each section of course work. Weightings are agreed and advised to students and this leads to uniform assessment. Also moderation internally of marks is made easier with uniform marking schemes.

It is also important that **expectations** are set for both students and teaching staff of learning, teaching and assessment strategies. Everyone knows where they stand.

Q. **As capstone modules come at the end of Undergraduate and Post Graduate Programmes is student feed back gathered to use in this improvement process?**

A. Yes, students are asked to fill out module feed back questionnaires on My Caledonian. Unfortunately not many students do this as after they finish the programme they seem to forget to look at Blackboard. They are much more likely to approach members of staff individually if they need assistance or have a grievance. This is due to the openness of 'The School' everyone feels they can do this and, indeed, do not describe themselves as being from one particular part of the school but as *belonging* to 'The School'. Feed back therefore from the Students' Consultative process is most useful in assessing the relevance, for example, of certain modules.

This feed back is used by Module leaders in their Evaluation of Operations and Review. From the analysis of both questionnaires and student representations, feed back is produced an action plan. This is presented to the Programme Board for amendment/approval.

Q. **How is this gathered - via My Caledonian, Blackboard or by any another method?**

A. See above, also:

My Caledonian feedback is gathered on an annual basis. Student advisors meet with whole cohort in week 4 then the Student Consultative Committee meets in week 6 of the semester. This means that any issues can be flagged up by Student Reps and (hopefully) dealt with as soon as possible. Of course, due to the open door policy here in the School, students know they can come forward at any time with comments, feed back etc. These are dealt with through the official channels. Students are not reticent to come forward. And it's always best to tackle issues early to avoid poor results and students leaving the course altogether through being unhappy.

Q. Do staff have the opportunity to evaluate and improve capstone modules on an annual basis?

A. See above

Q. **In what way is staff feed back gathered and analysed?**

A. See above

Q. **Do persons from out with Glasgow Caledonian have the opportunity to comment on the capstone module?**

A. A representative from practice and industry is always in attendance at the Programme Board. They have formal input at the board itself on new modules, programme re-approval or change. This also serves to reinforce good relationships with top employers and expand the opportunities for work placement. It's considered as a consultation process and keeps teaching materials and practice contemporary. Also persons working in relevant disciplines in industry are employed as part time lecturers which increase the input to programme module content.

Q. **Can you please tell me where these external parties come from?**

A. Industry, practitioners and also with Professional Bodies as regards accreditation and standards

Q. **Do you keep in contact with these external advisors and make it a formal part of the improvement process?**

A. As mentioned before this is done on a formal annual basis and also informally throughout the year.

Q. **And, are external supervisors used in the in the process, too?**

A. There are not too many external supervisors used – mainly use in-house supervisors for Undergraduate but perhaps a few more at post graduate. If an external supervisor is used there is a special in house training arranged so that they are familiar with LTAS of GCU

Q. **Where does the external supervisor fit into the assessment process? (Perhaps filling in an expertise gap, for a specialism not found at GCU, for example)**

A. Are used rarely for these circumstances.

Q. **Are external assessors used in the process?**

A. Yes, where there is disagreement over marking (by 10%) between internal markers. This is then referred to an external who is a 'critical friend' and can arbitrate/interpret. It is possible for a mini 'viva' to be held in order that the student can give input to the process.

At Masters level a sample of theses are submitted in advance to assessors. External assessors can comment on Programmes are they are involved with the formal assessment during the assessment event formally. They also can communicate 'off-line' at an informal evening gathering which opens up dialogue on wider issues relating to programmes and implementation of best practice.

Q. **Lastly, earlier on in the project I provided an overview of the Capstone Project. May I ask what your feelings or comments are about its aims and objectives?**

A. There should be a framework such as the one proposed, to avoid variance and large differentials in LTAS procedures.

This will also allow more flexibility in movement of student in Europe and mean the same thing everywhere. Benchmarks can be used to maintain standards and show what constitutes a doctoral thesis and a dissertation.

Perhaps, due to the increased transparency of post 1992 universities there is an even greater need for this to combat the elitist views of the older universities, which can be anti qualifications framework.

Also, from the student and employer perspectives there is a clear indication of levels achieved through the adoption of bench marks at all levels. It is consistent and transparent to provide this sort of framework.

As regards equal 'opportunities for all' this would play an important part in breaking down borders and embedding diversity in all institutions. This is all

the more important as, not only GU, but all other universities are welcoming more international students.

There should not be a one size fits all approach though, some flexibility has to be built in. The important thing is to get all institutions to subscribe to this EU initiative.

END OF INTERVIEW