

ACADEMIC AND PROFESSIONAL SERVICE STAFF COLLABORATION TO FOSTER INDEPENDENT LEARNING

Angela Benzies and Jane McDowell, Napier University

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ABSTRACT

This paper outlines how the project 'Transforming and Enhancing the Student Experience through Pedagogy', used a social constructivist pedagogical approach to support active learning and information literacy development within a module in engineering design management, with the intention of improving both student experience and assessment performance. The result was greater engagement with the body of knowledge, increased peer collaboration, and appropriate deployment of technology to facilitate the learning, teaching and assessment in the context of on-campus delivery, supported by discipline-based information literacy input from a librarian. In taking forward the lessons learnt the authors present the current work on more systematic development of scholarship skills across programmes of study by The Society of College, National and University Libraries (SCONUL) and Glasgow Caledonian and Napier Universities, and argue that collaboration among academic and professional services staff is essential to the success of such ventures in transforming the student experience.

INTRODUCTION

Napier University was the lead institution on a higher/further education (FE/HE) collaborative project entitled 'Transforming and Enhancing the Student Experience through Pedagogy' (TESEP), which started in 2005 and finished in July 2007. It was one of six E-learning and Transformational Change projects supported by £6m from the Scottish Funding Council, the overall aim of the programme being to support effective and significant change in technology-supported learning, teaching and assessment practice within institutions and across the FE and HE sectors, partly to ease the transition between two. A community of practice approach was taken with each practitioner participating in a sub-project within their own institution and contributing to the shared knowledge of the group throughout the project's operational phase. Work done across the whole project was collated at the end into the TESEP Transform website (Napier University, 2007a) to serve as both a showcase and a resource, and the intention was to use the experience gained and resources developed to continue with the transformation work beyond the project's official end date.

Napier University's Learning, Teaching and Assessment Strategy emphasises the role of the development of scholarly skills in the achievement of its aims and clearly sets out the intention that students should be playing an increasingly active and responsible role in their own learning, including the development of these scholarly, research and transferable skills (Napier University 2008). The TESEP project provided a vehicle for the further exploration of this area and the opportunity to develop pedagogical approaches, tools and techniques that could be subsequently embedded in mainstream curriculum development and teaching practice.

THE TESEP PROJECT

Vision and aims

Several issues pointed towards the necessity of examining how pedagogically-driven technology-supported learning could be used to transform educational practice at institutional level including political developments such as the widening access agenda, and practical issues such as the need for greater flexibility of delivery. Students' familiarity with technology and the desire to use it to help them access learning in a manner appropriate and attractive to them, the need to update the technical skills of staff and the absolute requirement to apply technology in an educationally sound manner, gave the impetus for experimenting with a range of tools and methods for learning, teaching and assessment and its support. TESEP did not promote a techno-centric approach but rather one where technology was recognised as an enabler.

A central tenet of TESEP was that learning should be designed to give control to the learners themselves, hence the project's strapline, 'Learners in Control'. While the amount of control appropriate for each stage of study may vary, it is certainly the case that such learner control is necessary for truly active learning to take place and, consequently, if this is to happen learners must be adequately prepared and confident to accept the associated responsibility.

Pedagogical foundations

TESEP advocated a social constructivist pedagogical approach, i.e. one where the human activity of constructing knowledge and meaning from one's experiences is conducted within a social context and comprises such activities as collaborative research, and peer tutoring and assessment. Technology added another dimension to this in that it enabled some of the necessary research, communication and collaboration, and the project aimed to utilise innovative tools and techniques, tailored for the specific requirements of the particular student group. Although it was not a requirement that the redesign was constructed as problem based learning, there were overlaps with this approach and some institutional projects did adopt it.

Organisational structure

The project was run by a professional project manager supported by a project management team comprising senior staff from each participating institution and led by a project director. In addition a project team of institutional e-pedagogy experts, an external consultant, an evaluator and an accessibility advisor supported a community of twenty practitioners drawn from a variety of discipline areas. Regular workshops, individual assistance, reflective blogs and an electronic community forum provided the mechanisms for project coordination, support and sharing of knowledge. All practitioners had access to case study outlines, models, learning designs and reflective diary material from their TESEP colleagues which assisted in transferring across lessons learnt in one project to another.

THE NAPIER TESEP ENGINEERING PROJECT

Project aims

The engineering TESEP project was centred around a module entitled 'Case Studies in Design Management' which covers analysis of successes and failures in product design, examination of the effect of organisational structure on design

performance, quality management and use of computer based tools for design process support, all leading to the development of best practice exemplars for good design management. The module is part of the BSc (Honours) in Product Design Engineering which is accredited by the Institution of Engineering Designers (IED) and the Institution of Engineering and Technology (IET). As TESEP started there were approximately sixty-five students across all years of the programme and seventeen taking this year three module. There were four contact hours per week which were used as a flexible mix of lectures, tutorials and seminars, supported by paper-based materials that were used in the form of a study guide. Students made formally assessed presentations on selected topics related to design management and also submitted an individual design management exemplar for their final summative assessment. While the module concept had been commended by its external examiner and its operation was not problematic, it was recognised that the students' use of learning resources could be improved as their engagement had been variable and there had been little technology use within the module. The TESEP project, therefore, provided an ideal opportunity to enhance what was already a valuable module, by making the student experience more enjoyable, by promoting greater student engagement and peer collaboration, and using appropriate technologies to support this in the context of on-campus delivery. There was also the opportunity to address the relatively common problem of lack of engagement with management topics by engineers who perceive that they are not as relevant as their technical subjects.

Approach

The redesign was done alongside the broader training and staff development activity of the TESEP project community, initial implementation on the module was carried out in semester two of session 2006/07, and the tools and techniques were also applied as appropriate to other semester one modules of that session. The changes in delivery were designed to encourage more student activity outside class, some of which was centred around tutor supplied materials, and to put greater emphasis on students adding to this through their own individual and group research. The technology focus initially was on using video to help with the assessed presentations, and use of library databases for researching presentations, though more extensive use of technology was planned for subsequent sessions, including WebCT Vista discussion boards and wikis. Blogs and audio technology were also investigated and implemented on other engineering modules, with the aim of using such technology to support both student and staff tasks; for example, voice recognition software was used to improve the quality of assessment feedback for students.

The intended outcomes for the redesign of the Case Studies module were:

- More motivated, engaged and active students
- Better quality output from learning tasks
- Evidence of deeper student knowledge of the subject area
- More student confidence with use of technology for learning and assessment
- Maintenance of good progression rates and improvement in the quality of work

- More effective staff teamwork, using skills of academics, educational development experts, and library staff to optimise the learning and teaching experience

The TESEP model did not focus on content creation, which is where much resource is often directed in e-learning development, but on the design of learning activities and promotion of active student engagement in a variety of tasks, including finding and analysing content, discussion and peer collaboration. Explicit development of information literacy skills was designed into the learning framework, which was not simply generic, but focused around the specific discipline and assessment tasks. Thus a progressive development of learner independence was facilitated over the period of the module delivery with the academic and a librarian guiding the students through structured activities, providing the expert knowledge to make the exploration fruitful.

Student Views on Technology-Supported Collaborative Learning

The details of the changes envisaged were discussed with students taking the module and their views on collaborative e-learning and technology usage were gathered by means of a survey. Key results are described below:

'100% said they liked the idea of using technology to help with teaching and learning and 94% reported it worked well and helped them to learn. 70% indicated that they would like to use additional technologies to those used to date, e.g. podcasting, although some had difficulty using the tools already provided due to lack of time or knowledge. Around 24% were happy with the level of technology usage, either because they felt that was adequate, or because it was more than that used in other modules. Students recognised the benefits of technology, particularly immediacy, ability to work any place any time, having a repository of information and being able to potentially obtain information in different formats, and 65% believed that technology supported an interactive approach to learning. 88% also reported that they learnt more from working in a group to prepare presentations and on courseworks, as opposed to just participating in lectures and tutorials, citing benefits including: increased confidence, being able to learn from each other, developing abilities with research, more in depth learning, and being forced to work at a consistent pace throughout the module' (Benzies, 2006).

Practice (i.e. formative) and final (summative assessment) presentations were captured on video and each student group was given a DVD. The first time this was done it was very labour intensive for the lecturer, who did all the production and post-production processing tasks, but in the second iteration the students were given the video camera and a technician did the DVD production. This worked much better in terms of managing workload, students enjoyed the process more and were better engaged and, perhaps consequently, they seemed to value the video feedback more highly than in the initial run.

Actual Results

The video feedback certainly did seem to improve performance on the presentation element of the assessment and anecdotal evidence indicated that this student group was also able to transfer the good presentation performance across to other module work.

However, there were still gaps in scholarly skills as evidenced by assessment performance in the individual written work and this was somewhat disappointing. This could have been tackled by reinforcing the preparation for research activity and investing effort in writing skills development, though it is believed that the TESEP project experience shows that such deficiencies cannot be turned round within a single module and that a more comprehensive approach to building scholarly skills is needed, requiring input from Year 1 and across the programme, to progressively build learner competence.

Setting expectations of active learning early on is a major factor in successful use of technology and collaborative working methods in modules and programmes. For example, where students feel that they are being asked to do more work in a module organised according to a technology-enhanced, social constructivist model than in their other modules, they may express a wish to revert to a more passive form of learning. Therefore, it is suggested that to be effective, TESEP principles need to be used consistently across programmes and institutions, rather than be dependent on individual practitioners, and that institutions should review their curriculum from a learners' perspective.

SCHOLARLY SKILLS DEVELOPMENT

The Need for Action

If it is accepted that Universities are scholarly communities, then a key aim must be to develop scholarly skills in all students so they may fully participate in the community, including the skills of enquiry, analysis, critical thinking and writing. Sitting under the umbrella of scholarly skills are information literacy skills and these were the focus of the library staff involved in the TESEP Engineering project at Napier. The authors' approach was a combination of a skills and socialisation rather than a 'new academic literacies' one, though the learning was negotiated and situated within a specific discipline context (Lea and Street, 1998).

Within the current university context the direct responsibility for the provision of information literacy skills rests with the five full-time subject specialist librarians, known as Information Services Advisors (ISAs), who are assigned to one or more Schools. Approach and level of engagement with academic colleagues varies between the disciplines, and an individual academic's own view on the value of information literacy skills development and its particular place in their module determines if and when such skills are emphasised in the learning, teaching and assessment activity. All this can lead to imbalance and gaps in the curriculum, especially in cross-discipline programmes. Other related work with academic staff has revealed the need for professional development for that group in the area of information skills, though this problem is largely unacknowledged and therefore hidden. Previous individual arrangements between library and academic staff are now complemented by more targeted staff education including showcase events at lunchtimes or internal staff conferences and sessions within the Academic Development professional development programme. This is considered important in ensuring that professional services and academic staff share a common understanding of information literacy development and resources so all may efficiently work towards embedding scholarly skills within the curriculum, thus giving students the tools to engage with active and independent learning.

The TESEP project work revealed the extent of the gap in information literacy skills among these year three students and, as they were believed to be typical of the general student population at Napier, confirmed the need to effectively prepare students for the challenges of independent learning in a more systematic manner. The particular source of the difficulty in researching for their learning and assessment tasks was that these students had received no formal information literacy training since having a short lecture as an induction input from library staff in first year and, without the TESEP project intervention, would not have had any support in this regard before beginning their honours year projects. In the context of the TESEP project the immediate challenge was to upskill these students as rapidly as possible, which was carried out by means of the academic and professional staff working together to assess the key information literacy skills required, with reference to the assessment task and the elements within the Seven Pillars model of information literacy produced by The Society of College, National and University Libraries (SCONUL). The technology aspects of information literacy are specifically cited by SCONUL, stating that the "definition of information skills in higher education reflects twin dimensions of the 'competent student' and the 'information literate' person, and that "higher education in the UK should be more proactive in contributing to the debate about the learning implications of an 'information society", hence the link to the e-learning development aspirations of TESEP (The Society of College, National and University Libraries, 1999). Also, effective and efficient management of information, including the ability to determine veracity, understand, extract meaning and then use appropriately, represents an important employability skill.

SCONUL has continued to update the Seven Pillars model and it forms the basis of many information literacy frameworks at UK HE institutions. The model outlines a range of information and IT skills against a path of progression from first-year undergraduates through to post-graduate researchers.

SCONUL Seven Pillars Model for Information Literacy
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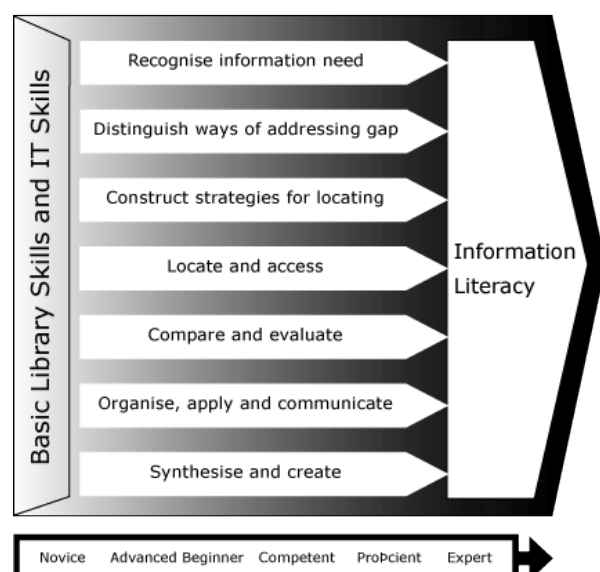


Figure 1 SCONUL Pillars

During the TESEP work, the academic and librarian had to quickly decide the skills the students needed, rather than consider this in the wider context of the requirements of the programme. By using practical group work and instructor led demonstrations in a computer laboratory it was possible to teach some new information literacy skills and proceed quickly to engage the students in some independent learning. However, while perceived to be useful and enjoyable by the student group, this short intervention had limited success in improving the overall quality of the individual written assignment, which still showed room for improvement in terms of evidence of scholarly skills generally. If information literacy skills had been developed progressively during previous years, it is likely that the students would have had not only the practical abilities but the confidence to engage further in more active, independent learning and that would have improved their assessment performance.

Post-TESEP Work: Approaches and Models

Involvement in the engineering TESEP project renewed staff focus on the delivery of information literacy skills and also on the benefits of collaboration between academic and professional staff. One of the practical initiatives undertaken was a pilot project with School of Built Environment and Engineering academics to develop online learning objects that may be imported into the institution's virtual learning environment (VLE) module websites; these objects include narrated video demonstrations (created using Camtasia software) that show how to access elements of the library resources such as electronic databases. It is hoped that as the learning objects project continues, students will become involved in updating and creating some of the objects themselves. This complements the work done on the Information Skills Online resource, IN:FORM, that was co-created with around 60 students, and includes their student voices, (Napier University, 2007e).

It seemed also that the time was right to start developing an institutional information literacy framework, mapping information skills criteria against levels 7 to 10 of the Scottish Credit and Qualifications Framework (SCQF) levels (The Scottish Credit and Qualifications Framework Partnership, 2007). The criteria were selected by using not only the SCONUL Seven Pillars, but also the emerging work of the National Information Literacy Framework for Scotland, which has been developed from research at Glasgow Caledonian University and is particularly useful as it links learning outcomes using SCQF and shows how scholarly skills can be linked and embedded within a curriculum. It could also support initiatives associated with the recent focus on fostering research teaching linkages as means of enhancing graduate attributes (The Quality Assurance Agency for Higher Education, 2006). The initial draft of a Napier Information Literacy Framework, which details recent library initiatives and resources for scholarly skills development, has been formally presented at the Faculty and University Learning Teaching and Assessment Committee meetings and at a staff conference. While this has prompted several interested responses from those attending, it would seem that this information has not yet cascaded further down to the rest of the academic staff. The mapping of skills against SCQF levels and Napier library resources may be seen in Appendix A.

SCONUL proposed "that the development of the idea of 'information literacy' requires a collaborative and integrated approach to curriculum design and delivery based on close co-operation between academic, library and staff development colleagues" and this approach was taken to an extent within the TESEP engineering project. The recent development of the Napier Information Literacy Framework is helpful in moving on from TESEP, but only proposes how collaboration may be done, rather than achieves it, and further work is required to ensure that graduates acquire the necessary information skills as they progress through their programmes. In terms of promoting staff collaboration, the approach taken by Newcastle University in the development of their Information Literacy Toolkit and Forum is of interest. Academic staff can choose from a range of online learning objects mapped across curriculum and student levels and they run an Information Literacy Forum, consisting of a group of interested academics and library staff, which feeds back into the development of the toolkit and fosters better collaboration.

Towards Concurrent Curriculum Design

Collaboration may be defined as academic staff providing input to library initiatives such as those detailed above but it is suggested that this limits the visibility and benefits of such work and instead a more strategic approach is required. The authors propose that university policies and procedures apply the principles of concurrent engineering to promote 'concurrent curriculum design', i.e. a process whereby modules are designed concurrently with programmes and in conjunction with professional services staff to facilitate the designing in of academic literacy skills development across each stage and longitudinally throughout each programme. The major barrier to this in the minds of some is the modular system which encourages a narrow focus on individual module development by discipline experts within subject groups, rather than a holistic view of programme provision that plans progressive development of discipline and scholarly skills. Even when modular systems did not exist and it could be argued that it was easier to facilitate 'joined up thinking' among individual academics developing a programme, it was not usually the case that scholarly skills development was planned in a systematic manner.

At Napier the move to 20 credit modules and the redevelopment of the academic year has created opportunities to establish strategic priorities and embed the key lessons from TESEP in the guidelines for programme and module design, including the development of scholarly skills (Napier University, 2007b). This major curriculum development exercise, which was completed in session 2007/08, required each School to create a 'culture' or 'ethos' document in which it stated how it would deal with the following aspects of provision:

- a) continually improving learning, teaching and assessment;
- b) embedding employability and personal development planning (PDP);
- c) internationalising the curriculum;
- d) addressing the need for scholarly skills;
- e) supporting diversity.

A redesign of Week 1 activities allows basic information literacy skills development to be incorporated there, while others are best embedded with the assessment work later on in the programme, which emphasises relevance to the discipline. To help make consideration of outcomes explicit, each module

descriptor has a section corresponding to the five priorities above in which module leader may outline their approach.

The introduction of a matrix management structure clarifies how the academic development and student experience functions operate, with management of these undertaken by School Directors, Faculty Associate Deans, and Vice Principals. The ISAs are available to meet with Directors of Student Experience and of Academic Development, as well as Programme and Module leaders to discuss these competencies and plan how outcomes can best be met for each student group. The information literacy framework may also prove useful for Personal Development Tutors as they discuss personal and academic development more generally with individual students.

CONCLUSIONS

The case is made for systematic development of scholarly skills in order to equip students for active learning and is reflected in TESEP's learner support and conclusions papers (Napier University, 2007c and d), and the management structure, policy and procedural framework now exists within Napier to achieve the concurrent curriculum design described above. It is therefore up to those in positions of academic leadership to translate this into on-going, operational practice that is reflected in subsequent programme planning and review, in addition to annual module appraisals, and to effect a change in culture to deliver on the statements in the 20 credit ethos documents. Genuine concerns and constraints must be acknowledged and overcome but, if successful, the proposed approach should ensure a more satisfying learning, teaching and assessment experience for students and staff, and be reflected in improvements in the profile of graduates. However, this aim will be compromised if there is not genuine collaboration among staff and recognition of the specialist skills that each can contribute.

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APPENDIX A

Table 1 Year 1 (SCQF Level 7)

Outcomes: To recognise a need for information. To develop an awareness of the basic information sources available at Napier , recognising when and how to use these. To acknowledge the use of information sources via standard referencing methods		
ACTIVITIES AND SKILLS	Maps to SCONUL Information Skill	Library (NULIS) – possible delivery methods
Develop an awareness of the basic services offered by the university campus libraries including locations and opening hours	Skill ❶	Basic C&IT/NULIS Week1 induction PowerPoint;
Locate the main campus library for the programme of study		
Be capable of accessing the library catalogue (NUIN) and the electronic portal (NUINLink) both on and off campus	Skill ❷	INFORM - library’s online information skills programme Library web pages including subject guides NULIS Online learning objects. ISA led lecture(s) ISA led practical workshop(s) ISA/Lecturer-led PBL activities. GUS – Get Ready for University Study online package [Wider Access]
Have a basic awareness of at least one major subject resource appropriate for the programme and year of study	Skill ❷	
Know where to locate module reading lists	Skill ❷	
Recognise the individual elements in a bibliographical reference	Skill ❷	
Appreciate the difference in content between books and journals	Skill ❷	
Select items from a reading list, knowing how to locate these using the library catalogue and/or portal	Skills ❷, ❹	
Know how to borrow, renew and request library items	Skill ❹	
Gain an appreciation of information quality and how to evaluate it	Skill ❺	
Appreciate the need to evaluate the use of internet based information sources (who, what, when, why?)	Skill ❺	
Be aware of the concepts of referencing and plagiarism	Skill ❻	
Know where to locate, and how to use, the appropriate referencing system for the programme of study	Skill ❻	

APPENDIX A

Table 2 Year 2 (SCQF Level 8)

<p>Outcomes: To recognise a need for information to fulfil a particular task. To develop insight and experience in searching a limited range of subject based information sources. To appreciate the need to select and evaluate the information retrieved, referencing it where appropriate.</p>		
ACTIVITIES AND SKILLS	Maps to SCONUL Information Skill	Library (NULIS) – possible delivery methods
Identify the information required for a particular task	Skill ❶	<p>INFORM - library’s online information skills programme</p> <p>Library web pages including subject guides</p> <p>NULIS Online learning objects</p> <p>NUINLINK - guides & instruction</p> <p>Databases – guides & instruction</p> <p>ISA led lecture(s)</p> <p>ISA led practical workshop(s)</p> <p>ISA/Lecturer-led PBL activities</p>
Specify the information required in the form of significant keywords and synonyms	Skill ❷	
Select a limited number of appropriate sources to search	Skill ❸	
Construct a search strategy appropriate to the resource being used and the time available.	Skill ❹	
Consider the use of search techniques such as Boolean, truncation and wildcard searching; how to cope with too much/too little information; how to apply search limits .	Skill ❺	
Select suitable references and know how to access these by linking/saving/ printing	Skill ❻	
Differentiate between the quality and nature of information retrieved from different sources using standard evaluation techniques including relevance, level, currency, bias, authority.	Skill ❼	
Use the retrieved information where appropriate, to construct reference lists and bibliographies, applying the required referencing system for the programme of study	Skill ❽	
Have an awareness of the concept of copyright for personal study	Skill ❾	

APPENDIX A

Table 3 Year 3/4 (SCQF Level 9/10)

<p>Outcomes: To construct information strategies to meet a wide range of information needs. To develop insight and experience in searching a wide range of subject based information sources. To evaluate the information retrieved, reflecting and redefining the information search where appropriate. To consider the storage and retrieval of bibliographical references. To appreciate methods of current awareness appropriate to the area of study</p>		
ACTIVITIES AND SKILLS	Maps to SCONUL Information Skill	Library (NULIS) – possible delivery methods
Design a systematic plan to retrieve and review literature to meet a particular information need	Skill ❶	<p>INFORM - library's online information skills programme</p> <p>Library web pages including subject guides</p> <p>NULIS Online learning objects</p> <p>NUINLINK - guides & instruction</p> <p>Databases – guides & instruction</p> <p>Endnote - guides & instruction</p> <p>ISA led lecture(s)</p> <p>ISA led practical workshop(s)</p> <p>ISA led info on subject based current awareness sources & services</p> <p>JISC Legal</p>
Analyse the information requirement, constructing a list of major and minor concepts in the form of significant keywords, phrases and synonyms. Determine search limits.	Skill ❸	
Construct a comprehensive search strategy/(ies) appropriate to the resources being used and the time available.	Skill ❸	
Apply advanced database search techniques, considering the use of controlled vocabulary and/or cross searching.	Skill ❸	
Critically evaluate search results, modifying the search plan where necessary	Skill ❺	
Consider an appropriate method for the storage and retrieval of search results, i.e. importing/exporting results to and from bibliographical reference management software.	Skill ❻	
Be aware of how to access material outwith Napier using the Document Supply service and/or through the use of external library access schemes.	Skill ❹	
Use the retrieved information, where appropriate, to construct reference lists and bibliographies, accurately applying the required referencing system for the programme of study	Skill ❻	
Determine a strategy for maintaining current awareness in the area of study	Skill ❻	
Have a working knowledge of the ethical and legal constraints involved in using published/unpublished information	Skill ❻	

