# Design for Inquiry-based Learning Case Studies

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## Abstract

The past nine months have witnessed the development and dissemination of a number of case studies of inquiry-based learning (IBL) projects supported and developed by the Centre for Inquiry-based Learning in the Arts and Social Sciences (CILASS), a Centre for Excellence in Teaching and Learning at the University of Sheffield (www.shef.ac.uk/cilass/cases). The cases aim to provide practitioners with accessible, informative and inspiring resources that illustrate ways in which inquiry-based learning is conceptualised, designed and facilitated in different disciplinary contexts. They are intended to communicate something of the experiences of students and staff who have been involved in inquiry-based learning activities at Sheffield.

**Keywords**: inquiry-based learning; case studies; CILASS;  arts; social sciences; CETL

## Introduction

Inquiry-based learning facilitates student learning through a range of inquiry and research activities and approaches. Tasks can include case scenarios and projects of different kinds which are designed to engage students with the questions and problems of their academic or professional disciplines, using the scholarly and research practices of those disciplines (Brew, 2006; Kahn & O'Rourke, 2004). Activities will be supported and directed to a greater or lesser extent depending upon the discipline in question, the level of the students, and the aims of the tutor.

The past nine months have witnessed the development and dissemination of a number of case studies of inquiry-based learning (IBL) projects supported and developed by the Centre for Inquiry-based Learning in the Arts and Social Sciences (CILASS), a Centre for Excellence in Teaching and Learning (CETL) at the University of Sheffield (www.shef.ac.uk/cilass/cases). The cases aim to provide practitioners with accessible, informative and inspiring resources that illustrate ways in which inquiry-based learning is conceptualised, designed and facilitated in different disciplinary contexts. They are intended to communicate something of the experiences of students and staff who have been involved in inquiry-based learning activities at Sheffield.

We adopted a web-based strategy in order to provide greater flexibility for searching and analysis than would be possible with paper-based cases, to share a range of resources, including multimedia materials, and to exploit the possibilities of on-line interaction. The architecture for accessing the cases consists of a web page per case, plus a series of additional materials in the form of downloads from a side-bar. An entry page enables cases to be searched by discipline, a keyword 'tag cloud' or a Google-style search feature. They are linked to (and from) the university's own case study/ good practice wiki (good.group.shef.ac.uk/wiki/index.php/Main_Page).

## *Rationale and context*

Over recent years, an increasing amount of literature has begun describe and analyse different approaches to IBL. However, when undertaking their literature review of E/PBL Sharpe and Savin-Baden (2007) commented that, "there seems to be relatively little understanding of how E/PBL might be constituted, how they might be mapped or seen differently, and the impact that such spaces are having on the nature of higher education". It is within this context that CILASS has developed its strategic commitment to disseminating the practice and theory of IBL more widely across the sector (Levy et al, 2007; see Levy & Petrulis, 2007 for a concrete example). The interest in sharing the learning about the IBL pedagogies that have underpinned educational development projects led to the decision to develop an externally-facing set of resources that would

summarise this information. As was noted above, these case study resources were intended to outline the key learning design principles that underpinned various curricular IBL innovations and participants' perspectives on this, since: "For the most part, the cases of interest in education and social service are people and programs" (Stake, 1995). Each case study was intended to represent and aid understanding of an individual IBL curriculum innovation, not primarily to help to understand a range of cases (Stake, 1995), although in the process of considering potential audiences for the case studies (Yin, 2003), it became evident that it was important that they were comparable and easily understandable by non-subject specialists.

The case studies were based upon the experiential knowledge (Stake, 2006) of IBL practitioners and were meant primarily for consumption by an audience of other interested teaching and learning professionals. A balance had to be struck between the desire to capture the, often subjective, experiences of participants in a project and to facilitate transferability of practice without losing the richness of participants' accounts (Stake, 2006). It was therefore intended that the case studies would offer a holistic picture of the project, situating it in a particular context (Stake, 2006), while maintaining a practitioner-focussed emphasis upon transferability and generalisation, since the 'researcher [= case study writer] asks, "What can be learned here that the reader needs to know?"' (Stake, 2006; 1995). Therefore, a general learning design template was developed, which allowed for comparability and generalisation. In addition, a member of the CILASS team was given the task of coordinating production and dissemination and ensuring parity across cases; this process and how it fits into overall CILASS educational development strategies is described in greater detail elsewhere in this journal (McKinney, Wood and Little, 2009). In order to allow for a degree of personalisation and specificity, as subjects of the case studies, project leaders reviewed all cases before online publication (Yin, 2003). They could, for example, choose to leave out parts of the learning design template which they deemed inappropriate, add additional comments, or link the case to further materials giving a more holistic impression of their experiences.

## *Inquiry-based Learning Design Overview*

The central part of each case study is an IBL design overview, which gives give an informative guide to the context of the project, the inquiry activities in which students engaged, the support which they received from staff, and some feedback from staff and students about their experiences. Each overview template is structured into the following sections, which are intended to be as accessible and user-friendly as possible in order to enable the transferral of good practice and to facilitate comparison and abstraction across cases:

1. *The students and the curriculum* (Please indicate here student Level (year), programme/module/ department, numbers etc)
2. *The teaching and learning aims* (Briefly indicate here what the aims (learning outcomes) were)
3. *The inquiry/ inquiries* (Briefly describe here the main inquiry task that students were engaged in, and any additional inquiry tasks. Please explain how students carried out the inquiry task(s) – i.e. as individuals, in groups, etc.)
4. *The assessment* (Describe what was assessed, and how the assessment was carried out)
5. *The 'process support'* (Describe here the activities and/or materials that were designed to help students develop skills to carry out the inquiry effectively (e.g. information literacy activities/materials; team-work support, ICT skills support))
6. *The information resources and strategies* (Describe here the approaches taken to providing students with access to subject information related to their inquiry, e.g. lectures, resource packs, library resource lists, tutor blog, etc.)
7. *The tutoring/facilitation approach* (Describe here the approaches taken to teaching and tutoring (e.g. lecturing, seminars, workshops, tutorials))
8. *The learning technology* (Indicate any learning technologies used, and briefly indicate how they were used by staff and students (e.g. MOLE, blogs, wikis, podcasts))
9. *The learning spaces* (Describe where 'contact hours' took place (e.g. CILASS collaboratories, lecture theatres, etc))

10. *What really worked* (Summarising your evaluation data, please indicate what 'worked' in this design (i.e. the elements of the design described above). Please include here what students said about the experience.)

11. *Things to build on and/or do differently next time around* (Indicate what you feel you have learned through running this activity and what you will do differently, or add to your design to develop it, next time around. Refer to evaluation data where appropriate.)

12. *Advice to others doing a similar project* (Please highlight any key pointers for others embarking on a similar approach.)

## Additional Materials

As the cases were to be presented via the web, this offered the exciting possibility of sharing a wider range of material than would have been possible in other formats. Therefore, in addition to the IBL design overview, each case study is accompanied by a range of resources that have been created by project leaders, students or CILASS staff members in the course of the project. These have been included in order to give a richer view of the project than a text-based description can offer. So far, the resources that we have included in case studies have included:

- Dissemination materials such as: journal articles; powerpoint and other presentations; HEA subject centre materials; newsletter articles; blog postings; posters;

- Course materials, such as: course handouts, descriptions of inquiry activities, student work;

- Evaluation data, for example focus group transcripts and project leader reflections;

- Photos, podcasts and videos of project leaders and students.

## *External dissemination, storage and sharing*

Many of the additional resources have been uploaded to external websites. This enables easier storing and sharing of materials and greater dissemination of the project. Sites/ services that we are using include:

- Podcasts – the University of London podcast feed:
  podcast.ulcc.ac.uk/accounts/UniversityofSheffield/CILASScasestudies.xml
- Photos – the Flickr photo sharing website: www.flickr.com/photos/cilass/
- Presentations and posters – the slideshare presentation sharing website:
  www.slideshare.net/cilass.slideshare

In addition, all case studies are 'tagged' via the delicious social bookmarking website to allow greater searchability and dissemination: delicious/cilass

## *Current case studies*

Case studies currently online include the projects below. More are being added all the time, so please do check to see if there have been any updates. The full list of case studies can be viewed via: www.shef.ac.uk/cilass/cases

- *Automatic Control and Systems Engineering: Induction of New Undergraduates.* A lecture-packed, information bombardment Induction Week was replaced with a Robot Challenge and a Learning Trail. This was intended to engage new students; to expose them to an inquiry-based learning approach; to give them a sense of identity with their new department; to let them meet their colleagues and develop friendships; to assist their transition from school to university; to manage their expectations of university study and introduce them to independent study approaches.

- *English: History of English Mentoring Scheme.* This project used second- and third-year students as group mentors on a first year core module, History of English. They facilitated the development of information literacy and key skills in historical approaches to language through an inquiry-based exercise and, in turn, themselves acquired coaching and mentoring skills. In order to accomplish this, students received support from the module convenors and a postgraduate student tasked with coordinating and supporting the mentors. Students were encouraged to reflect on and plan how to transfer the knowledge used in their mentoring activities to their own learning practices and research skills in their degree programme.

- *English: Roots Routes: Eight Things to do with a Text.* The module Roots Routes asked students to participate actively in a series of seminars using eight modes of inquiry to examine Alex Haley´s novel Roots and the popular TV-mini series. The course's virtual learning environment and CILASS collaboratories were integral to the delivery of the module, allowing students to engage in collaborative research-led learning in real time.

- *Human Communication Sciences: Inquiry-based Induction.* Intro Week inquiry activities in Human Communication Sciences were revamped in September 2006. Students worked in groups on a variety of activities, including treasure hunts and poster presentations to familiarise themselves with their course and IBL, their department and their university. At the end of Intro Week, students showcased posters they had created to a wide variety of staff and students from across the university, giving students an opportunity to discuss their research and their first taste of university life.

- *Information Studies: Inquiry in Information Management.* This new module challenged level one undergraduates, working in small groups, to choose a worthwhile research question and then undertake and report an original investigation on that topic. Understanding of the inquiry process was supported through workshops and online resources. One element of the assessment was research posters, shared with members of the department in a research conference. Students participated in developing the assessment criteria for the

posters and also contributed to the marking of work. Other assessment methods were group blogs and individual portfolios.

- *Law: Understanding Law 2.* During this core first year module 250 students worked on a diverse combination of individual and collaborative inquiry tasks in order to develop a more holistic appreciation of law in different contexts. Staff from the Law School collaborated with colleagues from the Learning Development and Media Unit to create a variety of resources to support this process. These included an online workbook that allowed the students to engage with and reflect upon the legal knowledge they were gaining in the course. Additionally, the students worked collaboratively in 45 groups to research an aspect of the law that was of particular interest to them, and to create a multi-media resource to share with other students, staff, and visiting professionals at a 'Celebration of Learning'.

- *Modern Languages and Linguistics (Dutch): Multicultural Society in the Netherlands.* In 2003, a collaborative teaching project `The Multicultural Society in the Netherlands´ was developed within the framework of the Virtual Department of Dutch (VDD), an IT-based collaboration between the Dutch Departments/Sections in Cambridge, Sheffield and University College London. This particular project links Sheffield students with University College London to pursue a collaborative inquiry into issues of migration and multiculturalism. Cross-institutional student groups use a Virtual Learning Environment to prepare a joint report, including a number of statements for discussion. The project culminates in a video conference, where each group chairs a discussion based on their background reading, reports, and statements.

- *Modern Languages and Linguistics (Hispanic Studies): Torquemada en la hoguera.* This project made innovative and effective use of ICT by producing an electronic learning environment to support student inquiries and enhance their learning experience by stimulating them to engage confidently and critically with the electronic edition of Benito Pérez Galdós's novel Torquemada en la hoguera (1889). This project built upon previous teaching of the novel by directly involving the students in the challenges presented by the study of Torquemada en la

hoguera. It was intended to maximize the opportunities offered by research-led teaching and the interactive electronic edition, stimulating students to develop new ways of reading the literary texts and to work like researchers. Further, it aimed to improve their skills in information literacy and collaborative learning.

## Evaluation

As initial attention was focussed on the actual development and dissemination of the case studies themselves, their impact has yet to be fully evaluated. In terms of initial planning and evaluation, extensive consultation was carried out within the CILASS team and with project leaders on how to structure the case studies and the process by which they would be generated. Initial feedback from practitioners who have engaged with the resource has been positive and project leaders whose case studies are now online have expressed themselves pleased with the end product. Where relevant, each individual case study summarises student and staff evaluation data from the IBL curriculum innovation itself. Plans to enable further engagement with the case studies resource include extending links with the institutional good practice initiative and the setting up of an RSS (Really Simple Syndication) feed, allowing users to 'subscribe' to content updates as they happen. It is hoped that ongoing dialogue on the cases, and evaluation data, will be generated by the inclusion of a comments facility on the webpage and/or through a link to the CILASS IBL blog (http://cilass.group.shef.ac.uk/).

## Implications for learning development

The IBL approach has some important implications for learning development itself. The self-directed and collaborative nature of many of the projects which have been supported means that academic and learning development staff have to be aware of the need to scaffold and support students' through the inquiry process, focussing on the development of particular inquiry-related skills. Importantly, the case studies themselves address the issue of what has been termed 'process support' in some detail, describing

the various ways in which students were supported through the process of each IBL innovation. For example, the need for students to carry out independent research might mean that attention has to be paid to the development of information literacy capabilities, such as the ability to search for, evaluate and synthesise information. Likewise, the use of collaborative working in inquiry activities may mean that particular emphasis has to be placed on preparing students for and supporting them through the process of group working.

The educational development approach taken to supporting and developing the CILASS funded IBL modules is addressed in an article elsewhere in this journal, by McKinney, Wood and Little (2009).

As with all CETLs, the future after 2010, when HEFCE funding comes to a close, is somewhat uncertain, although positive impact has already been made on the institution. For example, IBL is a strong presence in the institution's Learning, Teaching and Assessment Strategy. In the period between now and 2010 CILASS will continue to support IBL curriculum development projects, to evaluate and research their impact and to disseminate findings.

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