

CILASS (Centre for Inquiry-based Learning in the Arts and Social Sciences),  
University of Sheffield

# Inquiry-based Learning and Information Literacy

A meta-analytical study

Pam McKinney  
July 2010

# Inquiry-based Learning and Information Literacy

---

## Contents

1 Introduction .....	4
1.1 Purposes of the report .....	4
1.2 Definitions of IBL and IL and the relationship between them .....	4
1.3 Methodology .....	6
2 Research questions .....	6
2.1 ‘Teacher-focused’ questions .....	6
2.2 ‘Student-focused’ questions .....	7
3 The SCONUL ‘Seven Pillars’ model of information literacy.....	7
4 Level of engagement with Information literacy strategy and pedagogy .....	8
4.1 What projects hoped to achieve in terms of information literacy development.....	9
4.2 Information search.....	10
5 Support for IL focused educational development .....	10
5.1 LDRA support .....	10
5.2 Library support of and engagement with project activities.....	11
5.3 Resources that have been created .....	13
6 What IBL pedagogies have been used to build information literacy? .....	14
6.1 Peer support.....	14
6.2 Collaborative Inquiry.....	14
6.3 Reflective approaches.....	14
6.4 How IL development has been embedded in the IBL discipline curriculum.....	15
6.4 Information literacy and disciplinarity .....	15
7 The feedback students have given about the quality of their IL learning experience.....	16
7.1 Collaborative Inquiry.....	16
7.2 Peer support.....	17

7.3 Providing support for inquiry .....	18
7.4 Feedback .....	18
7.5 Timing of IL interventions .....	19
7.6 What students said about the use of IBL pedagogies to build information literacy .....	19
7.7 Students have developed their understanding of IL and its value .....	21
7.8 Students have developed their personal IL capabilities .....	21
8 What has been learnt about using IBL pedagogies to teach information literacy?.....	23
8.1 Strategic engagement with information literacy .....	25
9 Conclusions and recommendations.....	26
10 References .....	27
11 Appendix – List of projects.....	29
11.1 English 1 .....	29
11.2 English 2 .....	30
11.3 Human Communication Sciences 3.....	31
11.4 Library 4 .....	32
11.5 Psychology 5.....	33
11.6 Library 6 .....	34
11.7 Law 7 .....	35
11.8 Information Studies 8 .....	36
11.9 Information Studies 9 .....	36
11.10 Sociological Studies 10.....	37
11.11 Architecture 11 .....	37
11.12 Journalism 12 .....	38

## **1 Introduction**

This report summarises what has been learnt about information literacy and the relationship between information literacy and inquiry-based learning during the lifetime of CILASS, drawing on impact evaluation data from educational development projects that have been funded by CILASS. CILASS employs the same evaluation methodology developed and used by Learning and Teaching Services, intended to be a collaborative and participatory approach. It is based on a combination of Theory of Change (Connell & Kubisch, 1996) with Enabling, Process and Outcome (EPO) Performance Indicators (Helsby & Saunders, 1993). This methodology has been used at programme level within CILASS to define an overall programme level Theory of Change and resulting performance indicators, and this document has been used as the basis for generating a specific Theory of Change for the Information literacy strand of CILASS activities.

The Theory of Change methodology is also employed at project level and gives a framework for the evaluation process for all CILASS curriculum development projects. At project level the Theory of Change document is used to define key project stakeholders, generate evaluation questions for the project and design the data collection methodology and instruments.

One of the advantages of this methodology is that it provides a standard framework for and comparable documentation to support research activity such as this meta-analysis of the information literacy strand. Previous research undertaken at CILASS examined all the Theory of Change documents that had been produced by projects to date to examine how information literacy has been represented and developed in this medium.

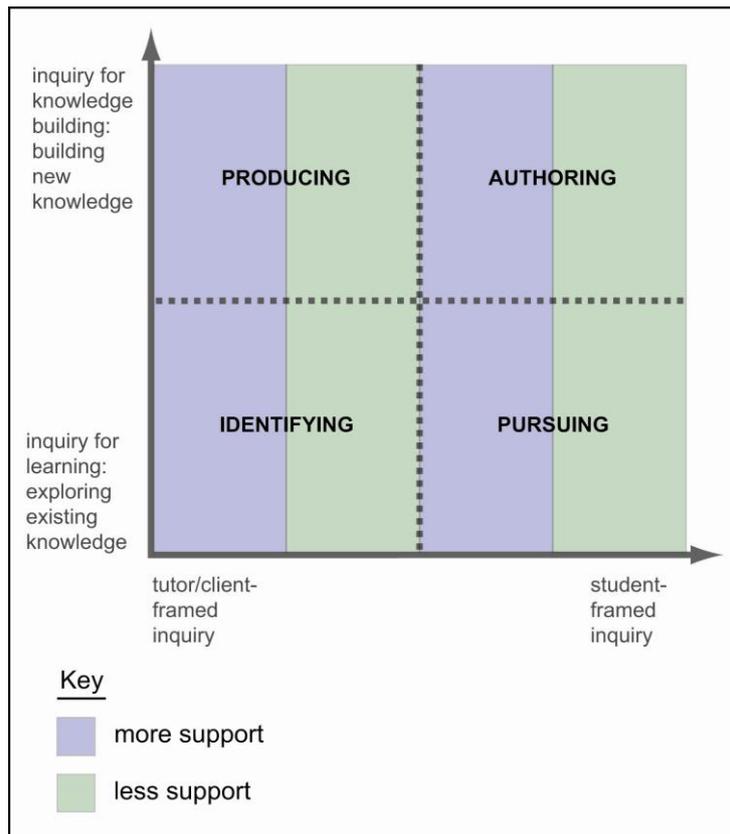
### **1.1 Purposes of the report**

This report is intended to be used as a tool to inform educational practice in relation to the support of and development of information literacy within the context of Inquiry-based Learning. Although the data relates specifically to the University of Sheffield, it is hoped that the report outcomes will be applicable in other HE institutions.

### **1.2 Definitions of IBL and IL and the relationship between them**

The term 'Inquiry-based Learning' (IBL) refers to a variety of pedagogies that involve students in discovery or research and employ approaches to learning that are essentially student-led. Case or problem-based learning (PBL), can be seen as subsets of the wider concept of IBL. Most students engage with inquiry in some form or another in their university careers, and the final year dissertation is often seen as the culminating inquiry for which students gradually build capacity and ability through their previous years of study. IBL can be embedded as small-scale tasks such as field work or project-based investigations within a more traditional transmission focused curriculum, or used as a design principle for whole modules and curricula.

The following diagram shows a framework for IBL that was developed as a result of research undertaken at CILASS into undergraduate student's experiences of inquiry and research and provides a conceptual model for Inquiry-based learning. It shows two main frames through which students view their inquiry: the 'information' frame (inquiry is about acquiring disciplinary knowledge) and the 'discovery' frame (Inquiry is about creating new knowledge).



Information Literacy can be defined as: “knowing when and why you need information, where to find it, and how to evaluate, use and communicate it in an ethical manner.” (CILIP). CILASS considers that the competencies encompassed by information literacy are essential for students to be successful inquirers. As students engage in open ended inquiry they are required to set their own questions which entails being able to define their information needs. They need to be aware of sources of information for their inquiry, whether that is academic, internet, print or human resources and they need to have the ability to access the information once they've found it.

When students have found information that will support their inquiry they need to be able to evaluate it for currency, authority and relevance, particularly if the information does not come from a trusted academic source such as a book or journal article. Students engaged in genuine research must be able to compare the information they generate with that produced by other researchers in the discipline if they are to give a competent analysis of their findings. Often students engaged in IBL must communicate the results of their inquiry in formats other than a traditional essay and learning how to present information in the requisite format is an important competency to develop that will also be needed in their working lives.

The ability to manage information that has been sourced and develop personal strategies for keeping up to date with new information in the field are important competencies for students engaging in advanced inquiries such as dissertations, but are also important ideas to raise with students at earlier levels of inquiry. The ability to synthesize information and create new knowledge are competencies that lie at the heart of IBL, where students ideally are given the space to generate genuinely new knowledge through the process of research. CILASS is particularly interested in “higher-order” (Bruce 1997) capabilities – including critical thinking, evaluation, synthesis, communication and knowledge-creation as well as in information processing and ICT. These are capabilities that are essential to functioning in 21<sup>st</sup> century society.

## 1.3 Methodology

A purposive sample of 12 CILASS funded projects was selected from the total pool of projects to provide the data set for the analysis. These projects were chosen to represent discipline areas in both the Arts and Social Science faculties, and from both the departmental and IBL grant project funding streams. The projects were selected for the research on the basis of their strong information literacy flavour, where there had been significant focus on the development of information literacy competencies and pedagogies. The projects fall into two broad categories:

- Those that had a specific focus on developing information literacy competencies through the mode of IBL;
- Those that focused on developing IL competencies to support students in their discipline inquiry more widely.

The former gives us an insight into inquiry-based pedagogies for information literacy development, and the latter give an insight into best practice for the support and development of IL competencies.

The data set for the analysis comprised of all CILASS requested documentation relating to the projects including funding application forms and interim and final monitoring and evaluation reports. All CILASS projects are evaluated using the 'Theory of Change' evaluation framework and all documentation relating to this process for all the selected projects was also included in the analysis. This includes Theories of Change themselves, student impact data such as focus groups and questionnaires, staff impact data including reflective interviews and focus groups, and the learning development case studies that have been generated from this data.

A full list of projects selected, the IBL activities and the data that was included can be found in the appendix. Each project has been given a discipline/numeric code which has been used throughout this report.

## 2 Research questions

The CILASS information literacy 'Theory of Change' document (available at [www.shef.ac.uk/content/1/c6/11/08/47/CILASS\\_ToC.pdf](http://www.shef.ac.uk/content/1/c6/11/08/47/CILASS_ToC.pdf)) was used to generate research questions for the analysis:

### 2.1 'Teacher-focused' questions

1. Have students developed their awareness and understanding of IL and its value?
2. Have students developed their personal IL, with positive impact on their capabilities as autonomous investigators and inquiry-based learners?
3. Have students provided positive feedback about IL and the quality of their IL learning experience? What have they appreciated? What less positive feedback have they given, or reports of difficulties, problematic issues?
4. How have staff embedded IL development explicitly and in structured ways into their IBL pedagogy? What design and facilitation approaches have they adopted, with what impacts on students' learning experiences and achievements?
5. What inquiry-based approaches to IL development have been developed?

## 2.2 'Student-focused' questions

6. What resources for IL in IBL have been developed and used to support students' IBL activity in projects, with what impact?
7. Have staff developed their understanding of IL in discipline based inquiry and of the relationship between IL and IBL?
8. Do academic staff have a better understanding of pedagogy for IL?

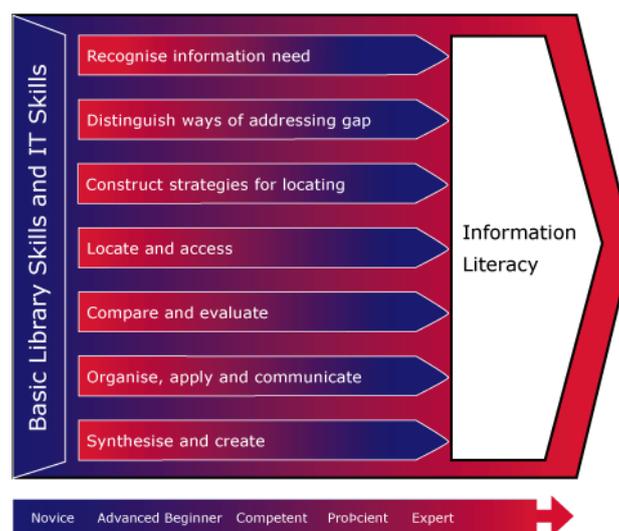
Atlas.ti software was used to facilitate the qualitative analysis of the data in response to the research questions.

## 3 The SCONUL 'Seven Pillars' model of information literacy

CILASS has used the SCONUL 'Seven Pillars' model of information literacy to shape our IL strategy. The model, is also used in the University Library and is widely used in the UK HE sector as a framework for information literacy strategy and the development of library and independent resources to support information literacy development.

The model is used by the CILASS LDRAs to facilitate discussion with prospective and actual project leaders regarding the scope of information literacy and the concepts that come under the broad umbrella of the term. Project leaders have provided verbal feedback during meetings with LDRAS that the model is useful as an aid to developing their conception of information literacy, and a number of project leaders have engaged with the model in more detail. The model was used as framework for two departmental information literacy audits, in Information Studies and in Architecture prior to the design of the Architecture 11 project. The model was given to both staff and students on the Psychology 5 project as a way of defining IL for them, but there is little evidence from project documentation that the model was widely used for this purpose in CILASS projects.

SCONUL Seven Pillars Model for Information Literacy  
© Society of College, National and University Libraries



More information about each Pillar and the competencies inherent in each Pillar is available from the SCOUNL website: [www.sconul.ac.uk/groups/information\\_literacy/seven\\_pillars.html](http://www.sconul.ac.uk/groups/information_literacy/seven_pillars.html).

## **4 Level of engagement with Information literacy strategy and pedagogy**

The extent to which prospective project leaders have engaged with the CILASS Information Literacy theme is evident from the detailed consideration of IL related drivers for projects and specific IL related aims of projects that can be found in project funding application forms.

Three projects mention in their initial bid documents specific IL related reasons for embarking on the project. The School of Architecture conducted an audit of current information literacy provision which identified specific areas where it was considered that IL teaching and skills development could be improved. The School also created an information literacy strategy modelled on that created in the Town and Regional planning department. Both these activities were undertaken with support from the Library. The bid from the Department of Journalism 12 cites pressure from future employers for graduates to have strong information literacy capabilities as a driver for the project, indicating that the department has recognised the importance of information literacy beyond the academic environment. This is consistent with the strategic engagement with Information Literacy outlined in the University's 'graduate attributes'. The bid for the English 1 project indicates that one of the drivers for the project is the perception of students that Library resources are poor for their subject, a view not shared by academic staff leading to the conclusion that students lack sufficient IL capabilities to access the full range of resources available.

Prospective project leader have included in their project bid documents specific aims for projects in terms of building IL capabilities in students, and these can be categorised across the range of the SCOUNL 'Seven Pillars' of Information Literacy. Pillars 2, 3 and 4 (knowledge of and access to resources) are particularly well represented and increasing familiarity with discipline specific academic resources is a key aim of a number of projects. The higher order capabilities of evaluating and synthesising information are also mentioned frequently, particularly in relation to increasing students' capabilities in judging relevance and authority of web-based information not accessed through the Library.

The relationship between Inquiry-based Learning (IBL) and information literacy is also made explicit in project bid documents. IBL is seen as a means of exposing students to a genuine process of research, in essence involving students in mirroring the research process undertaken by staff in their discipline. This is explicitly linked with giving students the capabilities to be autonomous learners who are in control of their own learning. [English 2] Building an understanding of the nature of inquiry in the discipline is also seen as an important part of the projects and this is linked to the information resources that students use in the inquiry process. [Architecture 11 and Journalism 12]. Building an understanding in staff of the nature of the relationship between IBL and IL was a stated aim in the Library 4 project.

## 4.1 What projects hoped to achieve in terms of information literacy development

Project 'Theories of Change' outline in detail the specific IL related drivers for projects, the perceived lack of IL capabilities in students and the room for improvement in relation to departmental IL strategy that it is hoped the projects will address. These include:

### Students

- Lack 'basic' IL skills
- Are unfamiliar with Library conventions
- Prefer to use Google rather than electronic academic sources or the physical Library
- Are not able to critically evaluate information
- Receive varying levels of support with developing IL so IL development is patchy

### Departments

- The importance of IL is not communicated well to students
- The department is not explicit enough about the research activity students are expected to engage in and the IL capabilities this entails
- There is no commonly agreed framework for the development of IL across modules and programmes
- IL does not feature in learning outcomes
- The curriculum focuses too much on developing subject knowledge rather than in developing transferable skills
- IL development is integral to the department's activities but there is no standard terminology for the concept

Project Theories of Change also outline the Information literacy outcomes that project leaders hope to achieve through their activities. These include:

### Students

- Will be confident in searching academic resources for the discipline
- Will be able to reference correctly
- Will see IL as a set of competencies related to other competencies that enable them to do research
- Will be able to use the Library more effectively
- Will be able to construct suitable search strategies for electronic, print and human resources
- Graduates will be aware that they have information literacy competencies and are able to apply them in their working environment
- Value IBL as a way of developing information literacy
- Have increased critical abilities to evaluate information for authority and relevance

### Departments

- Increased use of IL learning outcomes in module documentation
- An information literacy strategy is created

## 4.2 Information search

All of the projects that involved students wanted to improve student's abilities to search for information in the academic information environment so this is seen to be an important capability to develop. Project leaders had varying perceptions of the level of searching ability of their students prior to coming to university. Some thought that students lacked even basic search skills while others considered students quite accomplished internet searchers who simply need support in weaning themselves off the internet as the sole source of information and support in transferring search skills to the academic resources. Probably what this spread of opinion reveals is the varying level of information literacy of incoming students, all will have some level of IL but none will be information literate enough not to need further support.

## 5 Support for IL focused educational development

Educational development does not happen in a vacuum, and all kinds of support is required to ensure that genuine improvements can be made to learning and teaching in HE. At the University of Sheffield this is recognised through the existence of dedicated funding streams, specialist educational development and evaluation support and the partnership with professional services departments.

### 5.1 LDRA support

The initial bid to HEFCE for CILASS outlined the explicit focus of the CETL in exploiting the synergies between collaborative inquiry, information literacy and networked learning in new and innovative ways. Part of the envisaged support for this focus were two dedicated roles of 'Learning Development and Research Associates', one for information literacy and one for networked learning. The purpose of this role is to provide pedagogical support for curriculum development projects, particularly in the respective specialist areas, to support summative and formative project and programme evaluation and to take forward the CILASS research agenda in relation to their specialist areas.

Pedagogical support for curriculum development projects is split between the LDRAs in post and it is generally the case that projects with a clearly defined focus on either NL or IL are channelled towards that particular LDRA. However it has been the case that a project either covers both specialist areas or the specific focus has only become apparent once development work has started, in which cases the specialist support has been commissioned from the relevant LDRA.

Specialist support for information literacy has been provided in a variety of ways including:

- Facilitating links with the CILASS liaison librarian and the Library service that constructs and adapts MOLE based information literacy tutorials
- Recommending specific information literacy support resources, Library and internet based
- Facilitating links with external partners e.g. with colleagues at University of Leeds who shared an discipline-adapted version of an information literacy competency test [Psychology 5]
- Advising on effective inquiry-based pedagogy for information literacy
- Advising on ways to assess information literacy

- Providing targeted advice on the scope of the concept of information literacy
- Facilitating dissemination of IL related outcomes through internal and external channels
- Participating in staff development events such as away days

The CILASS interim evaluation report in July 2007 highlighted the success of the LDRA role with the “helpfulness, enthusiasm, willingness, commitment” of the CILASS team repeatedly praised by project leaders.”

Some feedback has been gathered from project leaders about the information literacy support that has been available through CILASS:

*CILASS support has been essential*

[English 1]

*LDRA support has been extremely useful.*

[English 2]

*Comment and feedback on the task that was developed from the CILASS LDRA was useful.*

[Psychology 5]

*Most important thing has been continued intervention. If CILASS had just given us the money and then just left us alone for 2 years, a lot of things would just slide. [...] I do feel that CILASS takes an active interest, wants us to succeed, wants to help us to succeed, wants to make sure that we do, pushes us to do it.*

[Sociology 10]

*The other side of that is having entered the world of information literacy is how much stuff is out there, both in terms of material, online packages that are available but also expertise. Going to the LILAC [Information literacy] conference was just incredible... you get the impression that there's this massive community of people who are very knowledgeable about many different aspects of the world and I'm just trying to sit within architecture and sort of harvest stuff that other people have worked on, but there's a realisation that it could be all consuming!*

[Architecture 11]

## 5.2 Library support of and engagement with project activities

A clear theme running through the project documentation and evaluation material was the high regard held by project leaders for the Library and the involvement of particular librarians in the support of the information literacy focused activities. Librarians were praised for the support that was available in terms of information literacy expertise, training and resources before projects started, and it is clear from both staff and librarian feedback that these elements have been significantly developed through project activities.

Comments such as:

*Lyn Parker and her team have been writing up how-to guides. And this has been essential. And this was not just in terms of having them on the library site, but also making sure that they appear in the MOLE environment for this specific set of modules.*

[English 1]

and

*Specifically for CILASS, Lyn Parker has been helping us to develop the quizzes, web based searches etc. Clare Scott has been involved in one of the CILASS things for the dissertations; she has actually come and spoke to all of the 3<sup>rd</sup> years dissertation students last week. It was extremely helpful – we're now going to incorporate that permanently in what we are doing. Absolutely specifically in terms of inquiry-based in that she is giving them more expertise than I can give them in doing the inquiry literature searching.*

[Sociological studies 10]

demonstrate the level of positive feeling towards the Library from project leaders.

Librarians have acted as consultants in the implementation of pre-project investigations and design of project activities [Architecture 11]. They have engaged in the teaching of information literacy using inquiry-based pedagogies, and librarians themselves acknowledge the impact of the Library's project to develop inquiry-based approaches to the teaching of IL. These teaching activities have largely been embedded within the design of the project as a whole and it is evident from project evaluations that project leaders and librarians have worked closely together to ensure that IL teaching by librarians has occurred at timely and relevant points in the module lifecycle.

Two projects involved librarians in specific activities to support the ongoing process of student inquiry. In the HCS 3 project, students were invited to book consultation sessions with the faculty liaison librarian during their week-long inquiry. The Law 7 project made significant use of the faculty liaison librarian as one of the staff contributors to the student support forums where she fielded inquiries that related to Library resources, referencing and other IL related matters. In two cases [Architecture 11 & Law 7] Librarians have been involved in dissemination activities related to the projects at conferences and feedback from project leaders in a number of projects indicates that long term collaborative relationships between librarians and academics have been facilitated by CILASS projects.

Feedback from the Library suggests that working in partnership with CILASS has raised the profile of Librarians with academic staff and facilitated the advancement of existing Library projects such as 'New Partnership'. The Library has also identified a need to build on this success by continuing an open dialogue with academic staff regarding information literacy support in relation to the learning needs posed by the curriculum.

Through engaging in the Library 4 project, Faculty Liaison Librarians have developed their Inquiry-based approaches to the teaching of information literacy. Evaluation data from this project has shown that librarians are taking a reflective approach to the development of their teaching and that they have grown in confidence in discussing the use of inquiry-based pedagogies for information literacy with academics. However it was noted that the constraints imposed on librarians in their teaching practice can affect how they use IBL. Librarians often 'parachute' in to teach a specific

short session in which they are expected to deliver information literacy to students. In the evaluation of the project, librarians acknowledged that they need to develop and share a particular approach to these 'one-shot' sessions, if they are to use IBL more successfully.

### 5.3 Resources that have been created

The Library's online Information Skills tutorials have been heavily used by project leaders across all CILASS projects, and feedback from the project leaders from this sample of projects indicates that the delivery via MOLE is seen by staff as one of the most positive features of the tutorials. Tutorials have been used without adaptation and embedded within module MOLE environments, and the Library's expertise has been used to create specific links between the Law 7 project electronic workbook and certain sections of the tutorials. Feedback from the students who used the electronic workbook suggests that while learning online was unfamiliar, it was seen to be a positive experience. The discussion boards that students used to solicit support from the module leaders and librarian were very heavily used, and also included a significant element of peer support.

Other projects [Psychology 5, Sociological Studies 10] required either changes to existing tutorials to make them more discipline specific or the creation of an entirely new tutorial. Completion of tutorials has been made a compulsory activity for students in one case [Sociological studies 10], but in most projects students are simply provided with access to tutorials and it has been recommended that they support their own learning through engaging with them.

Two projects [English 2 and HCS 3] made use of student guides or mentors and in both these projects specific resources were created to support the students providing the mentoring. This took the form of lists of relevant library resources that mentees could be introduced to, reminders of the relevant Library information skills tutorials and also material to support the actual mentoring activity such as a sample learning contract. Students receiving the mentor support in both projects were also provided with material to support their mentored inquiry such as information about IBL and why they were being asked to 'do' inquiry-based learning, information about CILASS, information about why they were being given the task and general information about the Library and the university. In both projects students were asked to work collaboratively and it was noted that they could use each other as well as their mentors/guides as a resource to support their IL development and inquiry.

Two projects [Journalism 12 and Architecture 11] featured in this analysis created online information hubs or gateways to both library and non-library resources. This part of the Architecture 11 project is still currently in progress, and it hasn't yet been decided where this information gateway will be hosted, but it is intended to provide links to both Library and externally provided information literacy tutorials and resources to support students in developing their IL capabilities. It will also feature video and/or audio interviews with practising architects who will be talking about their use of information in their professional practice. Both the Library and LeTS have been involved in the development of the gateway.

Interim feedback from students on the Architecture 11 project suggests that they are not convinced of the usability of MOLE for such an information hub, leading the project to consider using the new 'U-space' product. The blogging feature was seen as potentially very useful.

The resource created for the Journalism 12 project contains links to discipline specific non-academic online resources (newspapers, trade journals, public sector bodies, media archives) as well as Library hosted academic resources such as journals. The resource is intended to be used by students in

their inquiry and will also be used by academic staff when designing material to support students in developing an awareness of how news is reported in different formats. Initial feedback from students suggests that they find the site informative and useful (71.1% of students surveyed agree) and found the exercises based on using the resources helped them understand how journalists used a variety of sources when researching a story (88.9% of students surveyed agree)

## **6 What IBL pedagogies have been used to build information literacy?**

All the projects included in this analysis developed and used a range of inquiry-based pedagogies with the participating students. This section of the report focuses on drawing out the IBL pedagogies that have specifically been used to develop information literacy, as opposed to developing discipline knowledge or with other specific aims.

### **6.1 Peer support**

Two projects used students from higher levels of the same course to provide peer mentoring for students engaged in the IBL project. The HCS 3 project used 'student guides' over the week long project who were paid for their involvement. The English 2 project used student volunteer mentors to provide guidance to level one students over the first few weeks of semester in a particular module. Both guides and mentors were expected to support students in their inquiry by familiarising them with university information resources and the Library. (Pillar 2)

### **6.2 Collaborative Inquiry**

Four of the projects included in this analysis involved students in collaborative inquiry: Psychology 5, English 1, English 2 and the HCS 3. Generally group size has been 3-5 students and students have been placed in working groups by members of staff.

### **6.3 Reflective approaches**

Several projects have asked students to take a reflective approach to the development of Information literacy, and this is seen by project leaders to be an effective way of ensuring that students recognise that they have in fact developed certain IL competencies (skills) through engaging in project activities. Students on the Psychology 5 project had to respond to a number of reflective prompts when completing their collaborative PowerPoint presentation as part of the module assessment. Students were asked to reflect on the search strategies they had used in the news and academic sources, including how effective they were at finding relevant information. (Pillars 3 and 4) They also had to reflect of the differences in the quality of information between provided by newspapers and by academic journals (Pillar 5). Following the first iteration of the module the prompt questions were modified to make it more explicit that students were to reflect on the IL aspects of the task as some students responded to the question 'what did you find difficult' with details of group problems and the like. Feedback from the module leader indicates that those students who engaged more deeply with the reflective process produced work of a higher standard.

Students on the Law 7 project had to complete a reflective learning diary as part of the project activities, and students on the Sociological Studies 10 project had an additional reflective seminar where they were invited to speak about their experience of bibliographic inquiry. Students on the Information Studies 8 project complete an assessed reflective portfolio about their learning on the module. Students are invited to use the SCOUNL 'Seven Pillars' model as a framework for their reflection on how they have developed information literacy.

## 6.4 How IL development has been embedded in the IBL discipline curriculum

By their very nature, the projects that have formed part of this analysis have embedded IL in the subject curriculum by including IL as part of a module where students are expected to build their discipline knowledge. None of them have been conceived as projects that 'just' build IL outside the context of the subject that students study. Project leaders have undertaken these projects largely with the ethos that IL is an essential skill for inquiry and that it is beneficial to teach the skills of inquiry, through inquiry. Project leaders have contrasted this approach with how departments had previously engaged students with IL, generally through one-off timetabled interventions from librarians that were not well integrated into the subject curriculum. This, it has been acknowledged, has led to 'patchy' IL development.

The activities that students have engaged in through these projects are varied. For example, students have

- Undertaken small experiments and compared their results with published material, requiring them to search for similar experiments in the literature [HCS 3 project] (Pillars 2, 3, 4, 5 & 7)
- Searched for information for a particular brief, constructed a bibliography and discussed the validity of the information they found in seminars [Journalism 12] (Pillars 2, 3, 4, 5 & 6)
- Traced the sources of information from a particular news item [Journalism 12] (Pillars 2 and 4)
- Found and written a review of a journal article of interest to them [Sociological Studies 10] (Pillars 2, 3, 4 & 5)
- Searched for a news story in the discipline field that was purportedly based on real research data on a topic that was of interest to them, then found the original research article that the news story was based on. Reflected on search strategies used and compare and contrast the quality of information between the news story and the research article. [Psychology 5] (Pillars 2, 3, 4, & 5)
- Interviewed a 'client' (another student) about their information need, done the literature search and presented the results in a bibliography. Reflected on the task. [Information Studies 8] (Pillars 1, 2, 3, 4, 5 & 6)
- Selected 3 words from a sonnet they are studying and look these up in the OED online. Reflected on whether what they have found out about the meaning and origin of the word has changed their perception or opinion of the sonnet [English 1] (Pillars 2, 4 and 5)
- Developed research questions from a passage of text and searched for resources that would help them answer their research question. Constructed a bibliography of relevant resources and discussed online and in class [English 1] (Pillars 1, 2, 3, 4 & 6)

### 6.4 Information literacy and disciplinarity

Project leaders from some disciplines are very explicit about the scope and value of IL in their particular discipline and this is for a variety of reasons. Project leaders from the Journalism 12 department, for example, have discussed how intrinsic being information literate is to the professional role of being a journalist, therefore the subject curriculum at University needs to build IL capabilities for these future roles. The project aimed (among other things) to build students' understanding of how a journalist might use source and evaluate information for their job.

Projects in the Psychology, Law and English disciplines considered it important that students, through project activities, developed an awareness of key online resources for that discipline and

could search and use them effectively to support their inquiries. The information environment for Law is considered to be particularly complex and requires significant practise to be able to exploit it effectively. Architecture is a discipline that requires students to engage with information across what might be seen as traditional Arts / Social Science subject boundaries, as well as information in varied formats (e.g. diagrams), and this means that students have to develop their abilities to interpret and synthesise this information.

The discipline of Information Management is unique in its approach to information literacy in that IL is a significant element of the subject discipline, so students need to engage with the theory of IL as well as developing their IL competencies.

## **7 The feedback students have given about the quality of their IL learning experience**

### **7.1 Collaborative Inquiry**

Student response to collaborative inquiry has been mixed. Some students reported a positive response to collaborative inquiry, saying that working in a group was 'helpful' and 'useful' and enabled the pooling of ideas and experience. Students from the HCS 3 project found the opportunity to meet their course colleagues and engage with them valuable, particularly from a 'social' point of view. Collaborative working helped students spread the workload of the inquiry and made assessment seem "less daunting".

Responses to questionnaires used to gauge student's opinion of group work show a mixed response. 48.8% of students on the Psychology 5 project agreed with the statement 'I enjoyed working collaboratively face-to-face' but 25.7% were 'undecided'. Working collaboratively online was less popular with 42.5% 'undecided' and only 27.4% agreeing that they enjoyed that mode of working. However 77% of students agreed, or agreed strongly that they would feel confident in doing group work in the future. Similar questions were asked of students on the HCS 3 project where responses were more positive with 85% of the UG and 48% of the PG students agreeing or agreeing strongly with the statement 'My experience of inquiry-based learning has made me enthusiastic about working collaboratively with others.'

The negative feedback about collaborative inquiry was tempered by acknowledgement that the tasks themselves were useful, but the logistics of organising group meetings and ensuring equal contributions from group members led to a poor opinion of collaborative inquiry. The varying levels of engagement of 'home' Psychology students and those taking the module concerned from other departments as a level 1 option was a cause for concern for students on the Psychology 5 project. In addition the involvement of students from different departments in the same group also contributed to the logistical difficulties in meeting organisation. There was also concern that the practice of giving the same mark to all students in the group was unfair 'because the mark does not reflect how well the individual has done' [Psychology 5 student]. Another student expressed a view that they felt held back by less able group members:

*It meant I was unable to 'get on' and finish because I had to keep e-mailing my group members to get their work and ideas too.*

[Psychology 5]

Other negative views of group work seem to stem from a perception that working collaboratively did not enhance those particular students' understanding of the subject or facilitate their skills development.

## 7.2 Peer support

Student response to the inclusion of peer support from other students in these projects has been largely positive, both from those giving and those receiving the support. Students taking part in a structured mentoring programme [English 2] felt personal fulfilment in that they had been able to 'give something back' and could see the benefit of their experience to a potential future career in teaching. They also felt they had enhanced their IL capabilities through the teaching process:

*If you are teaching somebody else, you are improving your own skills for your own benefit*

Students acting as guides in the HCS induction project also reported feeling that they had gained facilitation skills. They felt they had refreshed their own IL and IBL related capabilities through having to familiarise themselves with resources prior to the activities starting.

The way in which the student guides in the HCS 3 project facilitated the inquiry of the new students was seen to be very positive

*They didn't really tell us what to do, we sort of came up with our own ideas and they helped us put them together*

The guides were also praised for their approachable nature, and students reported feeling much more comfortable soliciting support from other students rather than from staff members.

Students who received peer support found it valuable to be able to draw on the personal experiences of students who were studying the same discipline but at a more advanced level. They benefitted from being able to discuss approaches to inquiry within the discipline, including although not limited to sourcing and processing discipline specific information.

*So rather than just giving us information, she was helping us with the way we would do it later on in the course*

[HCS 3]

*It helped to have a different perspective from someone more experienced on many issues of which we as a group enquired about.*

[Law 7]

The Law 7 project and the Journalism 12 project also featured peer support in a less structured way. In both cases students engaged with peer support and valued the feedback and advice they received.

*The discussion boards were also very helpful, as students could help each other*

[Law 7]

Unfortunately student mentees on the first iteration of the 'English 2' project did not react positively to the mentor programme and did not value the scheme as much as had been anticipated. The project leaders felt that the reason for this was that the scheme was too brief and made significant

changes to the scheme for the second iteration of the module. This involved creating a new third year module from which to source student mentors who would take part in mentoring activity throughout the semester and their reflective analysis of their mentoring experience would form part of that module's assessment.

Interim evaluation from students in the Architecture 11 project identified a need to have support not only from Librarians but also from peers in terms of IL development.

### 7.3 Providing support for inquiry

The Understanding Law MOLE discussion boards were broadly praised by students, not only for the peer support mentioned above, but also for the support available from the module coordinators and the faculty liaison librarian. Students liked the 'rapid response' nature of the boards and felt that they gained confidence from seeing that other students were having the same issues with the inquiry tasks as themselves. They found the anonymous nature of one of the boards allowed them to raise questions without fear of looking stupid in front of their peers.

Feedback from some students suggests that online support for information literacy development in the form of the Library tutorials was not sufficient to support them in engaging with the resources for their inquiry, and that additional hands on support, potentially offered via a face-to-face workshop would be appreciated. However other students seem to really value the resources that were provided through MOLE, such as the Library tutorials:

*Yes the Library resources are very good and the sites posted on MOLE were useful*

[English 1]

Other issues raised, by a minority of students, seem to revolve around how clearly an inquiry task was described to them, and it seems to be quite important to ensure that students receive appropriate guidance on the purpose and format of their inquiry tasks, while still allowing space for open-endedness.

### 7.4 Feedback

Module leaders on the Understanding Law project reported that they still receive many requests for 'more feedback' from students in respect of the exercises they undertook in the electronic workbook. So although students consider that the discussion boards support their inquiry, they are not providing all the support and feedback that students need. Some students on the 'English 1' project also expressed a desire for more feedback on the results of their inquiry exercises, and linked to this an expression of confusion that the outcomes of the exercises weren't discussed more in class contact time. These tasks weren't assessed so students didn't get a feel for how successful they had been, leading to them thinking they hadn't learnt the 'right' answer and could potentially repeat any errors they had made:

*Pointless. We never got the tasks back and marked so I will be making all the same mistakes*

[English 1]

*They have the potential to be extremely useful but we were given no feedback so didn't know where we were going wrong*

[English 1]

It seems as if the inherent ambiguity generated by the open-endedness of IBL leaves students feeling uncomfortable and necessitates greater attention to feedback mechanisms. However it should be noted a large number of members of staff were tutors for these activities leading to a diversity of teaching styles. When the tasks were discussed in class time the feedback was very positive:

*The few [tasks] we were given were always covered in the seminar which meant that we were able to see everyone else's ideas and improve our own research skills*

[English 1]

For this student the action of sharing experiences with peers led to improvement in IL related capabilities.

### 7.5 Timing of IL interventions

Feedback from students suggests that the timing of Inquiry-based interventions to develop information literacy is very important, particularly in relation to the relative timing of assessed work which requires students to employ IL capabilities to interact with literature. The activities that students engaged with on other modules also affected their perception of how useful IL related tasks were:

*I think the second task was set much too late in the semester. By this point many of us already had experiences of using e-resources from other modules* [English 1]

However an approach in the English 2 project that devoted the first few weeks of the semester to skills development was equally unpopular with students, leading the project leaders modifying their approach to one that integrated skills development with subject content more in the second iteration of the project module.

There was a varied response from the HCS 3 project students to the placing of these IBL activities in intro week. Some students reacted positively to the timing as a chance to get to know colleagues and the university resources early in their course, while others found the experience daunting and overwhelming and compared their experience with other students who appeared to have a much more relaxed and social experience in intro week

### 7.6 What students said about the use of IBL pedagogies to build information literacy

Students provided mixed feedback about their IBL learning experiences and how useful it was in developing their information literacy. Some responses from students were very positive and indicated that their inquiry not only built their IL capabilities but also significantly advanced their discipline knowledge:

*However, I found the actual task of finding and evaluating corresponding journal articles interesting and helpful to my knowledge and understanding of psychology in a wider sense.*

[Psychology 5]

Other students felt they had extended their engagement with the literature for their discipline in a positive way, facilitated by the IL skills they had developed:

*I found the research tasks encouraged me to seek out further texts than those supplied on the reading list by providing me with new formats to searching for texts*

[English 1]

Going to the questionnaire data again gives an idea of the opinion students have about IBL. Students on the Psychology 5 project were asked to respond to the statement 'I found this inquiry-based task enjoyable and motivating'. Opinion is mixed with the highest percentage (38.9%) 'undecided'. The same statement was given to students on the HCS 3 project, who responded slightly more positively with 67% of the UG and 58% of the PG students agreeing or agreeing strongly.

Some students least expressed dissatisfaction with the inquiry tasks they were assigned but recognised the value of the IL capabilities they had gained:

*They [the tasks] were tedious but they did provide me with the skills needed for the assessments*

[English 1]

*I didn't see the point of it, as it did not appear to be benefiting us. as well as this, the assigned task was not stimulating. However, it did enable us to try using WoK [Web of Knowledge], which will be useful throughout the degree.*

[Psychology 5]

Other students, such a Masters students on the HCS 3 project and students in Sociological Studies 10 project felt that they already had the skills that the IBL activities were designed to build and as such felt the activities lacked value for them.

One project leader though reflected on the fact that students are more likely to give feedback if their experiences have been negative:

*No one's going to knock on your door and say 'Oh I quite liked that task it was ok actually' are they?*

[Psychology 5]

Some student evaluation data suggests that in some cases, students would have preferred a more transmission style of teaching to build information literacy:

*Tasks quite useful, but a sheet/ instructions on how to reference would have been more useful*

[English 1]

While others expressed the view that IBL, while interesting, should only be employed alongside more transmission styles of teaching:

*Inquiry-based learning, it can help, but I'd like to say - don't go too far, don't move away from actually teaching - it can complement, like, it can help*

## 7.7 Students have developed their understanding of IL and its value

There is evidence from students that they can see the value of the IL capabilities they have gained and how they will be useful in their academic life:

*OED task was useful, esp. for future*

[English 1]

*I felt that the electronic workbook and learning diary did take up a lot of my time however it was, with retrospect, very useful in the skills that it helped me to develop*

[Law 7]

Data from students also suggests that they are able to see the value of the IL capabilities they have gained such as ability to use the library resources effectively on one module being directly transferrable to other future modules. Students taking part in the activities in the 'Psychology 5' project linked the skills they had gained with being able to do research in the future, suggesting that they have been made aware of the research component of their degrees from semester 1 at level 1 and have positively linked the information search and evaluation skills they have developed with the research process.

However there is little evidence from these projects that students can see the long term benefits of being information literate beyond their university careers. An exception to this is reported from student mentors on the 'English 2' project who expressed the opinion that they had gained significant personal and academic skills through engaging as mentors, although it is not clear whether those are skills that might be labelled 'IL' or other skills to do with the mentoring process.

## 7.8 Students have developed their personal IL capabilities

All of the projects that involve students that feature in this analysis provided feedback from staff or students that students' information literacy had been improved in some way through engaging in the project activities. Staff feedback has mainly come from either project leaders, librarians or other academic staff from the department concerned who have observed improved IL capabilities in students. A better standard of referencing in assessed work (Pillar 6) [English 1] and greater range of sources referenced (Pillars 2 and 4) was observed in students [English 1] and there was also evidence that students seemed more comfortable in using a wider range of sources than previously [English 2], as well as great confidence in going beyond material provided in reading lists [Psychology 5]. The high quality of work produced that evidenced significant reflection on the part of students on their search strategies (Pillar 3) and assessment of the varying quality of information from different sources (Pillar 5) was also observed [Psychology 5]. Students requesting more guidance about the academic validity of internet resources indicated to project leaders on the 'English 2' project that students were taking steps to building competencies in evaluating information (Pillar 5). General evidence of the application of 'higher order' IL capabilities was reported [Information Studies 8].

Students themselves reported gaining knowledge of and confidence in using both electronic library resources such as databases and e-journals as well as print-based library resources (Pillars 2 and 4). It is apparent from the comments that students could see the value in developing this knowledge of resources e.g.:

*Very helpful, enabled me to get used to researching and using online resources.*

[English 1]

*Finding out how to access database for more journals*

[Journalism 12]

There was also acknowledgement from students that ability to employ a wider range of sources improved their academic work.

Students on the Psychology 5 project felt they had learnt how to use a specific database, the Web of Knowledge (71.7% agreed or agreed strongly), but were less confident in their abilities to evaluate the information they found (58.4% agree or agree strongly, 29.2% undecided). Students on the HCS 3 project were asked to say to what extent they thought the activities had developed their information literacy skills, and the most popular answer was 'some' from both UGs (52%) and PGs (42%).

Students also reported feeling that they had developed their search skills and strategies (Pillars 3 and 4) for both library and internet resources, and that these were useful skills to have for future academic work:

*Learning how to use e-journals and Google scholar as it will help with future essays.*

[Journalism 12]

This was accompanied with acknowledgement that these skills were extendable and valuable beyond the academic environment:

*I learnt how to refine searches not only for my course, but for everyday life.*

[Journalism 12]

Other students reported developing referencing capabilities (Pillar 6) [English 2] as well as developing generic 'research' skills [Psychology 5]. There was acknowledgement that their academic work was improved by greater information literacy capabilities:

*I intentionally went beyond JSTOR to improve the quality of my essay*

[English 1]

However there is some evidence from some projects that students did not feel they developed their information literacy through the projects. For example some of the Masters students on the HCS 3 project felt they didn't extend their IL capabilities beyond what they had learnt in their undergraduate degree. Other students felt they hadn't learnt to reference correctly and lacked confidence that they could select appropriate resources [English 1] There was acknowledgement from staff as well that it is not always possible to attribute an improvement in IL competencies solely to the activities that students undertake in just one module.

## 8 What has been learnt about using IBL pedagogies to teach information literacy?

The CILASS evaluation process using 'Theory of Change' invites project leaders and others involved in the projects to reflect in a structured way about the project, informed by the evaluation data collected from students. Project leaders engage in a reflective interview facilitated by a CILASS LDRA, they also engage in a reflective process when writing their final report and case study. By looking at this data we are able to examine what has been learnt about using IBL to 'teach' information literacy. Project leaders and colleagues have spoken in detail about their use of IBL pedagogies in these projects, and although these have taken place in the context of a specific aim to build information literacy, the learning is applicable to IBL for other specific purposes. Those engaging with CILASS projects have valued the opportunity to take a reflective approach to their teaching practice, although it is acknowledged that taking an experimental approach to teaching is not without its pitfalls.

Based on this sample of projects, ensuring that the support, framework and scaffolding students are given for their inquiry is adequate seems to be a particularly important aspect of using inquiry-based learning for IL.

*It's a balance between giving them the framework, the scaffolding as we call it, but being able to do that within a context so that they recognise the value of doing it, and that is still the difficulty I think. I don't think you can just dive into inquiry-based learning, well you can... without framework and scaffolding but it's a lot easier if you've got that.*

[Law 7]

The inquiry task needs to be planned in detail, and getting feedback on this planning from colleagues, librarians or from other members of a teaching team is seen as beneficial [Law 7, English 1] One project leader reflected on the fact that students can misunderstand what seem to be quite clear instructions, but that it is important to take this on board and modify the framing given for subsequent iterations of the module.

*This time we used prompts at the bottom of the PPT slides to encourage students to consider the information literacy aspect of the task, such as 'what information was provided by the newspaper article'. There were fewer instances of people talking about issues that weren't related to information literacy.*

[Psychology 5]

Good facilitation is all about giving students the confidence to approach their inquiry, that they can find things out for themselves and this of course requires information literacy.

It is important to recognise that if students, particularly those at level one, are engaging in research activities, they may miss linkages between concepts or between theory and practice that a more experienced researcher might make. As such they may need the 'obvious' pointing out.

*And I'd done the interview protocol and it had questions that were very explicitly.. I'd flagged up that this question relates to these bits of Ellis' model of information behaviour and so forth to make it clear for them.*

[Information studies 9]

It can be tempting, one member of staff reported, to just give students the answer when they are experiencing difficulties with their inquiry. However it is much better to guide the students through the use of appropriate questioning and provision of support materials to discover their own path through the inquiry.

*We don't use the discussion boards necessarily to give answers, they do use it to encourage, well think about what we did in week whatever, or think about, or have another look at. It's this kind of encouraging, you know, you can work this out, you can do this.*

[Law 7]

Peer support can be a very good strategy to support the development of information literacy as most students arrive at university with some information literacy capabilities, and in fact some of them are accomplished internet searchers. Many aspects of information literacy are seen to be 'common sense' and as such students can help themselves and their peers to develop IL competencies.

It has been noted above that students consider feedback an important aspect of the IBL process, and staff have also reflected on the need to ensure appropriate feedback is given to support the learning process. Standardising approaches to feedback by a teaching team was mentioned by one project leader as something they want to develop in the future. [English 1] Staff have reported that students have enjoyed the inquiry-based learning process, and have seemed much more engaged and active in face-to-face sessions than previously where more transmission style teaching was used.

Project leaders spoke about the degree to which IBL is open-ended and the effect that has on student learning. Anecdotal feedback and observation of students has shown that students can really appreciate the opportunity to shape their own inquiry and investigate topics that are of interest to them, and this facilitates engagement with information literacy tasks.

*Because they could look for anything....it was something that they were a bit more interested in rather than just multiple choice questions which they just have to do, and they're more likely to want to discuss it*

[Psychology 5]

However some project leaders found they had to compromise their desire to make the IBL very open-ended and give students a list of topics to choose from due to students' lack of confidence with topic choice. In this particular project staff will use a text-book in the future as a subject knowledge support mechanism for the skills-based IBL. Another solution to the problem of students choosing topics to investigate is to spend significant contact time with them working on how to define a meaningful inquiry question.

*There was an issue of choosing a topic, I didn't want to set topics.... I needed to devote more time to 'what is a useful question'*

[Information studies 9]

It was noted as well that it can be quite difficult initially for staff to develop the confidence to use more open-ended approaches to IBL, but that ultimately students do benefit from this.

Even at level one it is possible to engage students in a process of genuine research that contributes to the knowledge base of the discipline. This can make the inquiry experience much more 'real' and

grounded for students, and enable staff to build linkages between teaching and research. Staff can also then build their own disciplinary knowledge through the students' process of discovery.

*I think we've demonstrated that first years can do research....obviously they're not finished researchers at the age of 18-19.... but they are able to engage with this activity.... I've also learnt about information behaviour in second life from the students having carried out the research. Something has actually been added to the knowledge base of the discipline by the students doing the activity.*

[Information Studies 9]

It was acknowledged that using collaborative inquiry to develop information literacy can be problematic, but that a solution whereby students are encouraged to collaborate online could help solve some of the logistical problems mentioned by students in arranging meetings. Collaborative working is smoother if students are given more guidance on *how* to collaborate effectively, for example in defining how often they should expect to meet outside of timetabled sessions. Collaborative or 'team' teaching can also be successfully used for IL-related IBL, however it is important to ensure good communication between the team members and, as mentioned above, consistency of approach to facilitation. It is also important to ensure that the information literacy of tutors is sufficient to ensure that they are able to support the students. This could be accomplished through specific training activities as undertaken in the Psychology 5 project.

Generally feedback from staff suggests that IBL, as implemented in these projects has been successful in building information literacy competencies in students. However it was noted that staff need to be explicit about the links between IBL activities to build IL and the rest of the curriculum or students can fail to make the connections themselves. One way to do this is to stress the usefulness of information literacy in supporting students in approaching assessed work, even that of other modules. For example, one project leader noted that, through the project activities, students seemed to have developed a much better awareness of the function of bibliographies, and that this had led to that cohort of students producing better bibliographies for assessed work in other modules. It is important to be explicit with students about the information literacy aspects of the inquiry-based learning they are being asked to engage with. This enables students to develop a conception of what information literacy is and that then helps them apply it across modules and develop their competencies further. One project leader commented that for her, IBL and IL are intrinsically linked in that good IL is fundamental to the success of IBL.

As a result of engaging in Inquiry-based projects to develop information literacy, departments have been led to examine their strategic approach to both IL and IBL, and to look at integrating both these elements into the subject curriculum.

## **8.1 Strategic engagement with information literacy**

CILASS, the Library and the Information Literacy Network have facilitated academic departments to engage with the strategic development of approaches to information literacy embedded within the subject curriculum to support Inquiry-based learning. The Library identified this as a key driver for their first CILASS funded departmental project (Library 6) and have worked with both the Town and Regional Planning department and the School of Architecture to develop IL strategies. The initial work with Town and Regional Planning was stimulated by the first of a series of workshop events organised by the Information Literacy Network aimed at supporting departments in responding to the Information Literacy related 'Sheffield Graduate Attributes' in their Departmental Learning

Teaching and Assessment strategies. Town and Regional Planning, in conjunction with the Library devised an information literacy strategy based around the SCOUNL Seven Pillars model of Information Literacy with key targets for student capabilities identified for each year of study. Subsequently colleagues from the School of Architecture employed a similar model in devising their own IL strategy, again with support from the Library. This then formed the basis for an IBL grant project (Architecture 11) which used CILASS funds to create a MOLE based information literacy resource hub on MOLE. Funds were also used to create a series of inquiry-based workshops to support IL development at key points in the PG and UG curriculum to be delivered by the faculty liaison librarian. This activity was supported by the Library 4 project which developed capabilities in using IBL pedagogies for teaching information literacy with faculty liaison librarians.

## 9 Conclusions and recommendations

This section of the report will focus on summarising the main learning points from the analysis as a whole and attempt to make suitable recommendations for the development of inquiry-based approaches to information literacy development and IL development to support inquiry more widely.

Models of information literacy are an effective means of introducing both staff and students to the broad scope of information literacy. Educational developers and librarians can develop a shared vocabulary for IL with academic colleagues who can in turn use the model to develop a shared vocabulary of skills development with students. Students benefit from having a label to pin to their burgeoning capabilities and this can be facilitated through reflective process structured around responding to an IL model.

Evidence-based, strategic educational development is an excellent method of ensuring that information literacy development happens at the right time and in the right way for the needs of students in a particular department. The benefits of developing information literate students cut across module boundaries so it makes sense to look at IL holistically. Information literacy audits where provision of IL development is examined across a programme help inform dedicated IL strategies, competency statements and interventions as well as feeding into wider departmental learning, teaching and assessment strategies. Specialist input from librarians and educational developers can facilitate the audit process and feed into the formulation of strategic approaches. Strategic approaches to information literacy can best be supported at institutional level by inclusion of IL and the competencies it entails in the Learning Teaching and Assessment Strategy and other policy documents. At the University of Sheffield the inclusion of IL in the Sheffield Graduate Attributes has had a far-reaching successful impact on the positive adoption of strategic approaches to IL.

The Theory of Change approach to impact evaluation has made explicit the positive outcomes from IL focused educational development and helped signpost areas for improvement. If librarians or educational developers with specific expertise in IL are present at the initial stages of the evaluation process, i.e. defining the Theory of Change, this can help embed IL more deeply in the project activities, foreground pedagogical approaches to developing IL and embed the support for IBL in terms of supporting students in building their IL.

Librarians should be seen as vital partners in the educational development process in terms of information literacy as they have significant expertise to offer in terms of pedagogy for IL and their knowledge of support mechanisms for IL. Librarians themselves benefit from opportunities to

develop their pedagogical approaches to IL teaching through dedicated training and discussion events. Librarians are well placed to offer advice on appropriate ways of embedding online support for information literacy in the form of VLE and internet-based tutorials. The tailoring of this material to the discipline context helps make it more meaningful and engaging for students. The projects in this analysis have demonstrated that creative approaches to IL support material developed in partnership with Librarians have provided a context for increased librarian/academic partnership and resulted in increased levels of support for students.

Section 8 above discusses in detail what has been learnt from the projects in this analysis regarding use of IBL pedagogies to teach information literacy and it is apparent that similar issues have been encountered with the design, support and student perception of IBL in this context as in other contexts. Collaborative inquiry causes logistical and support issues for students but is much favoured as a suitable learning strategy for inquiry. The distinctive feature that can be drawn from these projects is that of the perceived success of near peer mentoring to support information literacy development in the inquiry context. All students, perhaps without realising it, significantly develop their IL competencies during their studies at University, and are well placed to share this knowledge through a mentoring process. New students find other students more approachable than staff, and find that their peers have targeted information coping strategies that are easily shared with other students.

When IBL is open-ended and students are expected to shape their own inquiry they benefit from structured feedback and support mechanisms. This does not necessarily have to take place in the context of assessment, and in fact evidence from these projects suggests that reflective discussion with peers, guided by tutors can be a good alternative to feedback via assessment. Knowledge sharing activities in relation to information literacy seem to be a suitable strategy to building IL competencies.

Student feedback suggests that inquiry-based tasks that build information literacy are sometimes perceived to be 'jumping through hoops', but with the acknowledgement that the competencies they have gained are useful. The design and timing of Inquiry-based interventions to build IL then seems to be a critical aspect of the student's perception of the task at the point at which they undertake it. However where student feedback was gathered more longitudinally or well after the IL intervention, then student's perception of the usefulness of the IL competencies they had developed increased. The challenge for educational development then is to ensure that inquiries that build IL are meaningful and embedded in the curriculum in such a way as to facilitate the process of recognition of the value of IL. Reflective activities and discussion (as mentioned above) seem to play a key role in eliciting student perception that developing information literacy is valuable.

## 10 References

- Bruce, C. (1997). The relational approach: a new model for information literacy. *The New Review of Library and Information Research*, 3, 1-22.
- CILIP (2004). CILIP's definition of information Literacy [Online] <http://www.cilip.org.uk/get-involved/advocacy/learning/information-literacy/Pages/definition.aspx> [Accessed 08/07/2010]
- Connell, J.P., Kubisch, A.C., Schorr, L.B., Weiss C.H. (1995). *New Approaches to Evaluating Community Initiatives (Vol. 1)*. Washington, DC: The Aspen Institute.

Helsby, G. and Saunders, M. (1993). Taylorism, Tylerism and performance indicators: defending the indefensible. *Educational Studies*, 19 (1), 55-77

## 11 Appendix – List of projects

### 11.1 English 1

Dept/Project	Phase	Level	Bid	ToC	Final report	Case study	Other eval. data
English 1	IBL grant	1 & 2	Y	Y	N	N	<ul style="list-style-type: none"><li>• PL reflective interview</li><li>• Student questionnaire</li><li>• Student feedback collated by Student Ambassadors</li></ul>

This project embedded information literacy development in a number of core modules taught at levels one and two and as such required the involvement of multiple tutors. The SCOUNL ‘Seven Pillars’ model of information literacy prompted the design of a series of unassessed collaborative IBL exercises that students took part in during the seminar programmes of the modules concerned

The exercises aimed to build students competencies in engaging with the literature and resources of their discipline, in referencing and in critiquing literary arguments. The Library was a key partner for this project and online information literacy tutorials were adapted to support student activities.

Project leader feedback:

“The quality of referencing in 2nd year essays is far better than in the past”

Student feedback:

“Very helpful in learning skills that will benefit in other modules I will take during my time at University. It was an ideal way of introducing us to the resources the University offers”

Project Case study: N/A

Project Leader: Professor Cathy Shrank

## 11.2 English 2

Dept/Project	Phase	Level	Bid	ToC	Final report	Case study	Other eval. data
English 2	IBL grant	1	Y	Y	Y	Y	<ul style="list-style-type: none"> <li>• PL reflective interview</li> <li>• Mentee questionnaire</li> <li>• Mentor focus group</li> <li>• Self evaluation report</li> </ul>

How can we encourage upper year group students to collaborate and share their research expertise with students in lower year groups?

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.

Project case study: [www.shef.ac.uk/ibl/resources/casestudies/english/historyof.html](http://www.shef.ac.uk/ibl/resources/casestudies/english/historyof.html)

Project Leaders: Professor Susan Fitzmaurice and Dr Phillip Shaw

### 11.3 Human Communication Sciences 3

Dept/Project	Phase	Level	Bid	ToC	Final report	Case study	Other eval. data
Human Communication Sciences 3	IBL grant	1 UG and PG	Y	Y	N	Y	<ul style="list-style-type: none"> <li>• PL reflective interview</li> <li>• MmedSci Student questionnaire</li> <li>• MmedSci student focus group</li> <li>• BmedSci student questionnaire</li> <li>• BmedSci student focus group</li> <li>• Student guide focus group</li> </ul>

Want to help your students bridge the gap to university life? Intro Week inquiry activities in Human Communication Sciences were revamped in September 2006 as part of a CILASS project in order to do just that.

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.

‘It was great to get confidence, because it wasn’t the big things, it was the small things you were worried about’ (MMedSci student focus group)

Project case study: [www.shef.ac.uk/ibl/resources/casestudies/hcs/introweek.html](http://www.shef.ac.uk/ibl/resources/casestudies/hcs/introweek.html)

Project leader: Ms Margaret Freeman

## 11.4 Library 4

Dept/Project	Phase	Level	Bid	ToC	Final report	Case study	Other eval. data
Library 4	4	staff	Y	Y	N	N	<ul style="list-style-type: none"> <li>• PL reflective interview</li> <li>• Librarian focus group x 2</li> <li>• Presenter questionnaire x 6</li> </ul>

This project responded to the themes of "Building the partnerships for learning and teaching" and "Information Literacy" in the Library strategic plan. The driver for the project was identifying that Academic Liaison Librarians needed to develop their approach to teaching to achieve their potential of acting as partners with academic staff in the delivery of information literacy. A greater understanding of the pedagogy of Inquiry-based learning, how it sits in the teaching and learning landscape of the university and how it can be used in the teaching of information literacy could help them achieve this aim.

A series of workshops for Academic Liaison Librarians that drew upon the existing expertise IBL at the University to explore the relationship between IL and IBL took place over the course of an academic year. Discussion both online in MOLE and in the face to face sessions helped develop a community of IBL focussed information literacy practitioners.

Project case study: N/A

Project leader: Peter Stubley

## 11.5 Psychology 5

Dept/Project	Phase	Level	Bid	ToC	Final report	Case study	Other eval. data
Psychology 5	2	1	Y	Y	N	Y	<ul style="list-style-type: none"> <li>• PL reflective interview x 2</li> <li>• Self evaluation report</li> <li>• Student questionnaire</li> <li>• PG tutor focus group</li> <li>• Student feedback on tutor groups</li> <li>• Information Literacy questionnaire</li> </ul>

"Journals contain facts, unlike the Daily Mail"

This project introduced collaborative inquiry based learning at the very start of the level 1 curriculum in the Psychology Department. Students were asked to trace the origins of a Psychology-related story in the popular press back to its origins in published research. They were supported through this process by postgraduate tutors and by working together in groups to develop their information literacy skills.

Project case study: [www.shef.ac.uk/ibl/resources/casestudies/psychology/publicpres.html](http://www.shef.ac.uk/ibl/resources/casestudies/psychology/publicpres.html)

Project leader: Dr Myles Jones

## 11.6 Library 6

Dept/Project	Phase	Level	Bid	ToC	Final report	Case study	Other eval. data
Library 6	1	various	N	Y	N	Y	<ul style="list-style-type: none"> <li>• PL reflective interview</li> <li>• Formative evaluation report</li> <li>• Interim evaluation report</li> <li>• Feedback from other projects re: Library support</li> </ul>

"I would like to record how phenomenally helpful the Library has been, much more so than anticipated because once I was able to say to our contact that I didn't understand it or didn't do it very well she moved mountains to change things" (project leader feedback)

As a key institutional partner, the library plays a key role in developing information literacy approaches with CILASS project leaders. This project sought to increase student engagement in information literacy through a number of avenues:

- Collaboration between the Library, the CILASS team and module leaders to develop information literacy pedagogies.
- Further development of module resource lists in a more interactive way, including the digitisation of relevant materials where appropriate.
- Widening the scope of the Library's online 'Information Skills' resource, which is deployed via the virtual learning environment.

The project was particularly successful in developing collaborative partnerships between library staff, academics and CILASS team members and in supporting the embedding information literacy at various institutional and strategic levels.

Project Case study: [www.shef.ac.uk/ibl/resources/casestudies/library/seil.html](http://www.shef.ac.uk/ibl/resources/casestudies/library/seil.html)

Project leaders: Peter Stubley, Lyn Parker, Clare Scott

## 11.7 Law 7

Dept/Project	Phase	Level	Bid	ToC	Final report	Case study	Other eval. data
Law 7	1	1	Y	Y	N	Y	<ul style="list-style-type: none"> <li>• PL review</li> <li>• Self evaluation report</li> <li>• Interim evaluation report</li> <li>• PL reflective interview</li> <li>• Interview with Librarian</li> </ul>

How can you do inquiry-based learning with over 400 students?

This was the question that faced lecturers in the School of Law when they wanted to develop Understanding Law 1, a core first year module that develops the skills of legal inquiry in students.

The answer was to couple the traditional lecture and seminar programme with two innovations: an electronic workbook and a student tutor scheme. The electronic workbook guides students through the foundational materials using a series of weekly research exercises and problem based activities. Students have the opportunity to come together and discuss their research (both what they found and how they found it) in colloquia which are led by 'Student Tutors'. The student-tutor scheme which gives a team of 20-30 second and third year students the opportunity to teach their first year peers in specially designed colloquia. Through a combination of activities students develop a range of inquiry, information literacy and transferable skills.

"I've found the course useful in learning techniques and applying the concepts of law and has provided the opportunity to have a go at a mock trial. The skills taught through the learning diary and electronic workbook and what we have learnt has shown me how useful it is for the course." (Student feedback)

"I thought the idea of having several lessons taught by a fellow student to be rewarding as she was full of useful information for us not just on this particular module but law in general. She always made a point of insisting that we could ask her anything, it helped to have a different perspective from someone more experienced on many issues of which we as a group enquired about." (Student feedback)

Project Case study: [www.shef.ac.uk/ibl/resources/casestudies/law/ul1.html](http://www.shef.ac.uk/ibl/resources/casestudies/law/ul1.html)

Project leaders: Dr Mark Taylor, Dr Natasha Semmens

## 11.8 Information Studies 8

Dept/Project	Phase	Level	Bid	ToC	Final report	Case study	Other eval. data
Information studies 8	IBL	*	Y	N	N	N	<ul style="list-style-type: none"> <li>PL reflective interview x 4</li> </ul>

This project was a Scholarship of Teaching and Learning project taken forward by the module leader. The module that formed the focus of the Scholarship activity is core for Level 1 students in the Department of Information Studies and there are traditionally about 20-22 students on the module. In this Information Literacy focused module teaching/activity in Second Life (SL) will take place. Students are introduced to SL in Week 4, and the module also features development activity on face-to-face interviewing as well as practice and experience in interviewing in SL. Every year, students are introduced to a problem in Week 4, which requires them to do their own research in SL. The students also have to take part in reflective blogging activity. CILASS projects under the SOTL IBL grant scheme do not have to take part in the standard 'Theory of Change' evaluation approach, instead the researcher takes a reflective approach to their curriculum development activity.

Project case study: N/A

Project leader: Sheila Webber

## 11.9 Information Studies 9

Dept/Project	Phase	Level	Bid	ToC	Final report	Case study	Other eval. data
Information studies 9	1	Staff	Y	Y	N	N	<ul style="list-style-type: none"> <li>Interim evaluation report</li> </ul>

This project aimed to develop an inquiry-based learning approach to integration and progression of Information Literacy (IL) in the Department of Information Studies (DIS), both at programme and module level. An initial audit of current information literacy teaching in DIS was carried out and the information was used to map current activity against the SCONUL "7 Pillars of IL" framework. This framework identifies seven key areas for development:

The project aimed to identify curriculum areas in which there are currently gaps in terms of IL development, as well as those aspects ("pillars") of IL which require further development in DIS. The project also identified current best practice in terms of inquiry-based approaches to teaching, learning and assessment of IL, and areas where the pedagogic approach to IL education could be improved.

Project case study: N/A

Project leader: Sheila Webber

## 11.10 Sociological Studies 10

Dept/Project	Phase	Level	Bid	ToC	Final report	Case study	Other eval. data
Sociological studies 10	3	1, 2 and 3	Y	Y	N	N	<ul style="list-style-type: none"> <li>PL reflective interview x 2</li> </ul>

This project formed one strand of the Department's CILASS project and sought to build information literacy skills through more extensive use of the Library's information skills resource and through dedicated IL focussed seminars that were incorporated into modules at levels one, two and three. Students engaged with bibliographical reviewing and exercises in literature search strategies, citation searches through Web of Knowledge. The assessment of IL capabilities was included in the modules concerned, through techniques such as the assessment of annotated bibliographies.

Project case study: N/A

Project Leader: Dave Phillips

## 11.11 Architecture 11

Dept/Project	Phase	Level	Bid	ToC	Final report	Case study	Other eval. data
Architecture 11	IBL	1, 2, 3 and PG	Y	Y	N	N	<ul style="list-style-type: none"> <li>PL reflective interview x 2</li> </ul>

This IBL grant project sets out to develop a coherent package of learning resources that will support students within the school of architecture at every level, from new undergraduates, through our portfolio of Masters courses, to MPhil/PhD candidates.

The focus of this project was on the learning support that ought to be considered as an integrated strand of the curriculum. An initial audit of Information Literacy Skills was carried out in 2006/07 and this demonstrated that the existing support for learning was both outdated and fragmented in terms of content, delivery and availability. This project identified when and where this support is and should be provided for all the School's students, and to develop resources appropriately.

The project developed a coherent strategy for supporting the School of Architecture's core learning and teaching activities and the design, development and implementation of a coherent suite of study skills resources that will be available to all students, relevant at every level and for every module of our courses.

Project case study: N/A

Project leader: Stephen Walker

## 11.12 Journalism 12

Dept/Project	Phase	Level	Bid	ToC	Final report	Case study	Other eval. data
Journalism 12	3	*	Y	Y	N	N	<ul style="list-style-type: none"> <li>• Staff feedback</li> <li>• Student questionnaire</li> </ul>

Journalists ask questions and find information, then tell people the results of their inquiry. They do it individually and collaboratively and in many subject areas. They publish in print, radio, television and on the web. They need sophisticated information gathering skills and to develop much better than average antennae in sifting 'good' information from 'bad'. Inquiry based projects within the Department of Journalism presently consist in getting students used to the practice of finding and using information from sources of all kinds. The department is seeking to develop its introductory teaching materials in the first part of the second semester through creating progressively more open ended classroom based 'mini-projects' before students are let loose on the real world. This project developed a single intranet location with links to newspapers, media archives, academic journals, directories of organizations, public sector bodies, regulatory authorities and blogs. This resource subsequently allows staff to create lecture, seminar and workshop material that demonstrates much more effectively than possible at present how different media outlets cover stories differently.

Project case study: N/A

Project leader: Tony Harcup