National Teaching Fellowship Project Report
2008

Perceptions of Information Literacy in the Transition to Higher Education

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Introduction to the report

"The more you know, the more you realise that you don't know, whereas if you don't know you don't know, you can be quite confident that you know"
[teacher in survey]

1.1 Introduction

This report details the activities and research with which I have been involved as a result of becoming a National Teaching Fellow. These activities are summarised in Fig 1 below:
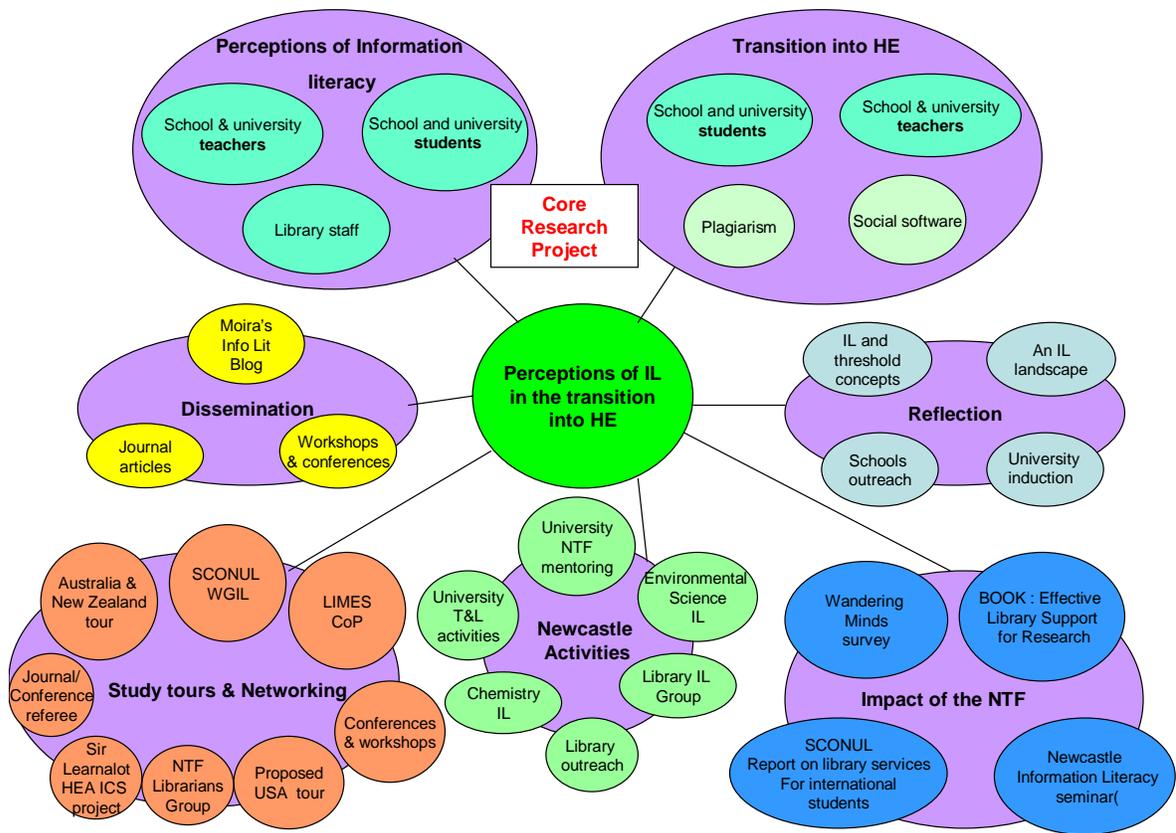
Fig 1 Summary of NTF activities

I present the results of my specific research project, investigating information literacy related issues around the transition into Higher Education as well detailing some of the spin off activities which have occurred since I became a National Teaching Fellow. The report gives me the opportunity to draw together the strands of all these disparate activities into one framework. The main body of the report contains summary data and analysis pertaining to the core research project, which is practitioner focused research informed by the literature of information literacy. Other chapters address parallel activities which the NTF has enabled me to develop alongside the core project, all

with the common theme of approaching learning from the perspective of the learner. I intend to use some of the data in the report as the basis for a series of more detailed journal articles; it has already been used for a variety of workshops and conference presentations.

In this respect, the report has a very wide remit, covering not only specific research results, but also the personal journey I have undergone as I have developed as a National Teaching Fellow. I hope the report will be of interest to the HEA, which awarded me the fellowship, to my managers at Newcastle University who have supported me and to all those who have participated in the research or advised me on how to proceed.

The award of a National Teaching Fellowship enables the recipient to develop an existing interest alongside their normal job responsibilities. My personal passions relate to the promotion of information literacy in education. I believe that Information Literacy is about changing an individual's attitude to their learning so that they are explicitly thinking about how they use, manage, synthesise and create information, in a wise and ethical manner, to the benefit of society, as part of their learning life. As such, it is an essential attribute for all our students and staff and I feel that an information literate university will have a progressive, coherent approach to learning which will enable it to compete in the 21st century. The University Library is already working towards this ideal, supporting both staff and students in developing their skills and attitudes. My National Teaching Fellowship award means that I am able to contribute by developing expertise, making international contacts and feeding in the results of my own research.

The National Teaching Fellowship has changed my life in many ways. It has allowed me the space to undertake personal research at a higher level, which has increased my credibility both locally with university staff at Newcastle and internationally within my profession. I am aware that there is international interest in my research topic and am in regular communication with acknowledged world experts in the field. This increased recognition has led to my participation in national strategy groups and to an increasing number of invitations to present papers on my research. It has been such a joy to have this opportunity for reflection and personal development and I am looking forward to continuing with my research and to developing my expanded opportunities to contribute to Newcastle University.

1.1.1 Acknowledgements

1.2 Executive summary

The aim of this piece of research was to investigate the conflicts and congruencies between staff and student perceptions of information literacy in the transition to higher education, particularly in Chemistry and English. The project comprised four main strands: perceptions of information literacy, library and information aspects of the transition into Higher Education: study tours and networking, and the impact of the National Teaching Fellowship.

Perceptions of information literacy

Working with a group of both state and independent schools and two universities, I investigated what Information Literacy means to teachers, students and librarians and how they perceive other groups' understanding of the concept. The data was collected using face to face interviews and discussion groups, as well as with an online survey tool. The common thread running through the results is that, in spite of information literacy being an unfamiliar term to many, staff and students in both schools and university were in the main very comfortable with many of the perceptions it encompasses. Variation occurs in the teacher perceptions of student perceptions, which are probably influenced by the evidence which the teachers see of what students actually do. The school students explained this variation by saying that it exists due to informed choice, in other words, they are aware of wider information literacy issues, but choose to demonstrate only basic level information skills because this is all that is required of them

Transition into Higher Education: library and information aspects

In order that the research delivers an immediate practical outcome to the Library, the discussion groups and interviews were also used to ask for views on the transition into university, specifically relating to information, but inevitably touching on more general areas, as well as researching examples of good practice from elsewhere. Results include suggestions from both staff and students on ways in which the university library might engage in outreach activities with local schools, as well as ideas for engaging with first year students more effectively.

Study tours and networking

The NTF study leave has been used to engage in personal development opportunities and networking, with opportunities arising to make contacts with acknowledged experts in the Information Literacy field and make my own contribution to the domain. Good practice themes and ideas are summarised, with comments on how these might be used in a local context.

The impact of the NTF

During all the workshops and presentations which have resulted from NTF activities, participants were asked to note down on a "Wandering Minds sheet" any thoughts or ideas that occur to them during the meeting and to keep in touch if these develop in any way. I'm interested in serendipity and what else might happen indirectly as well as more direct results. It seems that a National Teaching Fellowship can have a lasting impact on many more people than just the Fellow! Other major spin-offs arising from the NTF, including 2 major publications, are also referred to.

Dissemination: The NTF Project Blog : http://blogs.ncl.ac.uk/moira.bent

The development of the project, thoughts, connections and outcomes is documented in Moira's Info Lit blog, which began at the start of the travelling phase of my research, in Oct 2006. More details of the blog can be found in section 6.

Reflection and Future Directions

The report concludes with some personal perceptions of information literacy and reflection on the role of threshold concepts in information literacy. A mind map of an information literacy landscape is presented as a way of approaching the development of information literacy and some suggestions for future research directions are listed.

1.3 Literature Review / Survey

Rather than write a formal literature review, this section consists of an annotated list of key resources covering the main topic areas relevant to the core project.

Database of references

A record of all the resources consulted has been maintained in both an EndNote and a RefWorks database. An additional benefit of the NTF is that it has given me time to use both packages to support my research and to compare the 2 software packages from a researcher's perspective. It is hoped that this information will help inform any future University decisions on bibliographical software.

> ➢ Online database
> The RefShare database is available via my blog at http://blogs.acl.ac.uk/moira.bent
> and directly at
> http://www.refworks.com/refshare/?site=032251126249200000/RWWS1A413338/NTF%20Info%20Lit

> This version updates automatically as new references are added to the main database, so it is always up to date.

> ➢ Reference list
> A printed version of the database (from the date of report submission) is included as a reference list at the end of this report.

Topic 1: Information Literacy perceptions

The body of literature on perceptions of and attitudes to information literacy has grown over the last few years. Key papers relating to academic conceptions of information literacy include those by Bruce (1997a, 1997b, 2002, Bruce and Candy, 2000), Webber (Webber et al., 2005b, Webber et al., 2005a, Webber and Johnston, 2000, Webber and Johnston, 2002b, Webber and Johnston, 2002a) Andretta (2002, 2006, Andretta, 2007a, Andretta and Cutting, 2003) and Leckie and Fullerton (1998). Penny Moore writes extensively on the integration of information literacy into school curricula in New Zealand (1999, 2002, 2005), whilst Williams and Wavell (Williams and Coles, 2003, Williams and Coles, 2007b, Williams and Wavell, 2001, Williams and Wavell, 2005, Williams and Wavell, 2006a, Williams and Wavell, 2006b, Williams and Wavell, 2002) and Crawford and Irving (2006, Irving and Crawford, 2006) are key authors in the Scottish information literacy in schools scene.

A common element in many of the studies relates to the variation between different disciplines with regard to how information literacy is perceived. The study by Boon, Johnston and Webber on variation in conceptions between marketing and english academics is a good example (Webber et al., 2005a). Webber and Johnston have also studied variation between chemistry and english staff (Webber et al., 2005b) and an initial aim of my own study was to compare my own findings with these.

Claire McGuinness (2006) reports on faculty librarian collaboration and how perceptions may adversely affect the potential for collaboration.

This research is also informed by Williams and Wavell's work on teachers' conceptions of student information literacy and how that impacts on their teaching(Williams and Wavell, 2006a). Issues around linguistic understanding and making meaning, which Williams' research highlights, are also reflected in works on retention and employability in HE (Yorke, 2004, Bowl, 2003).

There are an increasing number of good general texts on information literacy. For practical tips, the Information literacy cookbook by Jane Secker et al. (2007) and Teaching information skills: theory and practice by Jo Webb and Chris Powis (2006) are both helpful. Chris Powis is also collecting materials to help people teach information literacy on his InfoTeach wiki, an outcome of his NTF project funding.

For a more theoretical approach, the key resource for me has been Bruce's Seven Faces of Information Literacy (1997), as well as material by Andretta (2005, 2007), Martin (2003) and Webber (2002) The SCONUL position paper (Johnson 1999) was the original paper positing the Seven Pillars model of information literacy.

Topic 2: Young people's information use

Madden (Madden et al., 2007) explains the "Information Space" originally defined by McKnight (McKnight, 2000) as the objects children use to acquire information and he summarises other research undertaken into children's information seeking. Madden's work highlights that there is an assumption that the internet is a significant component of the Information Space but few studies enable us to put this into context.

Shenton's work in the NE of England(Shenton, 2004), situated as it is in close proximity to my own, is pertinent as it asked children to describe how they had addressed their needs for information. Merchant and Hepworth (2002) have also produced useful studies in this area.

Smith and Hepworth (2005, 2006, 2008) have investigated student perceptions and use of information in secondary schools in the UK.

Williams and Cole (2007a, 2007b) explored how teachers in the UK use information in their teaching, raising questions about how teacher's own information literacy impacts on that of their students.

The briefing paper for the JISC and the British Library 'Google Generation' project was released in January 2008 [CIBER 2008] and is particularly pertinent to this research, so it is summarised in more detail here. The project investigated how the Google Generation searches for information and lists the implications for the UK's major research libraries. It summarises the main characteristics of digital information seeking behaviour as
- Horizontal information seeking whereby users view only one or two pages
- Navigating around spending as much time finding their way as viewing the results
- Short power browsing sessions looking for 'quick wins'
- Squirreling content but with no evidence that the content is read
- Diversity of user behaviours due to location, gender, type of university and status
- Users assess authority of sources according to brand recognition (e.g. Google).

According to the report, observational studies show that:

… young people scan online pages very rapidly (boys especially) and click extensively on hyperlinks – rather than reading sequentially. Users make very little use of advanced search facilities, assuming that search engines 'understand' their queries. They tend to move rapidly from page to page, spending little time reading or digesting information and they have difficulty making relevance judgements about the pages they retrieve.

In terms of information literacy, the report found that
- Information literacy has not improved despite increased access to technology
- Speed of searching results with little time on evaluating the relevance, accuracy or authority of information
- Poor understanding of their own information needs
- Preference for use of natural language
- Problems in selecting relevant materials from long lists of hits.

The report suggests that information literacy intervention in universities may be too late and that habits need to be developed in schools to prevent students from developing a coping strategy of getting by with Google.

Topic 3: Phenomenography

Phenomenography has become a more common research methodology in recent years. Originally conceived by Marton (1981), it has been developed within the information literacy field to great effect by Bruce (1999), Andretta (2007b), Limberg (1999) and Webber (Webber et al., 2005a) and more generally in learning and teaching by Marton (1994) and Prosser (Prosser et al., 1994). Marton (1994) defines it as "the empirical study of the limited number of qualitatively different ways in which we experience, conceptualise, understand, perceive, apprehend etc various phenomena in and aspects of the world around us". It uses a relational approach, focusing on the relation between people and their world, rather than focusing on the user at the centre. A key article in understanding the use of phenomenography in information science research is that by Bruce (1999) in which she describes it as an "interpretative research approach which explores qualitative variation in people's experience of aspects of the world around them". Bruce's article offers practical tips and further reading for researchers interested in pursuing a phenomenographic approach in information science.

Topic 4: Transition

Transition is a very large area of study, so it was quickly decided to limit the scope of this study specifically to the transition from secondary schools into Higher Education. Useful material in this area includes Bridges book, Managing transitions (Bridges, 1995). Taylor and Heathcote from QUT (Heathcote and Taylor, 2007) give an interesting viewpoint on the process of transition being about discarding part of an old identity in order to make space for a new changed identity. Their article gives a useful summary of relevant change management literature.
In Scotland, John Crawford and Christine Irving have been working tirelessly to establish links between secondary and tertiary education (Crawford and Irving, 2006), resulting a National Information Literacy Framework for Scotland (Crawford, 2008a). This work is elaborated on in the Scottish Information Literacy Project blog.(Crawford, 2008b)

Section 2

Perceptions of Information Literacy

Perceptions of Information
literacy

School & university
teachers

School & university
teachers

Library staff

Perceptions of IL
in the transition
into HE
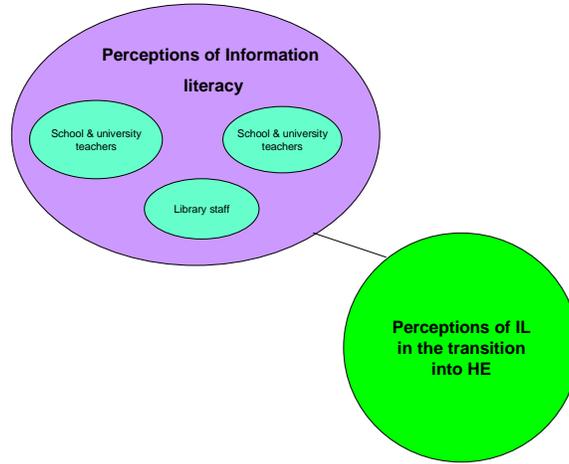
Fig 2

2.1 Aim

The aim of the core research project was to investigate variations in perceptions of information literacy amongst students and teaching staff before and after the transition from secondary to tertiary (specifically school to university) education.

> ➢ What does Information Literacy mean to teachers, students and librarians and how do they perceive other groups' understanding of the concept?
> ➢ How do variations in perception impact on information literacy interactions and behaviours?
> ➢ Which information interactions are important in the transition from school to university?

2.2 Methodology

The research primarily uses a qualitative approach, focusing on perceptions and understandings of the phenomena of information literacy. This was felt to be appropriate because the study is building on the phenomenograpic work done by Bruce (Bruce, 1997a)as well as comparing results with phenomenographic studies by Webber and Johnston (Webber et al., 2005a, Webber and Johnston, 2000). It was also felt to be important to preserve the context in which the participants of the study are situated, namely schools and higher education.

Two main methods of data collection were employed, a perceptions survey tool and semi structured interviews. The perceptions survey is based on a predefined list of statements designed to reflect different conceptions of information literacy as described by Bruce (Bruce, 1997b). Some qualitative analysis of data from the perceptions survey was also felt to be important in identifying key variations in perceptions between different groups of participants.

Semi structured interviews, which allow the exploration of unpredicted topics whilst at the same time imposing a basic structure on the discussion in the form of key topic areas, were the main form of data collection. The interviews were conducted with individual staff and with small groups of students in an informal discussion setting.

The two disciplines chosen for the study were selected to represent the two extremes of hard-soft, categories as described by Biglan (Biglan, 1973), as well as to allow a comparison with the results

of the Webber and Johnston study. English represents the "soft" arts category, whilst Chemistry represents the "hard" sciences category.

2.2.1 Sample size and composition

The scope of the survey was confined to the North East area of England. County Durham was selected as a county which contains both rural and urban schools, in an area which has relatively easy access to 5 universities and several FE colleges. The school sample consists of 5 state schools and 2 independent schools in both urban and rural settings. The initial aim was to have 6 state and 3 independent schools, but 2 schools failed to respond to requests to participate. Initial contact with the schools was made via the Durham Schools Librarians Group, meaning that an immediate bias was introduced into the sample as all the schools involved had a named person responsible for their school library. The independent school which didn't respond does not have a school librarian. Within the schools themselves, students were selected on the basis of studying either English or Chemistry and were all in years 12 and 13 (6th form) In each school, the staff involved were the Head Teacher, the Head of Sixth Form, Head of Chemistry, Head of English and the School Librarian.

The university samples are limited to Newcastle University in the UK and the University of Canterbury at Christchurch, New Zealand. The latter was selected due to personal contact with the chemistry librarian, who was keen to use the project as a means of initiating contact with staff and students. Initial data analysis, however, has been confined to the UK sample, due to some inconsistencies in data collection in New Zealand. At Newcastle, students were asked to participate in the online survey with the chance of winning a small monetary prize. Staff participated voluntarily and as a consequence, the sample size is quite small.

The sample sizes finally analysed were:

UK school teachers: 23
UK school students: 84
UK university teachers: 10
UK university students: 40

2.2.2 Data collection

The data was collected using semi structured interviews (with teachers and librarians) and discussion groups (with students), together with a paper and online perceptions ranking exercise (completed by all). In addition, the Bristol Online Surveys software was used to run a comparative study of perceptions of information literacy between students at schools and a university in New Zealand in collaboration with staff from the University of Canterbury at Christchurch. Newcastle University first year chemistry staff and students are took part in the research in Oct 2007, with English students and staff participating in April 2008.

2.2.3 Pilot survey

The perceptions survey (Appendix 2), interviews and discussion group questions (Appendix 3) were piloted in 2007 at Durham High School for Girls. The survey was completed by 5 staff and 12 students. Staff were asked to fill in a feedback form (Appendix 1) on the interview process, clarity of questions and quality of supporting documentation. As a result of the pilot, the perceptions survey was slightly redesigned to allow for easier ranking. Feedback was universally positive on the interview process, purpose of the research and clarity of questions, so at this stage the questions were not altered in any way.

Subsequently, the perceptions survey and interview questions were reviewed by Christine Bruce, who made some useful suggestions on tightening up two of the question strands and approved the design of the survey.

2.2.4 Phenomenography

The research took a phenomenographic approach, aiming to map results onto the relational model proposed by Christine Bruce (1997a) in the Seven Faces of Information Literacy. Bruce proposes 7

conceptions of Information Literacy, which she describes as the following categories (Bruce, 1997b):

- ➢ *Category one, the information technology conception*
  Information literacy is seen as using information technology for information retrieval and communication
- ➢ *Category two: the information sources conception*
  Information literacy is seen as finding information located in information sources
- ➢ *Category three: the information process conception*
  Information literacy is seen as executing a process
- ➢ *Category four: the information control conception*
  Information literacy is seen as controlling information
- ➢ *Category five: the knowledge construction conception*
  Information literacy is seen as building up a personal knowledge base in a new area of interest
- ➢ *Category six: the knowledge extension conception*
  Information literacy is seen as working with knowledge and personal perspectives adopted in such a way that novel insights are gained
- ➢ *Category seven: the wisdom conception*
  Information literacy is seen as using information wisely for the benefit of others

Phenomenography is about outcomes. It can lead to maps of experiences and descriptions of categories which explore variations in experience. Multiple perspectives can show patterns and differences. In essence, phenomenography enables us to answer questions such as "what are the varying ways in which people conceive, or experience, some aspect of the world?" (Bruce, 1999) Bruce goes on to say "through identifying conceptions, or experienced meaning it becomes possible to predict phenomena. Depicting conceptions points towards depicting phenomena when a phenomenon is considered to be the combination of different ways in which people experience the meaning of some object" A phenomenographic study is usually designed so that participants are not constrained in the way they think about the phenomenon, but this study differs in that it is aiming to compare results with Bruce's described conceptions.

2.2.5 Perceptions survey

Bruce's 7 conceptions were used as a basis for this research, investigating whether they provide a reflexive model for staff and students in UK schools and universities. In a phenomenographic study it is usual to begin with very open, qualitative questions and to use the answers to describe variations. The survey is looking at the different ways in which people perceive information literacy. This study starts with a set of preconceived conceptions and tests their validity against a new set of data. The perceptions statements used in this research map directly on Bruce's conceptions using the mapping grid in 2.2.7 and were taken from a presentation and workshop given by Susie Andretta at Staffordshire University in 2006. Susie subsequently advised on the wording of the perceptions and the design of the survey forms.

Survey administration

At the beginning of each encounter, with very little explanation or introduction to the topic under discussion, participants were shown 9 statements about information literacy (see Appendix 3 for a copy of the survey) and were asked to select the 5 which they felt most closely described what information literacy means to them. They were then asked to rank their chosen statements in priority order from 1 to 5. Subsequently, they were given other similar sets of statements and asked what, in their opinion, information literacy meant to their teachers/ students and friends/ colleagues. The perceptions survey was administered face to face in all UK schools and online to both universities and the New Zealand school which participated. Data from the face to face and online

surveys was then amalgamated into one data set. To date only the UK data has been analysed and reported upon in this report, a future study will look at the New Zealand data.

Before the survey began, it was felt that participants might have difficulty in understanding what was required of them in giving their opinions of other people. However, the instructions were tested and modified during the pilot phase so that it was made very clear that people were not expected to predict other people's behaviour, just to give their own personal perception of the other groups. This appeared to work satisfactorily in the face to face situations. It is not possible to know whether the online results were compromised by any misunderstanding of the task, but as the results analysis shows a close correlation between face to face and online data, it is felt that this was not an issue.

2.2.6 Interview transcripts and additional survey data

As well as the perceptions survey forms, data was collected by semi structured interviews with teaching and library staff in school, in semi structured discussion groups with school students and via the second half of the online questionnaire for university staff and students. The aim of the interviews was firstly to see information literacy as it is understood by the respondents and secondly to elicit some feedback on specific issues surrounding transition.
The questions covered the following themes:
- What is information literacy?
- Are you information literate?
- Are your students/ teachers information literate?
- How do you go about looking for information for a piece of academic work?
- Which sources do you use first?
- What is plagiarism?
- Have you ever knowingly plagiarised?
- How do you use social software?
- Transition issues
  - Concerns about transition
  - Ideas to aid transition
  - Outreach ideas

The interview transcripts and online survey responses were coded thematically, with key themes identified and expanded. They were also mapped across to Bruce's conceptions using the mapping grid in 2.2.7. The transcripts provided a rich source of qualitative comments which illustrate the key themes drawn from the data.

2.2.7 Mapping grid

The mapping grid lists the 7 conceptions of information literacy described by Bruce (Bruce, 1997b), labelled as C1 to C7. These category labels are intended to capture the experienced meaning described in the individual categories (Bruce, 1999). These conceptions map across to the statements used to describe them in the perceptions surveys and words, phrases and concepts used in the interviews and discussion groups. The grid has been used to code data from the interview transcripts and to help describe variation between the different conceptions. The colours of the rainbow have been used to represent the conceptions in graphical displays, to make variation easier to see.

CB conceptions	Perceptions statements	Transcript words
C1 Using IT for information retrieval and communication Graph colour	Using computers and the web effectively. IT training, use the web	Using email, social software. Have to be able to use IT to be IL
C2 Finding information Graph colour	Knowing where to find information Helping students to find good information for coursework	Know which sources to choose
C3 Executing a process Graph colour	How to use the library How to find answers for a specific project Sending students to the library Giving clear instructions.	Know that having a search strategy helps, able to describe going through a process
C4 Controlling information Graph colour	Organised collection of resources Keeping your work organised Providing well structured notes	Organisation, storing for retrieval
C5 Personal knowledge base Graph colour	Understanding what you are reading Interpreting what you are reading and using it to answer questions Selecting, summarising, making links Following instructions IL is part of being a lifelong learner Being a better student	Making meaning, comprehension, critical analysis
C6 Working with knowledge to gain novel insights Graph colour	Interpreting information, summarising from a range of sources Using information to develop your own ideas Learning and developing themselves/ yourself	Building on existing knowledge to come to new understanding. Reflective practice Creative insight
C7 Using information wisely for the benefit of others Graph colour	Finding and using information ethically and wisely Understanding about wise and ethical use A means of teachers improving students ability to become lifelong learners	Personal values, attitudes and beliefs, ethics, social responsibility

Fig 3: Mapping grid

2.3 Data analysis

This project is unusual in that it isn't being written for submission for a higher degree and in fact just serves as evidence that the NTF award has been used in a constructive way. Although the analysis is intended to be robust, it does not need to meet the rigorous standards of a real PhD. For this reason, after taking advice from researchers much more expert than myself, I have decided to present here a fairly light touch analysis. More detailed analysis of specific aspects of the research will be written up in journal articles.

The intention of the research was to uncover variations in people's understanding of information literacy as a phenomenon, so the surveys and discussions were designed to address the following questions:

Q 1: Schools

Q1.1	Is there any consistency in the way in which UK school teachers as a group perceive information literacy?
Q1.2	What are UK school teacher perceptions of student perceptions? What are teacher perceptions of student abilities?
Q1.3	Is there any consistency in the ways in which UK school students as a group perceive information literacy?
Q1.4	What are UK school student perceptions of teacher perceptions?
Q1.5	Are there any variations between UK school teacher and student perceptions of information literacy?

Q 2: Universities

Q2.1	Is there any consistency in the way in which UK university teachers as a group perceive information literacy?
Q2.2	What are UK university teacher perceptions of student perceptions? What are teacher perceptions of student abilities?
Q2.3	Is there any consistency in the ways in which UK university students as a group perceive information literacy?
Q2.4	What are UK university student perceptions of teacher perceptions?
Q2.5	Are there any variations in perceptions?

Q 3: Variations

Q3.1	Are there any variations between UK teachers in schools and teachers in universities?
Q3.2	Are there any variations between UK students in school and university?

Q 4: Disciplinary differences

Q4.1	Is there any variation between chemistry and english teacher perceptions?
Q4.2	Is there any variation between chemistry and english student perceptions? How is this affected by students who are studying both subjects?

Q5 : Specific issues

Q5.1	Transition [see sec 3.1]
Q5.2	Plagiarism – issues around perceptions and use for students and teachers [see sec 3.3.2]
Q5.3	Social software – issues around perceptions and use for students and teachers [see sec 3.3.3]

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Q1 Schools

Q1.1 Is there any consistency in the ways in which UK school teachers as a group perceive information literacy? (App Q1.1 has associated data)

The tables in Appendix Q1.1 summarise the data from the 23 UK school teachers who were interviewed. The tables present the same data, first presented in the order of the survey, then sorted by ranks 1-2 and ranks 1-5 and finally in order of Bruce's conceptions. High values in the tables are highlighted in pink, low values in grey.
Colour coding has been used to make the data more easily understood in the graphs. The seven conceptions, C1- C7 are represented by the colours of the rainbow, in order from C1= red to C7 = violet, so that it is easy to see if conceptions are grouped together. It was felt that an indication of groupings in order would demonstrate whether or not these findings are an accurate illustration of Bruce's conceptions. As there were 9 choices of perception, some conceptions can be represented more than once in a ranking.

UK School teachers: What IL means to me through the rainbow Red = C1, Violet = C7
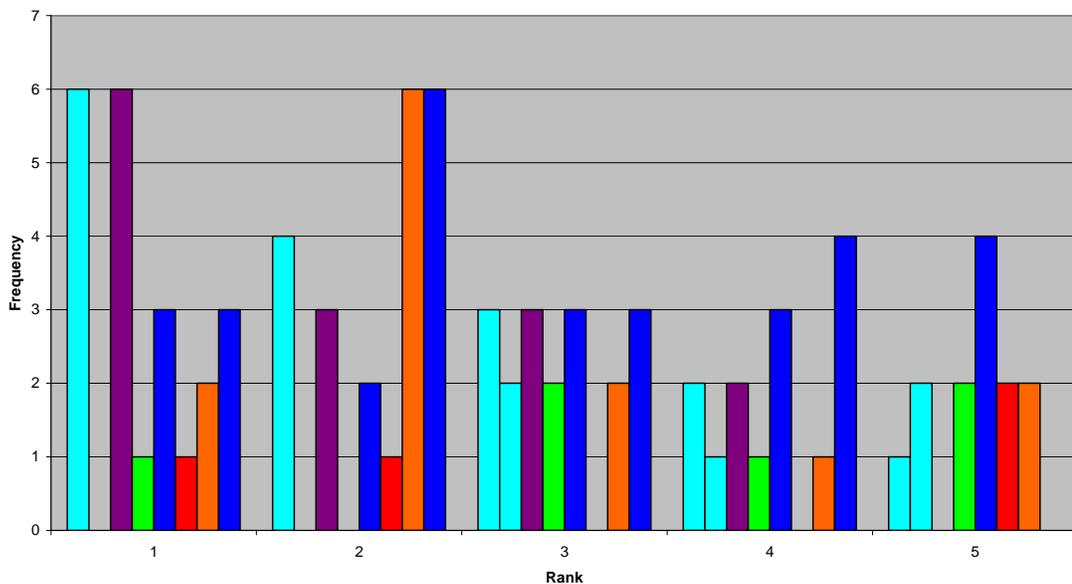
Graph 1

C1- C7 are represented by the colours of the rainbow, in order from C1= red to C7 = violet

Key to graph
C1 Using IT for information retrieval and communication
C2 Finding information
C3 Executing a process Graph colour
C4 Controlling information
C5 Personal knowledge base
C6 Working with knowledge to gain novel insights
C7 Using information wisely for the benefit of others

The rainbow graph shows in a visual way which of Bruce's conceptions were ranked most frequently as first and second choice. (C7 = violet) and also which conceptions were not ranked at all (C3 = yellow). It gives a general impression that the blue- violet end of the spectrum, the more complex conceptions, had the highest ranking. It clearly shows that C2 (orange) *knowing where to find information,* although not having such a high overall score, was also perceived as very important.

There is a lot of consistency in answers given by teachers. From the tables it is clear that for teachers, information literacy is perceived as being about *being a lifelong learner* (43.5% ranked 1-2 and 69.5% ranked 1-5) closely followed by *interpreting, summarising from a range of sources* (39% ranked 1-2 and 69.5% ranked 1-5) and *finding and using information ethically and wisely* (39& ranked 1-2 and 60.8% ranked 1-5). These indicate that they regard Bruce's conceptions C5 and C6, *building a personal knowledge base* and *working with knowledge to gain new insights* as most relevant for them, closely followed by C7, *using information wisely for the benefit of others.*

The lowest scores related to C3 *How to use the library properly*, which was not ranked in the top 5 by any teacher, C1 *Using computers and the web effectively* (8.7% 1-2, 17.4% 1-5) and C5 *Understanding what you are reading* (05 1-2, 21.7% 1-5)
It's interesting to note that elements which map to the same perception of a personal knowledge base, *understanding what you are reading* and *being a lifelong learne*r, are perceived quite differently by teachers and there is a large variation in their scores.

There is also a large variation between the three top ranked and 3 bottom ranked perceptions. It is possible that a bias was introduced into the research as respondents were aware that they were thinking about information literacy and so may have assumed that *use of the library* was an "incorrect" answer

What is information literacy?

During the interviews, teachers were also asked to give their own definition of information literacy. As the interviews took place after the perceptions survey, it is likely that their answers were influenced by what they had read in the survey, though they were also asked if completing the survey had changed their perceptions at all

> *Before you came I was thinking it was to do with how familiar people were with using bits and pieces within a library but now I think it's being aware of the different types of information and being able to use that information to help learning. [b3]*

This teacher went on to expand:

> *Being literate in ways of finding information from the range of sources and media that now exists, both textual and electronically mediated and being able to assimilate and correlate those findings and to differentiate what's valuable and what's irrelevant and learn how to use it avoid plagiarism and supplement ones' own ideas [b3]*

Most teachers were very comfortable with descriptions of information literacy which included finding and using information from a variety of sources, though few took their ideas as far as grappling with ethical and moral issues.

> *The ability to source and then effectively extract information from whatever books or computer sites you're using, to independently grapple with a myriad of different opportunities of information and also your own ideas [b2]*

> *Someone who knows what they're looking for, where to find it, how to interpret and use to address other issues [e1]*

Only one teacher introduced the concept of plagiarism being part of information literacy (see above – b3), but when this issue was discussed in more detail later in the conversation, it became clear that it is starting to be recognised as an issue by some teachers (see sec 3.3.2) although they have never labelled it as information literacy before.

A small group of teachers talked about interacting with information as being an essential part of being information literate

> *..adapting all the information I acquire and passing it on in a lively and interesting way [e1]*

Active involvement with the information [w2]

and this view was further developed when they were asked to give examples of what it means to use information effectively

getting used to doing something with it rather than just using it to understand[j1]

Interestingly, in one school, the librarian produced a written information literacy policy for the school, but the head teacher was unaware of its existence!

Are you information literate?

62.5% of the school teachers thought that on the whole they were information literate

Yes, I know where to go to get what I need and can generally evaluate what I need [d1]

..and I started off being fairly literate. I think the issue is about critical use of information and being selective so I think I am, probably [j1]

However, amongst the 37.5% who thought they were not information literate, there was often deeper awareness of all the issues relating to information literacy

No, I'm conscious that I don't always do it properly [w2]

No in the sense that I'm aware of people who are much more capable of manipulating IT than I am, but I've realised that you don't need to understand about it to be able to use it. There's just so much I still don't know.[b3]

How do you start looking for information?

When asked to give examples of the process they themselves went through to find information, conversations with teachers fell into two distinct groups. Teachers who had classed themselves as not very information literate tended to say they were less familiar with searching online and would start with books, demonstrating that they did equate information literacy with online searching capabilities. There were also issues around appropriateness of the material to fit the need. Several teachers talked about needing specific information relating to the curriculum or teaching management and almost all indicated that in these case, if they knew the correct source, such as an exam board website or a professional organisation handbook, they would go straight to that.

The data collected was analysed using the coding map shown in Fig 4 and will be reported in detail as a separate study.
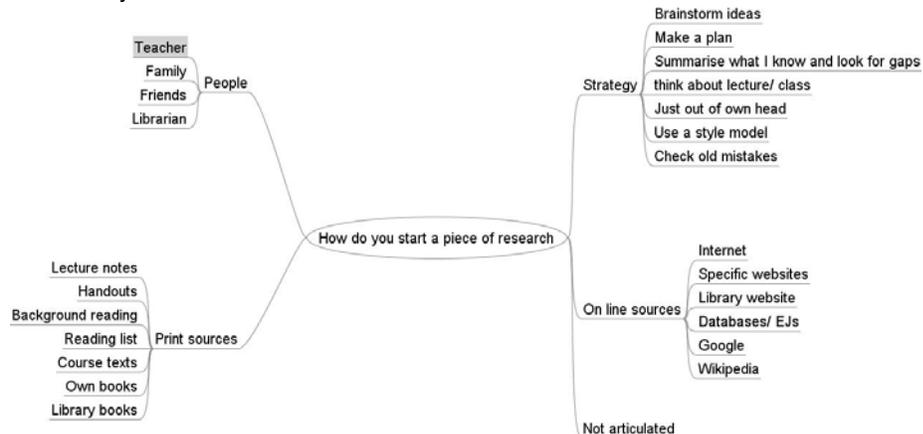
Fig 4 Coding map

Q1.2   What are UK school teacher perceptions of student perceptions? What are teacher perceptions of student abilities? (App Q1.2 has associated data)

UK School teachers: What IL means to students through the rainbow. Red = C1, Violet= C7
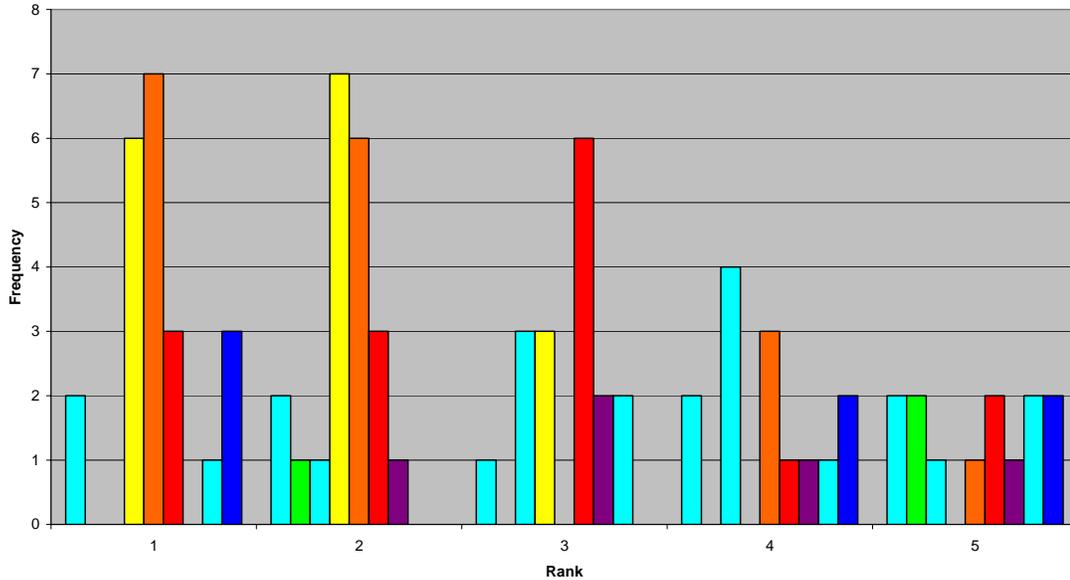
Key to graph
C1 Using IT for information retrieval and communication
C2 Finding information
C3 Executing a process Graph colour
C4 Controlling information
C5 Personal knowledge base
C6 Working with knowledge to gain novel insights
C7 Using information wisely for the benefit of others

Graph 2
The rainbow graph clearly shows that conceptions C1, C2 and C3 from the lower end of the spectrum were the most popular choices in ranks 1 and 2, with the more complex conceptions being much less visible.

Again there is consistency in the perceptions of the teachers as a group and it is clear from the responses that teachers' perceptions of student understanding are radically different from their assessment of their own understanding.

56.5% of teachers said that they thought students would regard information literacy as *knowing where to look for information* [C2], with 74% ranking this conception in their top 5. (56.5% rank 1-2, 74% rank 1-5). This is closely followed by *how to use the library for a specific project* [C3], also ranked as 1-2 by 56.5% and as 1-5 by 69.5%. C1, *an extension of IT skills and using the web effectively*, was ranked 1-2 by26% of teachers and 1-5 by 65%.

Only 4.35% selected *using information wisely* [C7] as rank 1-2 (21.7% rank 1-5), with *a way of keeping their work organised* [C4] and *interpreting what they read* [C5] scoring similarly at 4.35% (rank 1-2).

The perceptions survey asked about what people thought other people thought, a difficult concept for some people to deal with. During the discussions, it was possible to broaden the conversation out to garner more general opinions of what the teachers thought of their students' actual information literacy and at this stage some interesting variations start to appear.

> *They are more information literate than I was, for example, some students created revision guides for the class using a variety of sources [h1]*

Although the teachers as a whole felt their students had a simplistic perception of what information literacy was about, almost half of them, 48%, felt that the students demonstrated that they were information literate, usually based on them having implicit IL training built into their studies in some way. They did not feel that it was necessary to know what information literacy was to be an information literate person.

> *I think it's built in, it's not necessarily specified but it is inherently built in to what we do. I assume it's implicit. [d1]*

This raises some interesting issues about how we teach information literacy and whether it is more effective to "bury the pill in the sweet" or to explicitly explain to students how they are learning.

At the opposite end of the spectrum 52% of the teachers indicated in their replies that their students were not information literate.

> *I brought in a load of textbooks and asked them to use them to find out about this topic and they couldn't do it, they didn't know where to start "oh miss this book's really hard to read" [b3 – talking about 6th form chemistry students]*

> *A very significant number of them don't do much data handling and using, they still use it as they did in year 9, cut and paste. There is not much interaction with the information, not much critical appreciation. They just use one source [j1]*

So in general, most teachers agree that students don't know what information literacy is, but in spite of this, half of the teachers felt their students were fairly information literate.

An interesting outcome from the interviews with school teachers was the degree of interest and engagement they displayed in the subject of information literacy. Almost without exception, teachers seemed to approach the topic as a "good thing" and something which they felt a little guilty about in terms of both their own development and how they approach it in their teaching. A lot of frustration was expressed that the demands placed on them to deliver the curriculum restrict what they are able to achieve:

> *Exams are the be all and end all really, the be all and end all of our existence, we aren't here for anything else" [e8]*

> *There's a vast amount of short termism, all driven by the requirement to have very specific subject related skills available on a specific day for an exam[w4]*

> *We don't leave them to work independently, everything is chunked so they never do anything that's one big massive piece of work. That fundamental discipline of working and analysing and evaluating and putting a big piece of work together, they just don't have to do that at A-level [e4]*

Several teachers used the interview to start to speculate on how they might bring more information literacy into their teaching and some became very enthusiastic about changes that they might introduce lower down the school, where they felt there was more scope for teaching to be flexible.

> *It would be a way of bringing the curriculum together. I envisage the school curriculum as being a kind of wheel with information literacy as the hub and the subjects around it being the spokes and they are all linked together by a central set of learning skills based on information literacy [w4]*

This could be central to everything we do. No time is just an excuse, if we really thought about how to do this it would just be part of how we teach [e1]

It'll be interesting to see what these new specifications are like in terms of requiring students to have done some digging around and thinking more broadly. That might give us scope to do more work like this [b3]

Since the school visits took place, several schools have maintained the contact, informing me, for example, of courses staff have been encouraged to take or of initiatives which they have begun subsequent to the interviews.

Just to let you know I went on a course about independent learning – that stuff we talked about was really useful and gave me a head start on some of the discussions [d3]

There's a lot happening here all of a sudden. I thought your visit might stir one or two people. The problem basically is the lack of independent skills that our students demonstrate (not surprising as there seems to be very little teaching of them). This however, is becoming a serious issue so there was much discussion in a meeting this week. I think it's a case of watch this space!

I said I would contact you when the new sixth from library was up and running. Everything has gone well and there is good usage by the students, although with the accelerated reading programme I am unable to devote as much time as I would like to helping them. The Learning to Learn sessions with Year 7 and 8 have also started. Ian Lister taught a independent learning morning with Year 13 students. As a result we are thinking of running some short workshops, up to 20 minutes, with students (on a voluntary basis) to prepare for university. The emphasis will be very much on practical research and learning skills. What research skills would you like the students to have when they arrive at university? Big question, I know but I would be grateful for your input.
We are beginning to realise that we will have to start at a much more basic level than we originally expected [w5]

This feedback support Heisenberg's view that any research activity will leave the subject of the research in an altered state (Heisenberg ref to find)

Q 1.3 Is there any consistency in the way in which UK school students as a group perceive information literacy?

The tables in Appendix Q1.3 summarise the data from the 84 UK school students who filled in the perceptions survey in print and online. Data was also obtained from these students during group discussions. The tables present the same data, first presented in the order of the survey, then sorted by ranks 1-2 and ranks 1-5 and finally in order of Bruce's conceptions. High values in the tables are highlighted in pink, low values in grey.
Colour coding has been used to make the data more easily understood in the graphs. The seven conceptions, C1- C7 are represented by the colours of the rainbow, in order from C1= red to C7 = violet. As there were 9 choices of perception, some conceptions can be represented more than once in a ranking.

Graph 3

UK School students: What IL means to me through the rainbow. Red = C1, Violet = C7

Key to graph
C1 Using IT for information retrieval and communication
C2 Finding information
C3 Executing a process Graph colour
C4 Controlling information
C5 Personal knowledge base
C6 Working with knowledge to gain novel insights
C7 Using information wisely for the benefit of others

Although the graph shows a spread of colours across the spectrum, blue- violet predominates, demonstrating that UK school students gave a higher ranking to conceptions C5, C6 and C7 than had been anticipated.

In contrast to my expectations and also those of their teachers, many of the students articulated a sophisticated perception of information literacy, with 41.6% ranking *interpreting information* [C6] as 1-2 (73.8% ranked 1-5).
30.9% selected *finding and using information ethically and wisely* [C7]as rank 1-2 (58.3% 1-5) and
29.8% chose *understanding what you are reading* [C5] as rank 1-2 (59.8% 1-5)
70.2% also selected *using information to develop your own ideas* [C6] as rank 1-5

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At the other end of the scale, the lowest percentages related to *how to use the library properly* [C3](7.1% 1-2), *using computers and the web effectively* [C1] (9.5%) and *an organised collection of resources* [C4] (9.5%)

What is information literacy?

Student definitions of information literacy were very varied but did demonstrate a high level of awareness of the value of evaluative skills and the concept of knowledge for its own sake.

> *Someone who just knows, they know exactly where to go to find out, like they've got it in their head [w1s]*

> *There has to be evidence that they understand it and haven't just fished it off the internet [w2s]*

> *Picking up knowledge or reading something for the sake of it, you can then store and use it in other circumstances [d1s]*

Some students applied the concept to their school situation

> *Like in schools it's a process where they're helping you develop ideas and using different sources [b1s]*

> *Like teaching you to be independent, like knowing where to look for the right information and being able to use it effectively whilst working, stuff like that [b2s]*

Are you information literate?

Just under half (47.8%) of school students stated that they were information literate, a smaller percentage than I had been expecting

> *No, I wouldn't say I'd be able to get any information I wanted without a lot of trouble {d4s]*

> *I could probably find all the information, I just wouldn't be able to like, interpret it and like, use it [b1s}*

Several students expressed the opinion that they could be information literate if necessary but that they didn't need to demonstrate this

> *Yes, I can be when I want to be [w2s]*

> *Maybe if I want to take my time on something I will and I'll use it, but if I don't want to I'll just scan through and not even bother [w2s]*

> *We don't need to be really, they just give us all the information we need to pass the exams so you don't really need to think more than where you put the notes. [e1s]*

This last statement accords very closely with the findings of Smith (Smith and Hepworth, 2008) who also found that in schools there was little interaction with information expected of the students, who tended to work in a passive learning environment where information is given to them. This approach does not encourage the development of information literacy.

It is interesting here to consider how these responses compare to Madden's findings of children's Information Spaces (Madden et al., 2007) Madden concluded, along with Shenton (Shenton and Dixon, 2003), that children tend to use people based resources such as teachers and parents lower down the school, but give more importance to other information sources, particularly the Internet, as

they grow older, as they are able to make a more informed assessment of source. The students in my study, although acknowledging the importance of their teachers, paid most attention to books and the internet as sources of information and a surprisingly large percentage expressed awareness of their limitations in using them effectively.
Marian Smith's research into perceptions of information (Smith and Hepworth, 2008) supports these findings. She found that Year 7 children use people, books and the physical school library a lot, possibly as they have less access to computers, whereas years 12 and 13 mainly use the Internet as an information source. All students agreed that they trusted information from people the most.

How do you start looking for information?
The data collected on this topic was analysed using the coding map shown in Fig 2 (p 18) and will bear some deeper analysis. It will be reported on as part of a separate study.

Q 1.4 What are UK school student perceptions of teacher perceptions?

T he tables in Appendix Q1.4 summarise the data from the 84 UK school students who filled in the perceptions survey in print and online. Data was also obtained from these students during group discussions. The tables present the same data, first presented in the order of the survey, then sorted by ranks 1-2 and ranks 1-5 and finally in order of Bruce's conceptions. High values in the tables are highlighted in pink, low values in grey.

Colour coding has been used to make the data in the graphs more easily understood. The seven conceptions, C1- C7 are represented by the colours of the rainbow, in order from C1= red to C7 = violet. As there were 9 perceptions statements, some conceptions are represented more than once.

Graph 4

UK School students: What IL means to teachers through the rainbow. Red= C1, Violet= C7
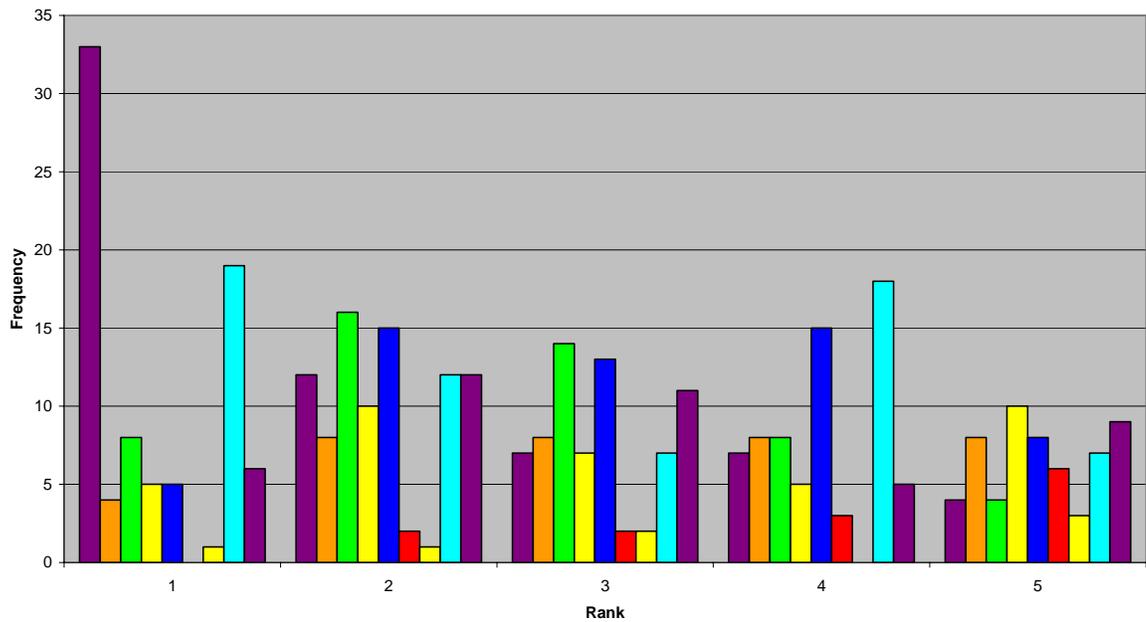
Key to graph
C1 Using IT for information retrieval and communication
C2 Finding information
C3 Executing a process Graph colour
C4 Controlling information
C5 Personal knowledge base
C6 Working with knowledge to gain novel insights
C7 Using information wisely for the benefit of others

The rainbow graph demonstrates very clearly that students attributed high levels of information literacy understanding to their teachers, with C7 violet scoring very highly in the rankings**.** In the discussion groups almost without exception students expressed the opinion that their teachers were also very information literate people.

Students tended to be much more complimentary about their teachers' perceived conceptions than teachers were about the students!
53.57% (rank 1-2) of the students thought that their teachers understood information literacy as *a means of improving students' ability to become independent learners* [C7] (75% rank 1-5), with again 75% ranking their teachers 1-5 for *selecting, summarising, making links* [C5]

Very few students felt that teachers viewed information literacy as *IT training and use of the web* [C1] (2.38% 1-2, 15.47% 1-5) or as *helping students to find good information for coursework* [C2] (4.76 1-2)

A surprisingly small percentage (21.4%) expected teachers to interpret IL as being about *wise and ethical use of information* [C7], the biggest anomaly in this set of results.

Q1.5 Are there any differences between teacher and student perceptions of information literacy?

Interestingly, both students and teachers had very similar perceptions of what information literacy was about, consistently choosing conceptions C5-C7. This can be seen very clearly by looking at the colour patterns on the rainbow graphs, where blue, indigo and violet feature prominently as rank 1-2 in both graphs:
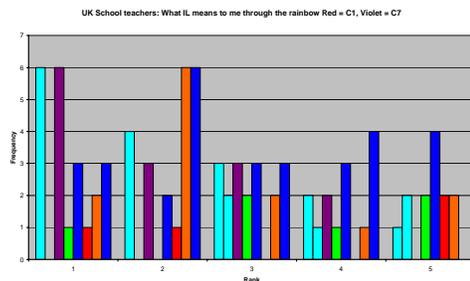
UK school teachers
What IL means to me
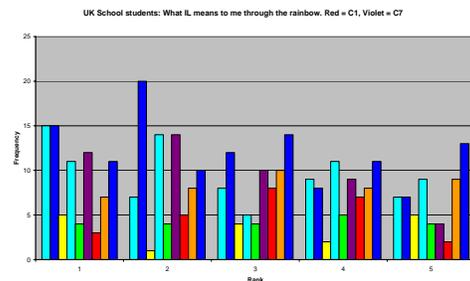
UK School students
What IL means to me

Significant gaps appear, however, when we compare their perceptions of each other! The graph of teacher perceptions of student perceptions demonstrates a much higher incidence of red, yellow and orange in the top ranks, whereas the student perceptions of teacher perceptions shows an extremely high peak of violet in rank 1.
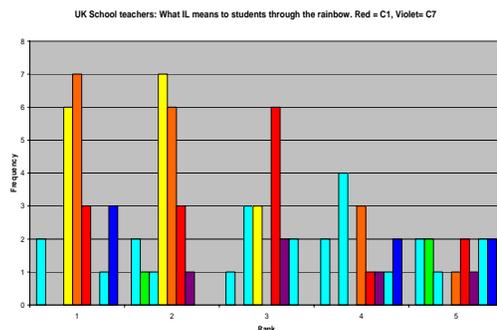
UK School teachers
What IL means to students

UK School students
What IL means to teachers

27
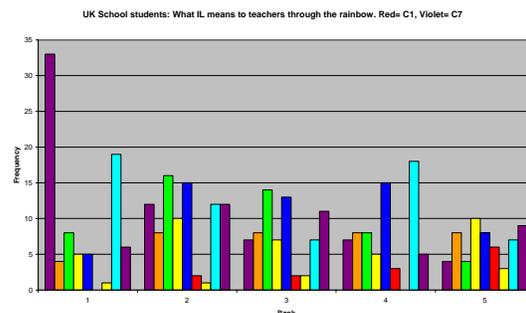
Key to graphs
C1 Using IT for information retrieval and communication
C2 Finding information
C3 Executing a process Graph colour
C4 Controlling information
C5 Personal knowledge base
C6 Working with knowledge to gain novel insights
C7 Using information wisely for the benefit of others

On the whole teachers had a much "lower" opinion of their students' perceptions than the students had of themselves, with lower being used to indicate perceptions C1-C4. In some respects, this isn't surprising, but remember, they were not being asked about their perceived ability, just their understanding. There Is an abundance of literature which demonstrates that students have a much lower actual information literacy ability than they predict, but this survey was not asking about their ability, just their understanding of the concept and it is important to separate these two issues when analysing the data.

Teachers felt that students have a very simple perception of information literacy, relating to use of the library and IT, and these observations were based on what they see students actually doing:

> *Not quite as they should be, what they want is ease and they want it visual, with a keyboard and a screen [d2]*

However, teachers did acknowledge that the students were just responding to the way in which they are taught and the demands put upon them.

> *We are certainly not getting the sixth form to read around their subjects nearly as much as we'd like [d3]*

> *No, I think we see the information they gain and use at a very pragmatic level, not as knowledge which is worth having for it's own sake but knowledge which is worth exploiting to get them somewhere and it's learned for the sake of passing exams [b3]*

> *I haven't ever said to them you must go and use these different sources [d1]*

Students also talked about how teaching and the curriculum influenced how much they needed to demonstrate their information literacy. In many cases, there is no place within the teaching or assessment for the students to use higher level IL skills, no expectation that they will or credit given if they do, so that, although they may well be aware that the way they approach information finding and use is simplistic, they can choose to do so as that is all that is needed to pass the course.

> "*well, I guess I'm just basically lazy, you know, we just don't have to do any more to pass the exam*"

> "*Yeah well, I'm thinking that when I go to university it'll all be doing it by myself and it will all be so big and then maybe I'll think about finding out what else there is*"

In spite of this recognition by both groups that students do not demonstrate that they are information literate in their school work, students were actually able to discuss IL issues in very sophisticated terms, perhaps indicating that they do understand that there is a difference between what they currently choose to do and what they know is possible. For example, in the discussion groups students said that an information literate person is:

> *Organised, knows where everything is and can find the right bit of information, they know where to find the information and then use it to their advantage.*

> *Someone who knows how to find information quickly and efficiently and can use it to the best of their ability and not take it all, just the relevant bits. [w1s]*

Someone who just knows, they know exactly where to go to find out, like they've got it in their head[w1s]

If you start talking about one thing maybe they can link it into something they've read or heard, it's kind of like a mixture[d1s]

In schools it's like a process where they're helping you to develop ideas and using different sources [b1s]

Being able to see what source is reliable and how creditable different sources are, you have to use your discretion [b1s]

Students also expressed some frustration about this in the group discussions, explaining that they felt teachers did not understand what students already aware of and therefore tended to approach teaching this topic in a very simplistic (and boring!) way.

Mrs xxx (chemistry teacher) does go on about this kind of stuff but she talks like we never came across any of it before, like we're just kids, so I tend to just switch off a bit [b1s]

With their lower expectation of student understanding, teachers tended to talk a lot about developing specific IL skills, particularly relating to finding information and using IT and the library effectively.

They learn about search engines and they learn about extracting information from the web [e4]

There was little expectation from teachers that students would have any interest in self development beyond the minimum needed to pass exams and this view was reinforced by student comments about choosing to do the minimum. The difference is that teachers do not perceive that students understand that they are working at a minimum level, whereas students demonstrated a much greater awareness.

This gap in perceptions has some interesting implications for the way in which teachers approach the teaching of information literacy. In all of the group discussions with students, the students expressed a great deal of interest in the topic. Very few were dismissive and felt it of little importance and the majority seemed to enjoy engaging in a debate about the relevance of information literacy to their learning. There was much more interest in IL as an "abstract" concept than I had anticipated; although students did talk about specific skills, they were also interested in how a better understanding of how information works would affect them as individuals. This was very heartening as it seemed to demonstrate that a more holistic approach to developing information literacy might be effective, where students are made aware of the issues and are enabled to make informed choices.

Students certainly seemed to think that this was what their teachers would want, with 75% expecting that teachers would interpret IL as improving their students' ability to become independent learners.

Several teachers also expressed the view that information literacy ideas were quite well taught in years 7 to 9, but then allowed to fall into disuse higher up the school. One head teacher, after reflecting on this situation, was determined to set up a school working group to discuss how the situation could be rectified, hopefully a positive impact of the project!

Q2 University

Q2.1 Is there any consistency in the way in which UK University teachers as a group perceive information literacy?

As this sample is disappointingly small, only 10 responses, it is difficult to draw too many conclusions. However, it is interesting to note that 70% of the teachers ranked *Interpreting information, summarising from a range of sources [C6]* as 1-2 (90% 1-5), closely followed by *knowing where to find information [C2]* 70% 1-2 and 80% 1-5. In contrast to the school teachers, none of the university teachers ranked *finding and using information ethically and wisely [C7]* as 1-2, though 60% ranked it 3-5. Lowest ranked for this group was *an organised collection of resources [C4]* and *how to use the library properly [c3].* In general the perceptions of this group are much more spread out across the Bruce conceptions than the school teacher group.

Graph 5

All UK University teachers: What IL means to me through the rainbow. Red= C1, Violet =C7

Key to graph
C1 Using IT for information retrieval and communication
C2 Finding information
C3 Executing a process Graph colour
C4 Controlling information
C5 Personal knowledge base
C6 Working with knowledge to gain novel insights
C7 Using information wisely for the benefit of others

The rainbow graph demonstrates the disparity in perceptions.

Q2.2 What are UK university teacher perceptions of student perceptions of information literacy?

Graph 6

All UK University teachers: What IL means to students through the rainbow. Red =C1, Violet = C7

Key to graph
C1 Using IT for information retrieval and communication
C2 Finding information
C3 Executing a process Graph colour
C4 Controlling information
C5 Personal knowledge base
C6 Working with knowledge to gain novel insights
C7 Using information wisely for the benefit of others

It is clear from the graph how differently teachers view their student perceptions.

As a group it seems that university teachers attribute their students with quite different information literacy perceptions than themselves, with 90% rating 1-5 for *an extension of IT skills and using the web effectively [C1]*.
80%, however, chose 1-5 for *knowing where to find information*, a similar ranking to their views of themselves. Consistently low in the rankings were *using information wisely [C7] 10% 1-5* and *learning and developing themselves[C6]10%1-5,* indicating that as a group lecturers think that their students do not have a sophisticated understanding of what information literacy is about. This is likely to be reflected in the ways in which they impart information literacy to their students

Q2.3 Is there any consistency in the way in which UK university students as a group perceive information literacy?

Like their teachers, many students gave a high ranking to *knowing where to find information [C2]* 67.5% 1-5, but students also perceived information literacy to be about *using information to develop your own idea*s [c6] 77.5% 1-5 and *interpreting information and summarising from a range of source*s [C6] 80% 1-5.
Their lowest ratings were *how to use the library properly[C3}* 22.5% 1-5 and *an organised collection of resources[C4]42.5% 1-5,* but in general student perceptions were much more varied and spread out across the 7 conceptions.

All UK University students: What IL means to me through the rainbow Red = C1, Violet= C7
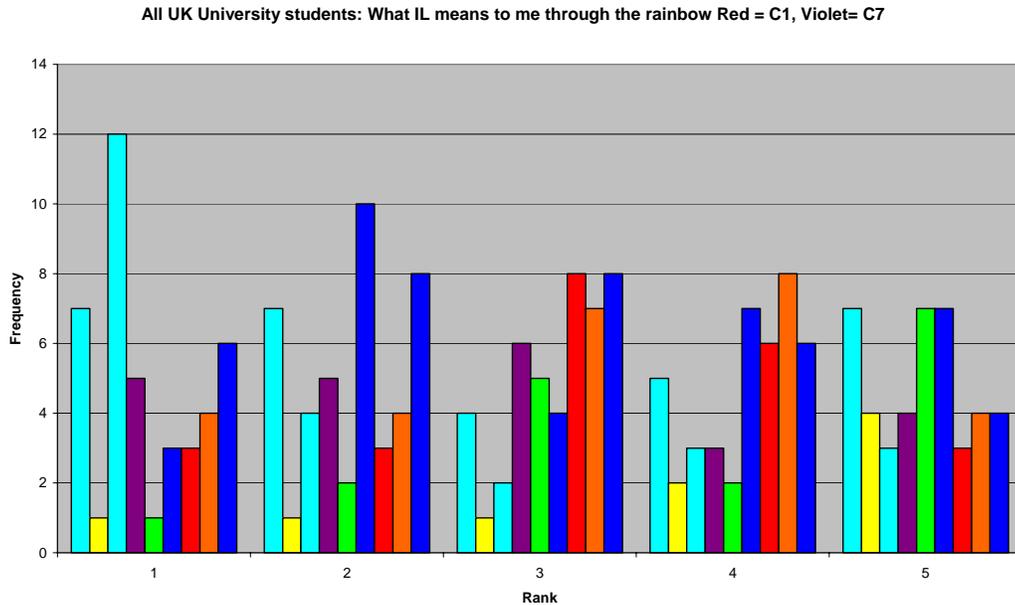
Graph 7

Key to graph
C1 Using IT for information retrieval and communication
C2 Finding information
C3 Executing a process Graph colour
C4 Controlling information
C5 Personal knowledge base
C6 Working with knowledge to gain novel insights
C7 Using information wisely for the benefit of others

The rainbow graph demonstrates the wide spread of results across the conceptions
These findings correlate with the study done by Crawford(Crawford, 2006) in which he found that students "broadly understood the concept of information literacy"

How do you look for information?
As with the school students and teachers, this data was coded using the coding map in Fig 2 and will be reported on as part of a separate paper.

Q2.4 What are UK university student perceptions of staff perceptions?

Graph 8

All UK University students: What IL means to teachers through the rainbow Red=C1, Violet=C7

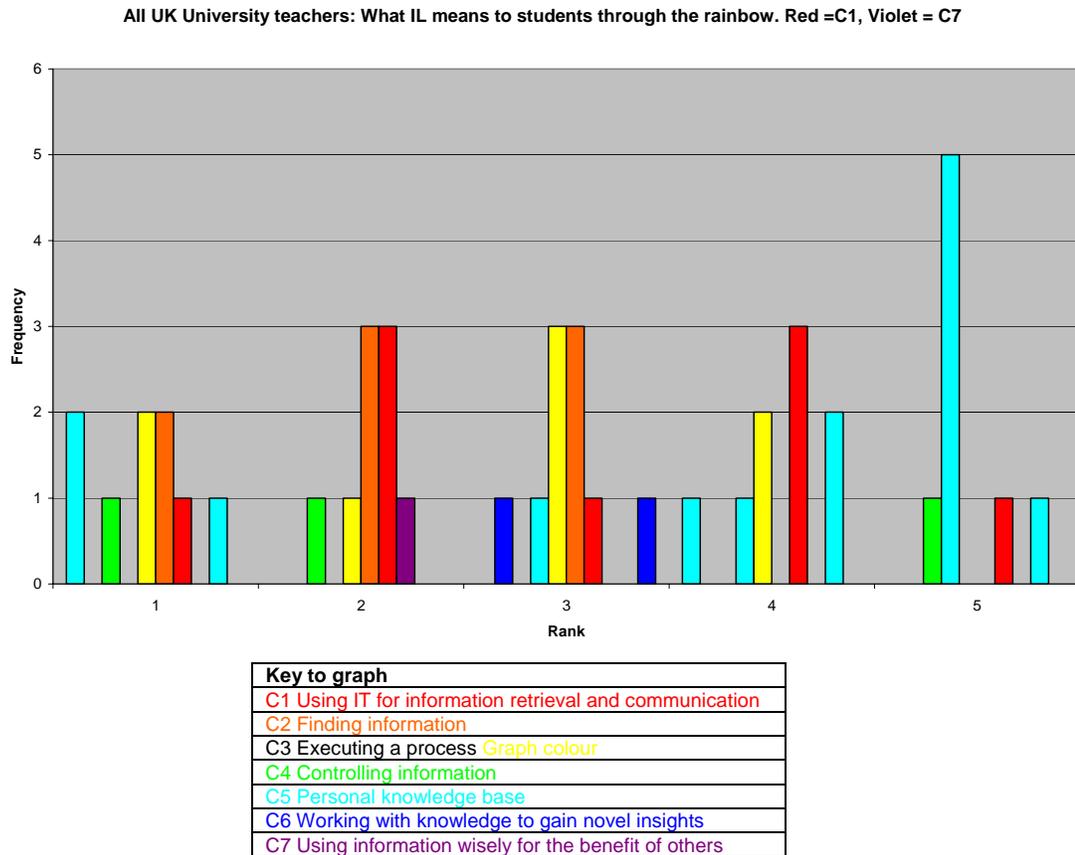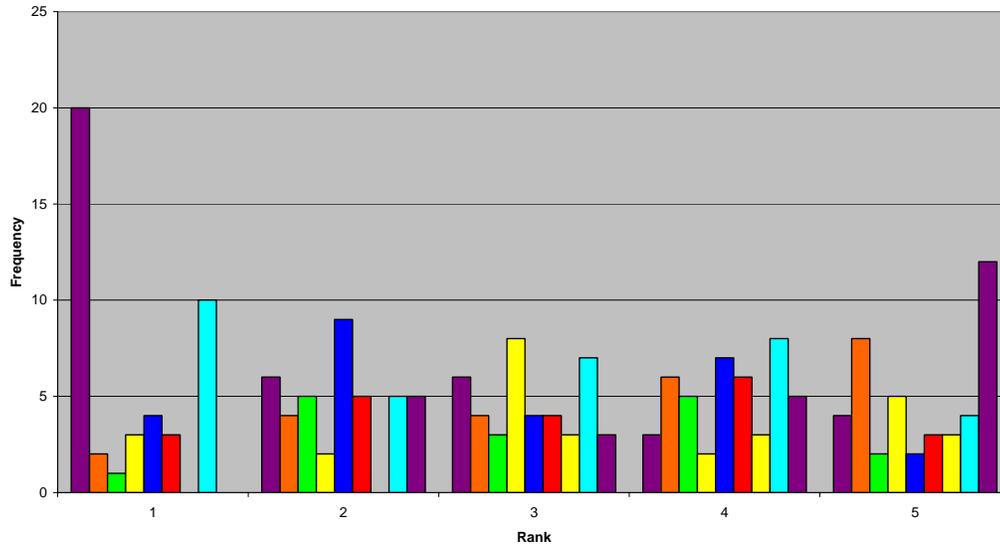| Key to graph |
| --- |
| C1 Using IT for information retrieval and communication |
| C2 Finding information |
| C3 Executing a process Graph colour |
| C4 Controlling information |
| C5 Personal knowledge base |
| C6 Working with knowledge to gain novel insights |
| C7 Using information wisely for the benefit of others |

As with the school students, university students credited their teachers with understandings of information literacy from conceptions C5 to C7. *Working with information to develop new ideas* and *selecting summarising and making links* were each ranked 1-5 by 85% of students, while *a means of improving students' ability to become independent learners* was ranked 1-2 by 65% and 1-5 by a huge 97.5%. It seems that students as a whole do have an awareness of what information literacy means and an expectation that their lecturers will want to encourage them to become independent learners.

No discussion groups took place with this group of students, but they were encouraged to leave comments on the online survey about how they actually use information and these throw some interesting light on how students perceive their teachers

> *We have done some stuff on finding information and I think she also talked about making sure it was good quality and about not just using the web, but when you have a deadline to meet it's easier just to use Google and you never lose marks for it [Uc1s]*

> *In english you have to use a lot of books and they just expect us to know how to find everything, no one has ever talked to me about it like this before. This survey has made me think about what I do a bit more [Ue1s]*

Over half of the students thought their lecturers perceived information literacy as IT training (52.5% 1-5) which may also be a reflection of how they are taught, a consequence of the teachers' perceptions of the students.

Q4 Disciplinary differences

The data relating to disciplinary differences has not yet been analysed and does not form part of this report. Should time allow, it will be studied and published separately at a later date.

2.4 Conclusions on perceptions of information literacy

Although these results are based on quite a small sample, the common thread running through them is that, in spite of information literacy being an unfamiliar term to many, staff and students in both schools and university were in the main very comfortable with many of the perceptions it encompasses. Many librarians continue to use the narrower term of information skills when working with staff and students, assuming that this practical approach will have more immediate outcomes and that the more abstract concepts encompassed by information literacy will not be embraced by teachers and learners. However, these results show that the concepts of lifelong learning and interpreting information featured highly in all groups, while use of the library was given less emphasis. In the interviews and discussions, again much interest was displayed in discussing the more abstract concepts of being an information literate person that had been expected, indicating that it could be productive to engage students in thinking about their own information literacy as well as teaching them specific skills. Raising awareness at an individual level of personal information literacy development could prove useful for students when they are listing their attributes on a CV, for example, as well as providing a useful discussion topic in job interviews.

An unexpected (or disappointing) outcome is the relatively low ranking given to wise and ethical use of information by the teachers, particularly those in university. In fact this perception did not feature highly in any of the perceptions surveys. Once plagiarism was introduced as a specific topic, however, views were much more definite. It seems that on the whole respondents did not equate "plagiarism" to "wise and ethical use". Plagiarism is covered in more detail in section 3.2.

Variation occurs in the teacher perceptions of student perceptions, which are probably influenced by the evidence which the teachers see of what students actually do. The school students explained this variation by saying that it exists due to informed choice, in other words, they are aware of wider information literacy issues, but choose to demonstrate only basic level information skills because this is all that is required of them.

Students in both groups attributed to their teachers a complex understanding of information literacy perceptions, with a general expectation that they would want the best for their students in terms of equipping them to be lifelong learners. However, it is noticeable that university students also gave a high ranking to the concept of their teachers equating IT skills with information literacy and it would be interesting to investigate this further to see if it correlates at all with the way in which they are taught. Limberg (Limberg, 1999) surmises that educators who experience information literacy as IT will transmit this approach to their students.

An important point to remember is that just because a teacher is information literate themselves, this does not necessarily translate into their teaching unless they are aware of the issues and are actively engaged with trying to change their approach to teaching. Merchant and Hepworth (Merchant and Hepworth, 2002) found that although teachers may be information literate, they aren't necessarily transferring information skills to their pupils. Crawford and Irving (Crawford and Irving, 2006) draw similar conclusions, noting that while teachers may demonstrate information literacy in their teaching preparation, there is less evidence of this being transferred to their pupils. This will then start to have an impact on student information literacy. It is in this area that library staff working with teachers can have the most impact. By enabling teachers to incorporate information literacy principles into their teaching, perhaps by providing resources, activities, workshops etc, library staff can influence the information literacy development of students.

Section 3

Transition into Higher Education: Library and information aspects
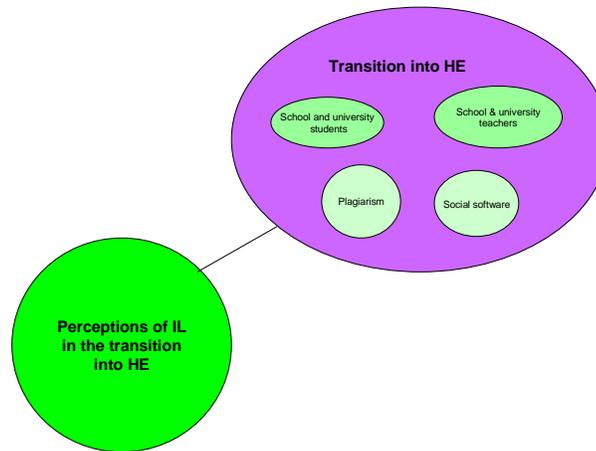
Fig 5

Information in this section is drawn from the interviews with staff and students in schools, as well as data from first year university students. It has been supplemented with ideas garnered during my study tour of Australia and New Zealand, as well as subsequent contacts both within Newcastle and around the UK. Full details of all libraries and schools visited can be found in Appendix 7.

3.1 Transition

Transition is a very large area of study, so it was quickly decided to limit the scope of this study specifically to the transition from secondary schools into Higher Education. Bridges (Bridges, 1995) talks about change being a situational, external thing which is about starting something new, while transition is more psychological and internal and involves letting go of the old reality. When a change occurs, between the ending and the new beginning is a neutral zone, which he sees as an opportunity to change habits. Maybe this is an argument for introducing good IL habits as soon as possible when students start university, while they are in their neutral zone. Peter Taylor 's concept of the changed identity needing to let go of old practices in order to make space for the new identity is also a useful concept to bear in mind.(Heathcote and Taylor, 2007) This can pose challenges for developing good information literacy habits, if we take on board the points mentioned in the CIBER report (CIBER, 2008).

3.1.1 Transition – what kinds of issues are teachers and students worrying about?

In essence, change is about the end result or new situation, while transition is the process the individual goes through in adjusting to the change. Transition is essentially a personal experience, but there are common elements in many transition situations which can be dealt with in a systematic way in order to support students. The transition into higher education is a major change and current approaches to supporting student transition are too often seen as "extra curricular" options, particularly in respect of the library and information literacy issues.

In this survey, school students were asked if they were looking forward to going on to higher education and if so, what concerns, if any did they have. Many students were very confident, excited and optimistic (62%), with few worries. Others expressed concerns about the lack of support after learning in such a structured environment at school:

> *Some people say you get a big shock when you go to university because you're on your own and you're not going to get it all written out for you [e3s]*

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Everything you do has to be independent [w1s]

We get everything pretty much spoon fed whereas at university you don't get that [b1s]

In parallel with these concerns were worries about dealing with the change in scale in lecture situations:

Lectures will be in very large groups so how can we ask for help [h3s]

I'm worried I won't be able to keep up with the lecture speed [h4s]

.. the thought of just sitting in lectures and just having to take your own notes, how will I know what is the important information to write down [b1s]

More general fears about the change in scale were also voiced:

Well, just will I get lost and how will I know where to go and who to ask [b2s]

Here if you get stuck you can ask your teacher or Mrs X (the school librarian) but there'll be so many people I don't know how I'll know which is the right one who I can ask or if I'm just supposed to figure it all out for myself [e1s]

Just like making sure I don't miss stuff by not knowing what's going on [h4s]

Moving on to discussions about using information and the library, views were quite divergent

I'm scared of the size of the library [h4s]

Well, I guess I'm used to using the library here so I should be ok, I mean once you know the section with your books they should be easy to find [e2s]

I think it would be ok. I went to a course at Oxford and they had huge resources and I still managed. It was a lot easier than being here because there were so many more resources [d4s]

Maybe it will be hard to know what are the best things to read [d2s]

It'll be all independent and we'll go in and say oh my god! [e2s]

Probably spend days in the library [h4s1]

Probably never need to use the library [h4s2]

3.1.2 Transition – do students have information literacy skills?

In general, few students had thought ahead about issues around transition and so expressed few worries. Teachers however, when asked whether they thought their students would be leaving school equipped with appropriate information literacy abilities for university, were much more doubtful

It's hard to prepare them because they're very immediate [w2]

I'm not sure students know how to research, we need to be more explicit in teaching IL [e1]

Most of them know how to access information, but I'm doubtful whether they know what to do with it next [d3]

Yes, if we're talking about IT [h1]

3.1.3 Transition – what suggestions do you have to help us ease the process for students?

Teacher views
All the teachers involved in the survey, without exception, were keen to develop more links with both the university as a whole and the university library. There was also a general feeling that schools need better guidance from universities on how they can prepare their students

> *Give schools feedback, tell us what they are lacking [h1]*

> *To actually have someone from the university coming in and saying your students will really need these skills, can you make sure they've got them [d3]*

> *Teacher perceptions of universities are coloured by their own experiences, so it would be better for universities to come out and say "this is what we need" [w2]*

Ideas for further action fell into several categories:

1. What the school might do itself

> *Schools could teach students about how to read a scientific paper [h1]*

> *We can teach them to critically go through and evaluate league tables being produced by different newspapers, so they can start to appreciate that what's there is not what they have to read[j1]*

> *I'd like to use your handout with my sixth formers, to start some class discussions about how they use information [d2]*

> *Setting up our sixth form library to run like a university library [w1s]*

> *I think the head of 6th form, teachers and librarian should all have a discussion of what we can do with you [w3]*

> *We could add links from our school VLE [h3]*

It is interesting to note that since my visit, this latter school has set up a new sixth form library and is actively working to change the ways in which it is perceived by the students.

2. What the library might provide for the school

Teachers were very pragmatic about the time and costs involved in setting up visits between schools and the library, but had some interesting suggestions for other ways in which the library might support the school

> *Give us a way of easily linking to good sites [h1]*

> *. if we had access to a few online journals like Scientific American we could get students used to them [h1]*

> *Would it be possible for you to give us some of your old library textbooks, so we could encourage the brighter students to read round the topics more [h1]*

> *Chemistry bridging material would be quite useful for my brightest ones [b3]*

> *Anything to give us access to resources, however temporary would be useful [w4]*

3. The university/library coming into the school

Opinion was divided about whether it was better for students to visit the university, or for the university to visit the school. Costs, time and numbers were the main reasons cited for preferring the university to visit the school

> *It would be very exciting to bring with you some undergraduates because pupils will listen to 18 and 19 year olds and they could come and lead some workshops [b2]*

> *Maybe do something for teachers on an inset day, so they know more about IL and what you can do for the kids [h5]*

> *Coming into school and teaching them to search properly [h5] how to write a bibliography [b1]*

> *Coming to tell them these are the skills you need to make sure you've got [d3]*

> *Either a project collection could be borrowed by the school or one of your people could come in and do a presentation with the materials [w4]*

> *We'd have to have a standard exercise I guess to find out what they know about how they could access information [e8]*

> *Anything to overcome their fear of university level text books [b3]*

4. The school going out to the university/library

If costs were equal, the preference from most teachers was to bring students out from school to visit the library. However, as well as the cost of transport, they had concerns about taking time out of the curriculum, a visit would entail a whole day, rather than just an hour or two if activities took place in school

> *Almost like a pre induction before they get to the university [b3]*

> *Kids going out of school to do stuff elsewhere is vitally important because kids realise that school is not the only source of knowledge [w4]*

> *To take years 7, 10 and 12 to a university, they would be the best years [b2]*

> *Take our students to a real university library with librarians who are not just people who stamp book but who actually teach, to go through an aspect of study skills development [b1]*

> *Maybe they could go and find a research document and use it as a model for a piece of A-level work [b1]*

> *It would be interesting for students to spend time in that context to realise how it will be crucial, so some kind of study day [b3]*

Student views

In the discussion groups, school students were asked the same questions as their teachers about ideas for supporting them in their move to university and, like the teachers, most of the students were positive about engaging in activities

> *I think it might be beneficial to be able to use a university library now [w1s]*

> *Kind of see if there is a way to teach people how to sieve information, how to scan a book, summarising even [d1s3]*

Shadowing university students would be good [h4s1]

I'd rather have a leaflet or a booklet than go to a web page, you just don't bother [h4s2]

Podcasts before you come would be cool[h4s4]

Looking at videos on you tube – I've already looked at some, especially if students have done them[h4s5]

Like in the last couple of weeks at school, a week of university preparation, some mock lectures or something [b1s]

One student had a very open minded view:
> *I think it wouldn't hurt to do a few classes like enrichment and then people who don't want it can sit there and think oh this is boring but then people who do like it will get something out of it[d1s2]*

3.2 Plagiarism

The results in this section are taken from the online survey and relate mainly to UK university staff (10) and students (112). The survey asked respondents to give their own definition of plagiarism as well their opinions on how important an issue it is and whose responsibility it is. Additional comments from the school interviews have been added as appropriate.

On the whole, university students were very familiar with the concept of plagiarism, common definitions referring to cheating or *passing off someone's work as your own.* A few respondents were quite passionate about the topic

> *For me plagiarism is cheating, taking someone else's work and passing it off as your own and if you're going to do it you may as well not bother with academic work as you won't learn anything [s]*

> *Plagiarism is theft and people who do it shouldn't be allowed to get a degree[s]*

92% of the university students agreed that plagiarism is wrong, with 42% accepting responsibility for ensuring that they don't plagiarise. 50% expressed the opinion that although it is wrong, it is not always easy to know that you're doing it. Only 4.5% of the university students had never thought about it at all, an encouragingly small number. In the responses from the school student discussion groups, 59.9% of the school students said they had never thought about the issue before, indicating a much lower level of awareness of the issue in schools. Of the university teachers, a healthy 90% took responsibility for ensuring they were not found guilty of plagiarism.

40% of university students felt they needed to know more about plagiarism and 51.7% suggested that this issue should be addressed in schools. 70% of the academic staff felt that students need to know more and 90% felt the issue should be tackled in schools. In the interviews with school teachers, there appears to be a growing interest in looking at plagiarism in schools, but many of the teachers admitted that they didn't give it the importance they knew it deserved. However, there was a great deal of interest in the schools for collaboration in this area and an acknowledgement that plagiarism as a topic can be a useful introduction to other information literacy related activities.

The final question asked if respondents had ever knowingly handed in work which includes plagiarised material. 11% of the university students admitted to this, with a further 9.2% selecting "no comment" rather than "no, I have never knowingly handed in plagiarised material". Thus, although 79.8% of students say they have never plagiarised, it is likely that 20% of them have. Numbers were even higher amongst school students, with over 30% admitting to knowingly handing in plagiarised work. Unsurprisingly, no academic staff admitted to knowingly plagiarising!

3.3 Web 2.0 and social software

The results in this section pertain mainly to university staff and students and are derived from the online survey, which had a section specifically dealing with social software. Comments from the interviews and discussion groups in the schools are referred to as appropriate.

Facebook
Perhaps the most familiar of Web 2.0 developments are social network sites such as MySpace and Facebook that facilitate the creation of individual profiles, the sharing of personal information, photos and activities as well as messaging within a network of friends. Boyd and Ellison (boyd and Ellison, 2007) provide an excellent definition of Social Network Sites.

In this research project, 82.8% of the 112 UK university students surveyed said that they use FaceBook; other social networking sites commonly used including MySpace and Bebo, although not to the same extent. These results correlate well with those of Ellison, who reports that 79-95% of all undergraduates have Facebook accounts (Ellison, 2007)and found that while some students reported the indispensability of Facebook, most failed to see how it could be used for teaching and 'resented the idea that they might be invaded by academics'. This criticism was also surfaced in an earlier 2007 JISC study where Facebook was seen by students as 'their space'(Franklin and Harmelen, 2007). The CIBER project also warned *... there are clearly dangers in trying to appear 'cool' to a younger audience…There is a big difference between 'being where your users are' and 'being USEFUL to your users where they are'. (CIBER, 2008)*

Students in this survey expressed similar views:

> *Played some games when I was younger, *can be* educational. Some institutions are really going all out for this. Look at that crazy pot smoking professor at Yale who teaches his class in "Second Life". I think it's ridiculous. But as a huge and growing industry it makes sense to latch onto this market and make it educational, I guess.*

> *I don't think I'd want my lecturers getting involved in FaceBook, it's not about studying.*

A JISC survey found that 65% of 6th form students in the UK regularly use social-networking sites (Swain, 2007). However, in my research the numbers were much smaller and in the discussion groups about 55% of the students said that they either didn't use them or had never really heard of them.

Neither group felt that it was appropriate for academic work, viewing it as part of their social life. This is a widely held view. Although it is important therefore, for library staff to understand what FaceBook is about and even to be familiar with using it, there seems little point in trying to develop a library presence there.
Interestingly, 91% of respondents use Instant Messenger, a very high percentage, and in general seemed to have a more positive attitude to using this kind of interface to interact with academic and library staff.

Blogs and wikis
Many libraries are investing a lot of time and energy into developing services based on web 2.0 technologies, such as blogs and wikis. As yet, these developments are still at an early stage, but they are growing very rapidly. It seems that students have yet to catch up. In the survey, 34.6% of the UK university students surveyed said that they use blogs as a reader, but only 2.7% use them for academic purposes. 65.5% have never read a blog at all and 16.4% have never even heard of them. Only 12.8% of the university students have ever written a blog as an author. In the school discussion groups there was very little awareness of blogs.
Wikis are more popular, with 72% of the UK university students using wikis as readers. Still 20% of university student respondents had never heard of wikis and only 11% have ever contributed to one.
In the schools, almost all the students had heard of or used wikipedia, although many of them just use it as another web page and don't understand the concept of how a wiki works.

Well wikipedia, is that a wiki, is a really good website for when you need to start a project [w2s]

The picture was noticeably different with the groups of teachers. 90% of the university teachers had never used a blog as either an author or a reader and none of the school teachers had used them. Even with wikis, only 50% of the university teachers said they had ever used one and only 1 had contributed to a wiki as an author. It seems that teachers are well behind their students in the use of this kind of new technology.

Podcasts
Only 12.7% of university students had not heard of podcasts, but even so, only 30.9% use them regularly and only 1 student admitted to using them for academic purposes. All university staff had heard of podcasts but only 2 staff had ever used them.

3.4 Transition: Proposed solutions

Initial analysis of the results demonstrates great interest from the school sector in more collaboration and outreach with the Library. In addition, thought needs to be given to the first year experience of the library once students start university. There are gaps in practical experience of students, as well as gaps in their understanding of information literacy expectations at university and there appear to be opportunities to narrow these gaps by working with students in schools before they arrive at university, as well as having a more focused strategy after their arrival. University staff, both librarians and teachers, demonstrated a fairly low level of awareness of the school curriculum and the ways in which students learn in schools and this is also an area which needs to be addressed. In contrast, teachers in schools were much more aware of university issues and, as a group, much more enthusiastic about learning more and developing stronger links. Interestingly, although the Key Stage 3 national strategy has a section in its key messages on information literacy and its importance in helping pupils become learners for life, no teacher or librarian in any school I visited mentioned this to me or seemed to be aware of it The DfES also provides good guidance notes for librarians, but little guidance for teachers, which highlights a gap in provision which the Library might fill. Strategies in school documents tend to refer to data handling rather than information in the broader sense. Although this project studied students in years 12 and 13, it is clear that, to be successful, information literacy interventions need to take place much earlier in a student's school life, so thought also needs to be given to providing support for students from Year 7 onwards. This will have implications for library staff training too, as few library staff have experience of teaching at this level.

Drawing on conversations in the interviews and discussion groups, individual contacts and observations of good practice from elsewhere, the following ideas are suggested as possible ways of building and strengthening links with local schools

3.4.1 Dedicated library web pages for schools
A set of web pages aimed specifically at schools could be created from a combination of new pages and the drawing together of existing services into a coherent package with which school teachers and students can identify. It would serve as a marketing tool for the Library and the University, as well as the focus for outreach activities. This has already been done successfully at Newcastle with the ResIN web pages. Such web pages might cover topics such as

For school students
➢ Using your local university library while you are at school (highlighting Newcastle but also linking to other local university libraries as appropriate).
➢ Access arrangements for local school students
➢ What to expect from the Library when you become a NU student
➢ Material from Special Collections and Archives (Education Officer activities)
➢ Specific student activities to be used in schools or independently
    o Quizzes
    o podcasts

For school teachers
➢ Access arrangements
➢ "Theory" – what is information literacy and how can I integrate concepts into my teaching?
➢ Useful free resources which school can use in their teaching and project work
➢ Information about outreach activities and visits
➢ Special Collections and Archives – Education Officer web pages
➢ IL toolkit - resources for schools. Many of the basic level resources in the toolkit can be used by schools and we could easily add extra school specific resources
➢ Links to university resources like the SAgE teachers toolkit

There are a lot of disparate transition related activities taking place across the university; the library is well situated to draw these activities together as a series of links on the web pages.

3.4.2 School visits to the University Library

> ➤ Visits for school teachers and librarians

The Library already has a programme in place for teachers of local schools to have access to the Library. It is proposed to extend this to school librarians and to organise some specific visit days in which we can show them the Library and discuss the kinds of ways in which we can collaborate with them

> ➤ Standard package for student visits

The Library already has regular visits from several schools and they are dealt with very effectively by the staff concerned. In order to learn from existing experience and to save time and effort in the future, it is proposed that material and resources used for these visits is collected into a central place and augmented by new material discovered as part of this project. I have a collection of activities and worksheets used as part of Huddersfield University Library's outreach programme and am collecting other resources at present. These have already been used by Erika Gavillet to develop a presentation and worksheet for 6th form psychology students. Materials used for the Partners programme and for recent visits organised by Sara Bird and Linda Kelly could also be included. By pulling all materials into a standard format, identifying gaps, developing resources to fill them and labelling them as the "NUL schools programme" we can present visiting schools with a coherent service.

> ➤ Visit space and timing

Careful thought needs to be given to when and where school visits take place to fit around university staff and student use of the Library, as well as access restrictions due to health and safety issues. Visits might be organised in collaboration with academic schools in order to emphasise the key role of the library in academic life and to develop specific subject packages. Students are more likely to understand the relevance of information literacy interventions within a subject context.

3.4.3 Outreach in schools

> ➤ Standard Information Literacy package for library staff to take out to schools

Many schools cannot afford either the time or the cost involved in bringing a group of students into the Library and we are also limited in the Library by the times in the year when we would want to welcome such groups. An alternative is for library staff to visit schools to deliver an information literacy related activity to the students.

The benefit of this for schools is that students enjoy having visiting speakers and pay more attention. It raises awareness of the university and also improves their information literacy in preparation for moving into university.

As part of the project, this idea is being piloted at Wolsingham Comprehensive School (state school). Erika Gavillett and I have met with school staff and are working on an IL activity to be delivered as part of the "bridging course" for year 11 to year 12 students. A similar pilot is planned to be run in Durham High School (independent school) with myself and Pete Maggs designing the activity. The workshops will be run by Erika and Pete and observed and evaluated by myself. If successful, it is proposed that similar workshops could be offered to local schools either free or as an income generating activity. Part of the evaluation will assess the viability of offering workshops on a fee paying basis.

It is recognised that this would be a time consuming and therefore costly option, but it is hoped that the pilot and evaluation would supply sufficient information to allow a bid for funding to be put to the new University Transition Activity Committee of UTLC.

> ➤ Package/ programme of IL activities to be run by school staff : "The NUL IL Certificate"

An alternative/additional suggestion is that of designing a set of short (20-30 min) IL activity workshops which can be run in schools by school teachers or librarians during lunch times or after school as "preparation for university" workshops. The activities/resources can be labelled as NUL resources and either provided free or at a small cost. As an incentive to attend, certificates could be issued enabling students to enter them as evidence on university application forms. The librarians at Wolsingham and Durham High Schools are keen to work with us on developing this idea.

➢   IL Toolkit activities for schools

Activities can be added to the IL toolkit, in fact, many activities in the toolkit at basic level will already be suitable and so could easily have additional labels added. Teachers and library staff in schools could then be encouraged to use the toolkit to find activities to integrate into their mainstream teaching.

3.4.4 Resources

➢   Withdrawn textbooks for school libraries

One simple suggestion which came out of the interviews relates to the disposal of textbooks from the university library. School libraries, if they exist, have very few subject specific textbooks and certainly no introductory university level books. Several teachers mentioned their desire to stretch their more able students by enabling them to read around their subject or even just to consult a wider range of textbooks that the core curriculum books. STEM (science, technology and medicine) books in particular are replaced in the university library on a regular basis and older editions would still have value in schools. In fact teachers commented on the fact that the school curriculum is often several years behind the latest thinking in universities! By placing a sticker in each book explaining that it has been donated to the school by the university library, students will become familiar with the name of the university and associate it with helping the school. It is suggested that this idea be piloted at first with schools involved in this project and with Partners schools and confined initially to science subjects.

The concept need not be too onerous to put into practice. Rather than list all withdrawn books, the science and medical library staff could select appropriate titles (this might even be done automatically by just selecting items of which we have multiple copies and new editions)and circulate a list (or post a list on the schools section of the library website). Schools could then request titles of interest, which could be posted out to them. NUL would have to bear the postage costs, as administering a system to recover costs is likely to be time consuming. Alternatively, participating schools could be asked to indicate subject areas in which they are interested and library staff could allocate titles to them on a regular basis. In this case, book boxes might be collected by schools on a rota basis. This would ensure a fairer distribution of books, but may mean schools occasionally receive less relevant material. Both suggestions will also involve a system of storing the withdrawn books at NUL until they are distributed to the schools. It is suggested that the system could be jointly administered by LIM and Store staff.

Although this suggestion does involve some time, administration and storage costs, it would be very beneficial for local schools and is a useful way of raising the profile of the university within the schools. It hits the right buttons for our Green agenda, community involvement and Chartermark.

➢   **Free electronic resources**

The Library already identifies free electronic resources via Metalib. It would be relatively easy to select a subset of appropriate resources to which teachers and school students could be directed via the web pages. Guidance in their use could be included in all of the outreach suggestions detailed above.

➢   **Special Collections and Archives**

As the Library is already addressing this area through the Education Officer post, I do not intend to cover it here. However, as part of the project, I have developed contacts in local schools which could be used as needed.

3.4.5 University Induction/transition ideas

➢   **Library staff development**

The project has highlighted the need for university staff to undergo some staff training to enable them to deal more effectively with new students. It is suggested that we work with staff in the School of Education as well as with school teachers and school librarians to develop a seminar / information pack for library staff covering issues such as

➢   The 14- 19 curriculum and how it is changing
➢   Latest A-level requirements, such as the new extended project, options for the International Baccalaureate etc

- Alternative activities such as the OU YASS courses and the new NU alternative entrance option based on this model
- Knowledge of the kinds of assessments and info lit experiences students are likely to have experienced at school
- Practical information about the scale. scope and use of libraries in schools
- Practical information about teaching in schools, use of IT etc
- Developing teaching skills for secondary school level

> **Pre induction activities**

In the discussion groups in schools and in the online surveys at university, a significant number of students (46%) suggested that they would have engaged in some pre induction activities at their chosen university if they had been available. At this stage, many students are keen to prepare for their new university life and have time and often encouragement at home to spend time exploring. For such students, options to explore the Library web pages and access some targeted electronic resources might be appropriate. Of course, these are motivated students and are likely to be those who attend their induction programme too, but it may not be difficult to provide material for them as an additional option. Ideas garnered fro discussions and visits include:

- Sending directed information out in university mailings
- Creating some intermediate library web pages with specific activities such as Informs tutorials, podcasts etc targeted at pre induction students. Information literacy self assessment material might also be appropriate here
- Working with university schools to highlight directed pre reading
- Pre induction library tours – real or virtual

> **Lifestyle library**

One of the common reasons university students cited for not using the library in their first year was that they found it

Scarily big and all the stuff seems to be way too difficult for me [u1e4]

When asked what kind of material they would expect to find in the library, opinions varied from *lots of old dusty boring books* through *probably not much I'd be interested in* to *everything I'll need for my course* and *hopefully some good stuff I can read, like you know all the new fiction.*

It seems that students have quite varied expectations of what the library is there for and what they might gain from it. The recent SCONUL report on Library services for international students, with which I have also been involved, highlights that many international students rely on the library as a social space as well as a study place. This is also the case for many "home" students and in the discussion groups, there was some conversation about ways in which libraries might be perceived as more friendly places. Comfortable, flexible study space was a key issue here and Newcastle library has addressed this very successfully.

An idea which I have raised before is that of the lifestyle library and this did engender some interest and enthusiasm amongst students. The concept of the lifestyle library is that it would contain material not directly related to academic study, but which would still support students as they settle into their university life. Other examples of such collections already exist (eg Singapore, Kingston) and run in a variety of formal and informal ways. At the most informal end of the spectrum, collections of material can be built up purely by donation from staff and students and can be borrowed on a trust basis. More formal collections include donated and bought material, have minimal cataloguing and are issued in the same way as other library resources.

The kind of material which can be included in a lifestyle library might be:
Financial/ money management/ how to budget
Dealing with stress, drugs alcohol
Cookery/ home maintenance
Travel/ holiday jobs
Topical issues
Fiction books, both in English and in other languages [international students could, for example, be encouraged to donate their favourite book from their home country, with a notation inside to say who donated it and why(Robinson, 2008)]

The benefit of a lifestyle library would be that it would encourage students to use the library for more that just academic information. It could be a way of bringing the university community together and encouraging students to read more widely, as well as having the practical benefit of providing support for students as they start their university life. This type of development would demonstrate a commitment to international student support as well as being a useful example for chartermark submission and a good profile raising and marketing tool for the library.

3.4.6 Information Literacy in the University

Although some university teachers are committed to developing information literacy with their students, they are still in the minority and a lot of activity happens as a result of personal contact by individual Liaison staff. There is a role for the Library in establishing an information literacy agenda in the University at all levels. It is hoped that this project has raised awareness of information literacy issues in several places, at UTLC, within QuILT and through university teaching and learning events

Current parallel activities taking place include the maintenance of the Information Literacy Toolkit, which includes many suggestions for activities which teachers can integrate into their own teaching(Bent and Brettell, 2006) and a UTLC funded project looking at integrating information literacy into the chemistry curriculum.

However, teaching staff still need to be encouraged to think about the impact that developing information literate students could have. The information literacy web pages give some background information for staff who look for it, but as an outcome from this project I would also like to see the following:

➢ An information literacy strategy document for the University.
   As well as detailing aims and outcomes of such a strategy, this document could explain what difference information literacy can make to the student learning experience. It could document some of the key teaching and learning issues and demonstrate where information literacy fits into each one.

➢ The Information Literacy Forum
   Originally conceived as part of the Information Literacy Project, the Forum is a Community of Practice of people across the University who have an interest in information literacy. Past meetings were successful opportunities for exchange of experiences and ideas and the group can also operate as a virtual community. However, it does need commitment from the Library to maintain momentum.

➢ Development of the Information Literacy toolkit to include a broader range of information literacy activities and ideas, plus a commitment to maintain it. This might include a refocusing of our information literacy activities to think about how we engage students in a discussion about their information literacy, rather than just "doing it to them"

Section 4

Study tour and networking
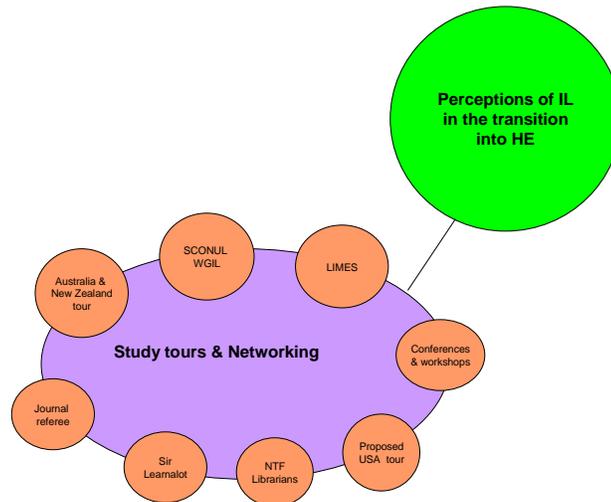
Fig 6

4.1 Introduction

The NTF offered great opportunities for travel, networking and collaboration. A study tour of Australia and New Zealand in Oct/Nov 2006 initiated a collaborative venture with both library and T&L staff at the University of Canterbury at Christchurch, New Zealand. Visits with the prestigious information literacy research group at Queensland University of Technology resulted in the "Information Literacy: making a difference?" workshop at Newcastle University at which the key speakers were Professor Christine Bruce (QUT) and Professor Sally Brown (Leeds Met) as well as ongoing dialogue and support relating to the research project.

4.2 Key themes

Rather than report verbatim on each visit, this section highlights interesting topics, activities, ideas and developments taking place in the libraries visited. A full list of libraries visited can be found in Appendix 7. Supporting documentation gathered during the visits is available in the NTF Project Accompanying Documentation box.

4.2.1 Information Literacy activities

A lot of interesting information literacy research and development takes place in Australia. New Zealand has been at the forefront of information literacy work in schools (Moore, 2002) so these countries were the obvious ones to visit in order to investigate the latest thinking in the information literacy field.

Queensland University of Technology Library
QUT Library has a well developed information literacy policy, overseen by the Library Management Group and managed by an Information Literacy coordinator. The Library has an Information Literacy Advisory Group which includes liaison staff, reference services staff and branch coordinators. The policy states that the library undertakes a leading role in affecting attitudinal and cultural change pertaining to the learning and teaching of information literacy, leading change in learning and teaching practice to ensure that information literacy is a pervasive and enduring part of

the learning environment, promoting information literacy as a key competency and enabling and empowering students as critical and independent users of information. The policy is promoted via the Information Literacy Framework and syllabus http://www.library.qut.edu.au/ilfs/

The Library has three learning and teaching strategies relating to information literacy:
➢ Extracurricula (supplemental) learning activities develop generic enabling skills and are supplemental to the core curriculum. Usually voluntary, run by library staff, basic info skills. http://www.library.qut.edu.au/academics/strategies/strategiesextra.jsp
➢ Intercurricula (integrated activities develop specific enabling skills linked to the core curriculum. Usually run by library staff in consultation with academic staff and scheduled into the timetable http://www.library.qut.edu.au/academics/strategies/strategiesinter.jsp
➢ Intracurricula (embedded learning opportunities develop within the core curriculum, contextualised within the content and assessment of a unit http://www.library.qut.edu.au/academics/strategies/strategiesintra.jsp

Key Performance Indicators for Information Literacy
QUT Library is working with KPIs to monitor information literacy activities. The KPI statement is that 70% of compulsory units within undergraduate courses show evidence of information literacy implementation and/or curriculum planning and development. The statement seeks to measure the capacity of the curriculum to support the learning of information literacy. It is not an indicator of the library's role or performance, or an indicator of student learning. The KPI footprint runs on a 5 year cycle to regulate the work involved in the analysis.
Analysis is carried out by liaison staff, who analyse 14 units per course (2/semester for 3yrs plus 2). Detailed instructions are provided and the data is centrally coordinated by the information literacy coordinator. Copies of the instruments of analysis and 5 year plan are available in the NTF Project Box of Accompanying Documentation, along with a print version of the Information Literacy Framework and Syllabus.

Information Literacy examples [all documentation in NTF Project box]
➢ The Murdoch University Library (Perth, AU) Information Literacy Skills Template is a good example of outcomes, activities, assessment and graduate attributes being brought together in an easy to read common framework.
➢ Curtin University Library (Perth, AU) provides a Research Information Literacy Program and, again, a framework linking outcomes, activities and assessment suggestions. Staff also fill out a teaching report for each session taught.
➢ Christchurch Polytechnic Institute of Technology (NZ) run an information skills module. The example in the NTF box includes an example of a marked essay and detailed examples of academic writing and paraphrasing
➢ QUT Library is well known for it's online information literacy module, PILOT, which culminates in a PILOT licence! http://pilot.library.qut.edu.au/

4.2.2 Podcasting
Curtin University Library (Perth, AU) started to pilot the use of podcasting to deliver information literacy in 2005/6, with a specific aim of helping external (distance) students and for international students. The podcasts are aimed at first year undergraduates

Principles
➢ Topics relevant to first years
➢ Reinforce information already provided in other ways and link back to website
➢ Short and concise (max 5mins)
➢ Weekly instalments – tip of the week
➢ "Funky, stylish and trendy"
➢ Variety of library staff
➢ Music at start and end

Issues
➢ Equipment – laptop
➢ Software – audacity
➢ Legal issues – http://wiki.creativesommons.org/Podcasting_Legal_Guide
➢ RSS feeds – from website direct to mp3

- ➢ Promotion
- ➢ Staffing

Topics
- ➢ Orientation
- ➢ Journal articles
- ➢ Referencing
- ➢ Endnote
- ➢ Databases
- ➢ Web searching
- ➢ Reference sources
- ➢ Subject resources
- ➢ Keeping up to date
- ➢ Wireless access
- ➢ Statistics

Sadly at the time of my visit, little evaluation of the use of the service had been done, so although it seems like a very interesting idea, I have no way of judging whether the time and effort expended has actually made an impact to student information literacy or attitudes to the library. In terms of how we might follow on from this, I plan to add links to the podcasts from our IL toolkit, so that staff can be made aware of the examples and adapt them individually. As part of our own podcasting activities we might also discuss trying some specific IL topics, such as referencing, endnote, keeping up to date.
I have a more detailed paper available from Curtin, available in the supporting documentation box..

4.2.3   Study skills

The CPIT Library is also the home for all study skills activity in the university and I was impressed by some of the activities they promote:
- o Peer Support matches students to other students for short term help in a particular subject. Helping students are trained and paid by CPIT and will help with assessments and assignments for up to 8 hours in total
- o PASS (peer assisted study scheme) – are peer facilitated study groups, coordinated by study skills staff and related to subjects
- o There is a great deal of support in academic writing skills

Similar study scheme support services were available in UQ Library, again staffed by students.

4.2.4   Schools/ Outreach

The University of Queensland Library Cyberschool (Brisbane AU) was the most impressive schools outreach programme I have come across – see www.library.uq.edu.au/schools and documents in the NTF Project box.
   It does the following:
- ➢ Links to free quality info for schools
- ➢ Develops information literacy
- ➢ Runs professional development activities for school staff
- ➢ Negotiates discounted subscriptions on behalf of schools
- ➢ Offers support to school staff in IL activities
- ➢ Runs school classes and tours in the library
- ➢ Provide lesson plans for teachers

QUT Library also have a schools outreach programme, which was reported in Outreach 2002 (Peacock, 2003) The project was a collaboration of library staff and schools teaching staff, who developed models for the delivery of information literacy within the senior school curriculum. The Library brought teachers into the university so that they could experience what it was like to be a current day student and also ran workshops for teachers in schools.The report concludes that the project was beneficial to staff and students in the participating school as well as to QUT.

4.2.5 Endnote

UQL provides the best Endnote support service I have come across. John East is employed by a consortium of libraries to develop and provide the service for all their users, so has time and resources to provide a quality service. During my visit I was given permission to use and link to material on their web pages to enhance our own service at Newcastle.

4.2.6 International student support

The data collected relating to international student support has been used in the SCONUL Guidelines for library services for international students
http://www.sconul.ac.uk/groups/access/papers/international_students.pdf
so will not be repeated here in any detail. The University of Canterbury at Christchurch has a well established programme, with a named international librarian (job description in SCONUL Guidelines). Murdoch and Curtin libraries also deal with many international students

4.2.7 QUT research group

The QUT research group consists of a host of well known information literacy academics headed by Professor Christine Bruce. Other members of the group include Sylvia Edwards, Helen Partridge and Hilary Hughes. All were very generous with their time and advice during my visit and Christine Bruce consented to be the focus of the Information Literacy event held at Newcastle in April 2007, when she also advised on the validity of this research project.
The group have published extensively and many of their publications are listed in the bibliography.

Section 5

Ripples in the pond: the impact of the NTF
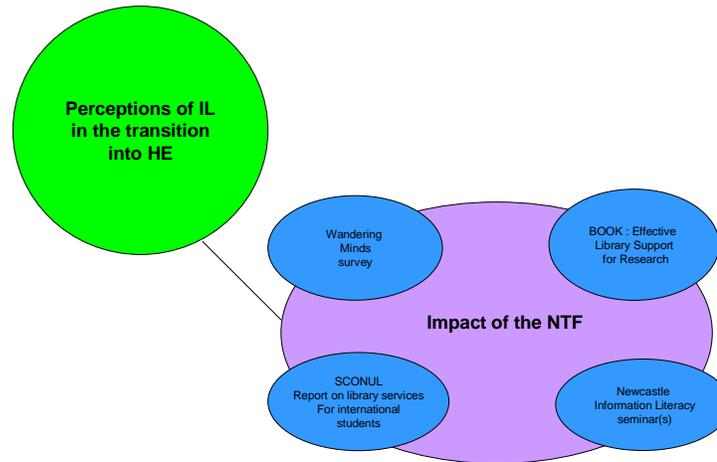
Fig 7

The NTF award has had a lasting impact on my own career and the quality of my work experiences and these are covered in detail in Section 7. This section addresses the impact the NTF has had on other people during the last 3 years, as well as detailing some of the specific parallel outcomes which are not germane to the core NTF project.

1. Wandering minds

Very early in the project I conceived the idea of recording some of the impact the award of the National Teaching Fellowship has had on people other than myself. In order to capture some of this data, I used a Wandering Minds sheet, which was distributed to participants at any event or presentation at which I was talking about my NTF project. This included all the libraries visited on the study tour, as well as all visits since and all conference papers, presentation and workshops I have given relating to my research. Individual responses to blog entries have also been recorded, as have emails and other correspondence.
    .
The Wandering Minds sheet asks participants to jot down anything which crosses their mind during our encounter – it may be directly related to the topic under discussion or be a serendipitous outcome arising from a chance remark. People are encouraged to add their contact details so that I can follow up on specific ideas to see if they have actually put their thoughts into practice.

i.Data analysis

At first, I was unsure how people would respond to this request – was I risking receiving lots of shopping lists and personal criticism? Fortunately, the majority responded very enthusiastically. On the whole, people were captivated by the concept of capturing this kind of information and keen to participate. Several contacted me subsequently with further thoughts or information on activities they had initiated as a result of our meeting and I have a network of correspondents around the world who regularly read and comment on my blog entries. As respondents were assured that all comments would be confidential, it is not possible to illustrate this section with specific quotes, but

ideas and suggestions have been summarised to give a flavour of the responses. Two completed forms are included in Appendix xx (with permission) to demonstrate the kinds of responses received. It was also interesting to discover in this process that several people revealed quite personal details about themselves, while other treated the experience as a mini diary, commenting on their state of mind at regular intervals!

Responses from the Wandering Minds sheets were coded thematically in order to identify key themes, as shown in Fig 3.
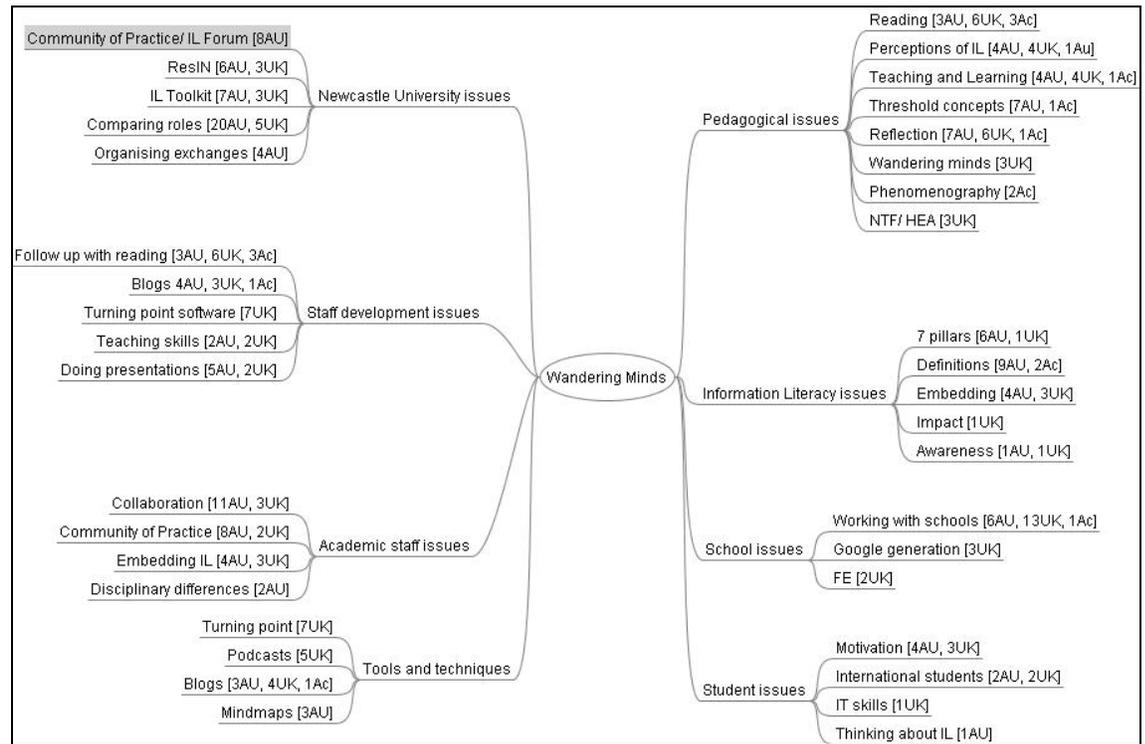
Fig 8: Wandering Mind? Themes from the Wandering Minds sheets

ii.Outcomes

Some clear themes emerged from the data. As was to be expected, library staff in Australia and New Zealand made a lot of comments comparing their library practices and situation with the one I was describing from Newcastle. There was a great deal of interest expressed in the different ways the libraries are organised and several suggestions that fruitful staff exchanges might be possible! Interestingly, one area which seemed novel to many of the Australian library staff was the degree of collaboration with academic staff which goes on at Newcastle. Very few seem to attend departmental meetings and although they did describe some good working relationships with individual academic staff, on the whole this seemed much less common than I had expected. The concept of the Community of Practice as represented by the Information Literacy Forum at Newcastle inspired interest in the UK as well in Australia, as did ideas around embedding information literacy into the curriculum. It was flattering that several staff in Australia and New Zealand displayed a keen interest in specific areas of practice at Newcastle, specifically the ResIN project and web pages and the information literacy toolkit and made suggestions of ways they might think about developing their own services as a result. As is often the case, it was frequently very small things which inspired ideas and reflection, for example, the use of quotes in the ResIN spotlight section.

In general, people were keen to follow up on ideas relating to collaboration and teamwork with academic staff. A surprisingly small number of comments related to students themselves and these

were mainly related to motivation and the differences between international and home students. However, there was great interest in concepts around closer working with schools and this topic generated more comments than any other, with several people intimating that they planned to take the idea further and start to develop local links. Comments about lack of understanding of the differences in educational techniques between school and university led on to respondents suggesting ways in which they might rectify the situation for themselves.

Similarly, specific reference to, and use of, different tools and technologies during the presentations and subsequent discussions gave rise to a number of both reflective and pragmatic comments. In the UK, there was great enthusiasm for the "ask the audience" Turning Point handsets which were used in several presentations, with several participants actively planning how they might employ similar ideas in their teaching. Two respondents took this further, commenting that although they might not have access to the technology, they were pondering ways of utilising the interactive element of voting and using the results to tailor their teaching. UK staff also expressed a lot of interest in the podcasting work being done in Australia and I am aware that 2 libraries followed up on this independently. The use of blogs as a reflective tool for self development engendered active discussion and many comments in all the encounters. Several participants were keen to tell me about their own blogs and to share their ideas about how to develop them. I am disappointed that I did not publicise these individual blogs at the time through my own blog, as this would have been an appropriate response.

It was encouraging that the discussions and presentations seemed to inspire many of the participants to follow up specific topics in further reading, with people being particularly interested in ideas of threshold concepts and general teaching and learning theories. Some staff felt that the opportunity for a general discussion had encouraged them to start more general professional reading, to keep up to date with issues. 3 library staff in the UK expressed their determination to explore becoming members of the HEA and/or apply to the National Teaching Fellowship scheme and 3 staff also intended to try out the wandering minds idea in other situations. In a response from the blog, one reader explained how reading the blog had challenged her to start rethinking her career and as a result she had applied for, and obtained, a new job!

Pedagogical issues in general were another strong them to emerge, with many comments relating to the role of librarians in teaching and personal reflection on individual teaching approaches. The area which caused the most debate focused around the underlying concept of the research project and how it would measure perceptions of information literacy. All the participants had the opportunity to fill in the same perceptions survey which respondents to the main survey filled in, so they were aware of how the data was being collected. Responses varied from those who wanted to use the same idea as away of engaging their own staff and students to those who felt it was far too complex to work.

One of the preconceptions I had before visiting Australia and New Zealand was that work on information literacy there is much more advanced than in the UK. It seems that librarians in the antipodes think exactly the opposite, that the UK is more advanced! Many more people in Australia expressed concerns about the terminology of "information literacy" than was the case in the UK, where it seems that it is becoming more accepted as a term. There was also little awareness of the SCONUL model of the seven pillars of information skills, but a great deal of good intent to follow up on this area.

On the whole, participants were very polite in their comments, though it may be that those with negative thoughts chose not to participate in the exercise. Unfortunately, a record of total number of attendees at all the presentations and events was not kept, so it isn't possible to estimate what percentage did not fill out a form. However, as the aim of the exercise was to capture some of the positive impact of the National Teaching Fellowship experience and project on others, this is not felt to invalidate the data.

2.Parallel activities

The NTF has allowed me space away from my normal work responsibilities to dedicate time to parallel interests, particularly writing and catching up on professional reading. The NTF status has also resulted in invitations which I am sure I would not otherwise have received!

i.   Research support book
Shortly after becoming a NTF, I was invited to be a co author of the book "Providing effective library services for research", which was published by Facet in July 2007. Two of the three authors are National Teaching Fellows, the third is a respected senior researcher. To date, the book has sold > 600 copies and has received several favourable reviews. It has also resulted in several peer reviewed journal articles and invitations to speak at major conferences.

ii.   International students support report
Also, because of my status as a NTF, I was invited to undertake research and subsequently write a report on Library services for international students on behalf of the SCONUL Access Group. The report was published in May 2008 and reported on in the Times Higher Education on 29th May 2008. It has attracted much attention and interest and is again resulting in invitation to run workshops and speak at conferences.

iii.   SCONUL Working Group on Information Literacy
The WGIL is a nationally recognised body which aims to promote the development of information literacy in UK HE, so I was delighted to be asked to join it in early 2007. As a NTF, my role in the group is to liaise with the HEA and subject centres, to encourage more librarians to join the HEA and to work with them to promote the NTF scheme to library staff.

Section 6

Dissemination

6.1 Publications
Included in these lists are all my publications and related activities which are a consequence of the NTF. In particular, this includes material relating to international students and support for research which are not relevant to the main theme of my NTF research project, but which are related.

Books and Reports
➢ Bent, M. (2008) Perceptions of Information Literacy in the transition into Higher Education. National Teaching Fellowship Research Report, Newcastle University.
➢ Senior, K, Bent, M. et al (2008) Guidelines for supporting international students in the Library. SCONUL . http://www.sconul.ac.uk/groups/access/papers/international_students.pdf
➢ Webb, Jo, Gannon-Leary, Pat, Bent, Moira (2007) Providing effective library support for research, Facet, London.

Published Papers
➢ Bent, M. (2008) Information Literacy and the transition from secondary to tertiary education: measuring perceptions. Invited paper for ELiSS (Enhancing Learning in Social Sciences) Journal. April 2008 http://www.eliss.org.uk/CurrentIssue/Abstracts/tabid/95/Default.aspx.
➢ Bent, M. Gannon-Leary, P. Webb, J. (2008) A destination or a place of last resort? The research library of the future, its users and its librarians. Invited paper for Library and Information Research, 32 (101) 3-14.
➢ Bent, Moira. Gannon-Leary, Pat. Webb, Jo. (2007) Information Literacy in a researcher's learning life: the 7 ages of research. Invited paper for the New Review of Information Networking 13(2) 81-99.
➢ Bent, M & Gannon-Leary, P, (2007) Being an information literate researcher: tips for avoiding plagiarism. JISC Plagiarism Advisory Service http://www.jiscpas.ac.uk/documents/tipsheetsv3/tp11_BeingAnInformationLiterateResearcher.pdf
➢ Gannon- Leary, P. Bent, M. & Webb, J. (2008) Researchers and their information needs: a literature review. New Review of Academic Librarianship, 13(1) 51-69.
➢ Bent, M. & Senior K. (2008) Discrete Library Services For International Students - How Can Exclusivity Lead To Inclusivity? In Brophy, P et al Libraries without Walls 7. Facet, London. pp205-216
➢ Gannon-Leary, Pat, Bent, Moira & Webb, Jo. (2007) Developing and managing effective library and information services to support research and researchers. University of Northumbria Performance Measures Conference, South Africa, Aug 2007

Other recent & forthcoming workshops/ conference presentations

➢ Invited paper on "information literacy for researchers", AHIS annual conference, Dublin. June 2009
➢ "Information literacy as a learning habit" LILAC conference, April 2009.
➢ Invited full day workshop on "supporting researchers writing for publication", NOWAL Group, March 2009
➢ Invited "Masterclass on assessment, learning and teaching": IL as a learning habit in the curriculum, Leeds Met University Nov 2008
➢ Invited paper on "international student suppo"t M25 Group Nov 2008 & Jan 2009.
➢ Invited paper for the National Acquisitions Group on research support, Sept 2008
➢ Library services to international students. SCONUL Access Conference, Kingston, June 2008
➢ Researcher's learning needs. Research workshop. SCONUL Conference, Edinburgh, June 2008
➢ Integrating information literacy into the curriculum, academic and library staff collaboration. National Teaching Fellows Symposium, London, May 2008
➢ Library support for research workshop, LILAC conference, Liverpool, Mar 2008

- Information literacy and the Google generation, Northumbria University, lecture to IS students, Feb 2008
- Phenomenography, Northumbria University CETL Research Seminar, Feb, 2008
- Information literacy in a researcher's learning life. SCONUL/CONUL seminar, Dublin, 31 Jan 2007
- The Librarian's Guide to researchers. CILIP UC&R NE seminar, Durham University 3rd Dec 2007
- Perceptions of information literacy in the transition into Higher Education. Reading University, 4th Dec 2007
- Conflicts and congruencies in perceptions of information literacy in schools in County Durham. i3 conference :Robert Gordon University. June 2007.
- Information Literacy perspectives. St Andrews University, Aberdeen, June 2007
- Collaboration in transition: working together to facilitate information literacy. Umbrella Conference, University of Hertfordshire June 2007
- **Information Literacy, making a difference. Organiser of one day conference at Newcastle University, April 2007 (guest speakers, Prof Sally Brown, Prof Christine Bruce)**
- Information Literacy, what's it all about? Northumbria University lecture to IS students Mar 2007
- Towards an information literate community at Newcastle University. Newcastle T&L seminar, Mar 2007
- Information Literacy in the transition into HE. ICS Subject Centre workshop, Northampton University Feb 2007
- Study tour Australia/ New Zealand – 7 presentations : Coals form Newcastle – a Geordie view of information literacy. Nov 2006.
- Researchers' learning lives workshop at Teaching and Research conference, De Montfort University, June 2006

Future workshop

A future workshop, aimed at starting a community of practice of staff in schools and universities who are interested in supporting students through transition is at an embryonic stage at present.

6.3 Blog http://blogs.ncl.ac.uk/moira.bent

"Moira's Info Lit blog" was begun in Oct 2006 as a means of keeping colleagues at work up to date with the progress of the NTF project during the study leave and associated study tour. As is the way with social software, it has changed over time. During the study tour, it was found to be a useful way of engaging all the libraries visited. By posting pictures of their staff and libraries, with short comments on the visit onto the blog, librarians from around the world started to look at it. It has also developed as a way of informing colleagues around the world about new publications, both personal and others relevant to the project, commenting on conferences and workshops as well as maintaining the original premise of maintaining a diary of my project progress. Once the data collection part of the project began, the blog was also used to engage all the schools visited, again posting (with permission) photos of the schools, staff and pupils. More recently, the blog has been used to collate and subsequently disseminate flipchart comments from participants at workshops, as well as posting copies of slides from presentations.
A more recent innovation has been the addition of the RefShare version of the NTF database of references.
One of the most disappointing aspects of the blog has been the way in which the software is administered at Newcastle. The blog was one of the first set up as part of the Newcastle blogging service and initiated some initial correspondence with support staff in ISS as it developed. Like many other serious academic blogs, this blog aims to develop links around the world and has gained a wide international readership. However, only Newcastle staff and students are able to post comments to the blog and this has seriously limited it's effectiveness as a collaboration and communication tool. I have considered moving the blog to a free shareware website to overcome this issue, but as it is now linked to from several other websites, for now I have decide to keep it where it is

6.3.1 Blog statistics and use

Readership of the blog has grown and it now seems to be an accepted part of the information literacy world, being linked to from the following websites:

- The Information Literacy website http://www.informationliteracy.org.uk/Information_literacy.aspx
- Sheila Webber's information literacy blog http://information-literacy.blogspot.com/
- IFLA/UNESCO information literacy resources directory http://www.infolitglobal.info/

Appendix 8 details blog statistics from Oct 2006 to May 2008. Use peaked at 73 visitors in one day in October 2006 and averages at 20-25 visitors a day over the period from Oct 2006 to April 2008. This consistent level of use does demonstrate an ongoing interest in the content of the blog. As an example of use, one post dated 1st April 2008 included a link to a powerpoint presentation (hosted on Slideshare) on research support which I had given earlier in the year. In the following 2 months, this powerpoint was viewed 265 times and although the viewers may not have come to it from the blog, this seems the most likely route as it isn't linked to from anywhere else

Analysis of the blog statistics shows that readers of the blog come from within the Library at Newcastle and from as far away as Yukon College in Canada. Although few people post comments to the blog (for logistical reasons) regular emails are received from colleagues around the world. It has initiated invitations to speak at meetings as well as providing content for conversations and networking opportunities. The blog has been a useful profile raising exercise and also served to encourage other colleagues in the Library to start experimenting with blogging opportunities.

A sample of the blog archive to date is contained in appendix 9

Section 7

Reflection & Future Directions

The NTF award and the associated research and activities with which it has enabled me to engage have been a personal journey of discovery for me. I'd like to use this section to share some of the lessons that I have learned and the ideas and thoughts I have had along the way.

Information Literacy

I've read a lot of different "definitions" of information literacy and each one has some merit and some aspects I agree with. However, most of them do seem to give a lot of weight to skills and I've come to understand that information literacy is about much more than developing information skills. My current personal perception is:

Information literacy is about individuals building an awareness of how they "use, manage, synthesise and create information, in a wise and ethical manner, to the benefit of society", as part of their learning life. Information literacy is central to learning and essentially involves changing learning attitudes and habits so that people understand how information fits into their learning. As well as involving a broad understanding of the information world, information literacy encompasses specific information skills, which can be learned within a subject context and are relevant to lifelong learning.

One of the reasons that information literacy has become such a critical topic is that finding information in the 21st century is perceived by many to be easy. In his book "The Cult of the Amateur(Keen, 2007), Keen coins the phrase "digital Darwinism" , the survival of the loudest and most opinionated. He makes the point that everyone is an author as well as a reader and that abilities to discriminate between good quality and poorer quality content are diminishing. This can lead to a state of informed bewilderment, in which a person has the skills to use technology and "find" information, but is not sufficiently information literate to make sense of the information to move forward in their learning. There is also an incoherence gap between how resources are organised and how a user looks for them, meaning that they may not always find the most appropriate information for their need. Perhaps raising awareness of these opinions amongst staff and students might help to stimulate debate about their own information literacy needs.

Librarians and information literacy

There is a general assumption that all librarians are information literate and that their perceptions of information literacy encompass the more complex conceptions described by Bruce. However, this may not always be the case. Many library staff have taught "user education" and "information skills" to students very successfully for years, with excellent feedback, and see no reason to change their practices. As busy practitioners, they have little time to read professional literature and to reflect on new conceptions of information literacy, equating the term directly with information skills. In some instances they may still place too much emphasis on bibliographical skills, which perpetuates a narrow and limited view of information literacy amongst academic staff and students. At the recent (June 2008) SCONUL Conference in Edinburgh, it was disappointing to hear so many chief librarians and deputies also subscribe to this limited perception of information literacy. A first stage in developing student and teacher information literacy needs to be to ensure that all the librarians involved are aligned on their own information literacy perceptions and are "singing from the same song sheet". Library staff may also need support in developing their understanding of broader teaching and learning principles which underpin information literacy. Information literacy demands a different way of thinking about what and how we teach (Moore, 2002) and librarians have not traditionally needed to address this issue. One of the problems with moving forward is making time for reflection and developing new ways of approaching information literacy teaching. Most library staff are very busy and it is often easier to just continue with the same set of slides and notes year after year than to invest time and energy into a whole new approach. This is an area which is unlikely to improve unless library managers have crossed their own threshold concept of

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understanding about information literacy and are able to provide practical support to enable their staff to develop.

Explicit and implicit Information literacy

Complex thinking skills and problem solving processes underpin information literacy. One of the issues is whether making people explicitly aware of these aspects of information literacy is a necessary part of them developing as information literate people. Can a person be information literate without being aware of it? The definition above includes "building an awareness", so that individuals understand the importance of information literacy in their learning life.

Librarians see the support of information literacy development as "their" domain, but if we see information literacy as part of learning, this is an increasingly unsupportable view. McGuinness (McGuinness, 2006) claims that this is merely a way of librarians maintaining their status and suggests that it no longer needs to be solely the province of information professionals. Personally, I advocate a similar view, and this was reinforced by responses from the school teachers in the survey who felt that they should be incorporating information literacy principles into their mainstream teaching. The role of librarians should be to facilitate information literacy development through the curriculum, in whichever way is most appropriate for each individual situation. This approach can then permeate every encounter students have within the library context as well as in their broader learning environment.

Information Literacy behaviour

Even when we think we are information literate, there are times when we don't exhibit behaviour which demonstrates this. Most people start with what they are familiar with. In order to identify what information they need, they have to be able to articulate what they already know as well as disentangling the complexities of the question they are trying to answer. Williams (Williams and Wavell, 2006b) talks about a critical learning point being the "zone of intervention" in which mediation from professional will have an impact on an individual.
In a recent conference presentation in Dublin, Sheila Webber raised some interesting questions about the "information literacy of the group" in which individuals have to learn how to share information and how to make implicit knowledge tacit. Group information literacy may be different from individual information literacy, as it depends on issues of group dynamics as well as how information literate the group members are.

An information literacy landscape

The information literacy landscape through which an individual moves is shaped by external factors as well as a range of personal attributes and perceptions. The information literacy mind map below attempts to bring these factors together:
The diagram illustrates the complexity of the information literacy landscape. It is not meant to be comprehensive, but to act as a starting point for debate and discussion. If we want to develop information literate students, we need to be aware that the landscape in which they are developing will be influenced by a wide range of different factors. Each individual will have a slightly different perspective on the landscape from their peers, so any information literacy teaching needs to be flexible and to allow for different responses. Too rigid an approach may result in an individual losing the way through their own personal information literacy environment.
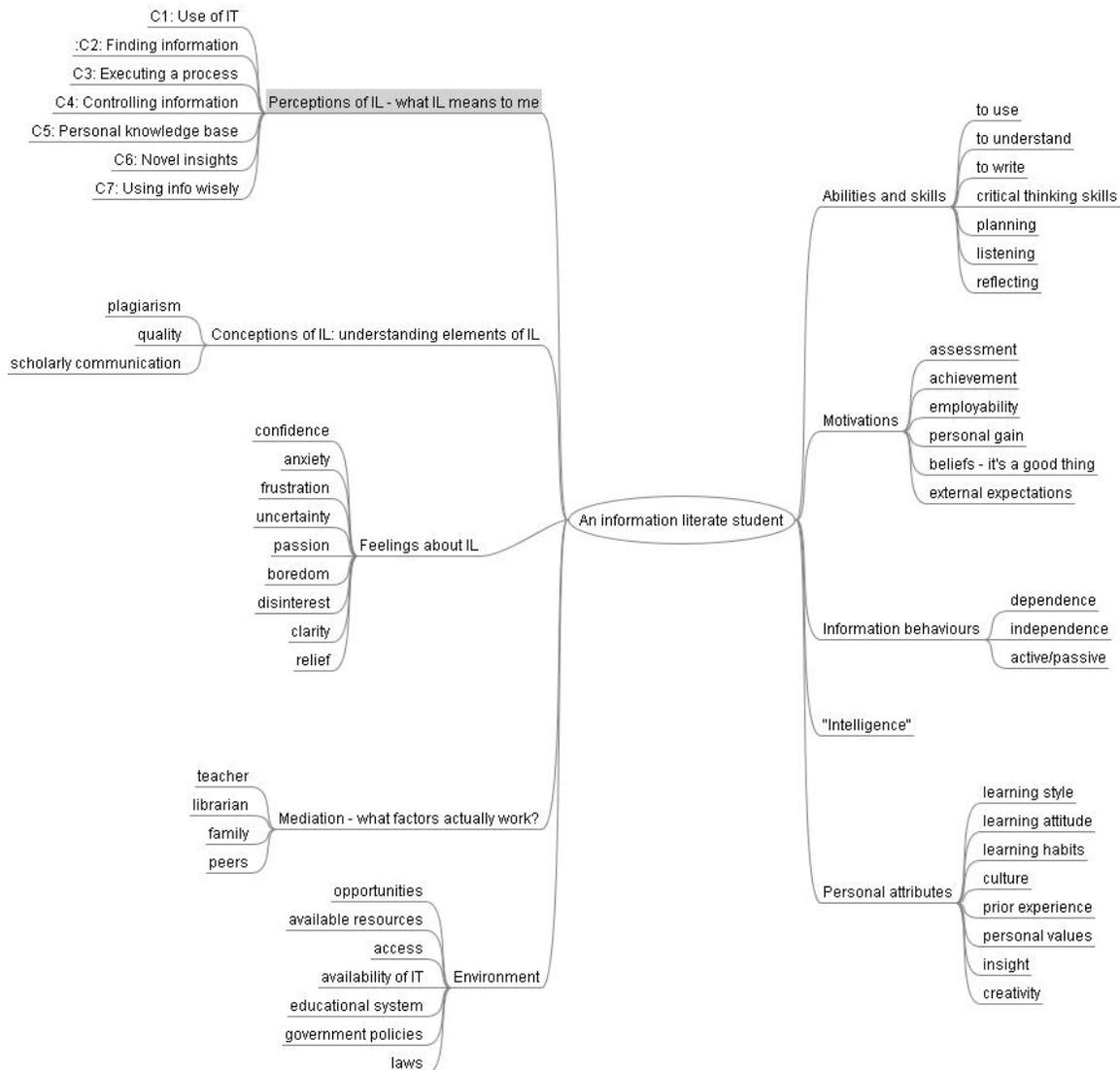
C1: Use of IT
:C2: Finding information
C3: Executing a process
C4: Controlling information — Perceptions of IL - what IL means to me
C5: Personal knowledge base
C6: Novel insights
C7: Using info wisely

to use
to understand
to write
Abilities and skills — critical thinking skills
planning
listening
reflecting

plagiarism
quality — Conceptions of IL: understanding elements of IL
scholarly communication

assessment
achievement
employability
Motivations — personal gain
beliefs - it's a good thing
external expectations

confidence
anxiety
frustration
uncertainty
passion — Feelings about IL — An information literate student
boredom
disinterest
clarity
relief

dependence
Information behaviours — independence
active/passive

"Intelligence"

teacher
librarian
family — Mediation - what factors actually work?
peers

learning style
learning attitude
learning habits
culture
Personal attributes — prior experience
personal values
insight
creativity

opportunities
available resources
access
availability of IT — Environment
educational system
government policies
laws

Fig 9: An information literacy landscape

Information Literacy and Threshold Concepts

Meyer and Land (Meyer and Land, 2003) describe threshold concepts as having 5 characteristics. First, they should be transformative, in that once acquired they should shift perception of the subject. Second they should be irreversible; once an individual has begun to perceive the world in terms of a threshold concept it is inconceivable that they would return to viewing it in the old way. Thirdly they are integrative. Meyer and Land describe this as the capacity of a concept to expose previously hidden interrelationships. Fourthly they are bounded; this means that they help to define the boundaries of a subject area and lastly they are counter intuitive; in grasping the concept a student may move from what they thought was a common sense understanding to a new perception which conflict with their previous understanding.

So you could say that a threshold concept is something which needs to be grasped before a student can move on in their learning. What is lasting in what they have learned?

We can think of information literacy in terms of threshold concepts. We want perceptions of information literacy to change so that learning habits are adapted in a permanent way and it is this philosophy that we are trying to pass on to the academic staff we are working with.

An individual really has to reach their own threshold concept of understanding what information literacy means to them to enable them to continue to develop as an information literate person. Threshold concepts are a very helpful way of viewing information literacy; one threshold concept might be about moving from seeing it as skills to seeing the bigger picture, certainly a threshold you can't go back over the other way!

An interesting debate arises over whether a series of common threshold concepts can be identified relating to information literacy and whether threshold concepts are individual or whether they can be the same for everyone.

Measuring information literacy

Another issue relates to the assumptions we tend to make about people's information literacy "level" It seems from the survey results that in general, both staff and students have a complex understanding of what information literacy means. Do they actually know more than we think? Are we in danger of making too much of an issue of information literacy? We avoid this question by focusing on specific skills "*well they don't know how to use that database properly so they can't be information literate*" one librarian said to me. We base our assumptions on the obvious evidence. However, informed choice might mean that someone knows perfectly well that they are not performing at the top level but that may not be important to them for that particular information need. This does not mean that they aren't information literate.

In his presentation at LILAC 2007, Ross Todd talked about the complex cognitive process involved in information literacy which he encapsulated as *what do people do with "stuff?"* He sees the end point of information literacy as being a knowing and knowledgeable person. How can we then document knowledge outcomes? Assessing a person's information literacy "level" is one issue. Assessing the impact of any information literacy activities is an added, quite different, complexity. Any assessment of information literacy level can only look at skills and competences and overlaid onto that we need to think about individual perceptions and understanding. This is where Bruce's six frames for IL education can be helpful (Bruce et al., 2006).

There are several examples of tools which can be used to assess information literacy competencies. Examples of these are available in the Information Literacy Toolkit.
http://www.ncl.ac.uk/library/staff/infolit/toolkit/
They can be useful in setting a skills baseline and in formulating specific outcomes from an information literacy programme (for example, "at the end of this workshop you will be able to use WoK to perform a successful cited reference search")
The Toolkit also uses the SCONUL & pillars model to demonstrate how an information literacy programme can be developed across the curriculum, by setting levels of attainment for each of the 7 pillars. Again, this allows the measurement of specific skills and competencies.

Self assessment tools, such as that in Appendix 10, can be a more effective way of engaging students in a debate about information literacy and help to make them think about their personal development. They can still be part of a skills based programme, but allow for the underpinning of a deeper understanding of information literacy principles. This tool has been used effectively at Newcastle with 1st year environmental science students as well as, in a more complex form, with science postgraduates and is also available in the Toolkit.

Measuring the impact an information literacy intervention has had is particularly difficult, as all the other elements of the information literacy landscape described above may also have had a bearing on any perceived development. It must also be borne in mind that learning is a developmental process and improvements in information literacy may be related to the age and maturity of the individual and their stage in their learning life. That said, one method of assessing impact has been devised and will be implemented during the next academic year with chemistry students at Newcastle. This method consists of a list of criteria which demonstrate evidence of information literacy. Student work will be compared against the criteria at the start of the academic year and during the course of the year, students will be subjected to a variety of information literacy opportunities. A second piece of work will be compared against the criteria at the end of the year, to

see if there is any discernable evidence that the student's information literacy has developed over the year. The criteria list can be found in Appendix 11

It is hoped that a range of different "assessment" tools will enable a better understanding of how student information literacy is developing.

Continuing work and Future directions

A lot of data was collected during the course of the project and not all of it has been fully analysed. Some of this analysis will be written up as separate articles over the course of the next year, specifically on search strategies and disciplinary differences. An international comparison using data collected in New Zealand will also be produced.

The first Information Literacy workshop held at Newcastle in April 2007 was successful and it is proposed to run a second workshop in 2009 focusing on transition and on developing a community of practice of library and teaching staff in schools and universities interested in information literacy. Initial contacts have already been made with this in mind.

Outreach with schools is already an objective for the Library and it is hoped that activities and contacts begun during the research will be continued and developed as part of a wider library strategy.

Other research strands have also suggested themselves as a result of the research. These possible future research areas and extensions are listed below:

➤ Information Literacy and threshold concepts – is this a useful model? How relevant are threshold concepts as a way of seeing the information literacy agenda
➤ Measuring the impact of information literacy interventions – testing the criteria tool
➤ Transition into Higher Education – a comparison between the UK, USA and New Zealand schools using a development from the original survey tools and with a new collaboration with schools in New Jersey, USA.
➤ Search strategies: how do students start looking for information? A more in depth analysis of the data from the coding maps
➤ Use of social software by students and teachers, a development of the original survey.
➤ Perceptions of information literacy. Additional data collected from library and academic staff in the UK, Australia and New Zealand which has still to be analysed and compared with the teacher and student perceptions from this report.

Final comments

This report is a mixture of theory and practice, reflecting my personal development over the last 2 years. For me, it is just a starting point for future research, but I hope that it will also provide useful information and ideas for colleagues both within the Library and elsewhere.

Section 8

Reference list and bibliography

Bibliography
The bibliography in Appendix 10 contains all the references consulted during the course of the NTF project up to the date of publication of this report. An online, constantly updated version is available at
http://www.refworks.com/refshare/?site=032251126249200000/RWWS1A413338/NTF%20Info%20Lit

References
The following subset of references has been referred to within the body of this report

Andretta, S. (2002) 'Information Literacy for mere mortals*', 5th World Conference on CPE for the library and information profession. Continuing Professional Education for the Information Society.* KG Saur.pp.Pages.

Andretta, S. (2006) 'Information Literacy : challenges of implementation (editorial)', *ITALICS,* 5 (1).

Andretta, S. (2007a) *Change and challenge: Information literacy for the 21st century.* Adelaide: Auslib Press.

Andretta, S. (2007b) 'Phenomenography: a conceptual framework for information literacy education', *Aslib Proceedings,* 59 (2), pp. 152-168.

Andretta, S. and Cutting, A. (2003) 'Information Literacy: A Plug-and-Play Approach', *Libri: International Journal of Libraries & Information Services,* 53 (3), pp. 202-209.

Bent, M. and Brettell, S. (2006) 'What's wrong with a good idea? An information literacy toolkit in practice ALISS Quarterly 2(1) Oct 2006', *ALISS Quarterly,* 2 (1).

Biglan, A. (1973) 'Relationships between subject matter area characteristics and output of university departments', *Journal of Applied Psychology,* 57 pp. 204-213.

Bowl, M. (2003) *Non-traditional entrants to higher education : they talk about people like me.* Stoke on Trent: Trentham Books.

boyd, d. m. and Ellison, N. B. (2007) 'Social Network Sites: definition, history, and scholarship', *Journal of Computer-Mediated Communication.,* 13 (1), pp. article 11.

Bridges, W. (1995) *Managing Transitions: making the most of change.* London: Nicholas Brealey Publishing.

Bruce, C. (1997a) *The seven faces of information literacy.* Adelaide: Auslib Press.

Bruce, C. (1997b) *Seven faces of Information Literacy in Higher Education.* Available at: http://sky.fit.qut.edu.au/~bruce/inflit/faces/faces1.php (Accessed: June 2008).

Bruce, C. (1999) 'Phenomenography : opening a new territory for library and information science research', *The New Review of Information and Library Research,* pp. 31-47.

Bruce, C., Edwards, S. and Lupton, M. (2006) 'Six frames for Information Literacy Education: A conceptual framework for interpreting the relationships between theory and practice', *ITALICS,* 5 (1).

Bruce, C. S. (2002) White Paper prepared for UNESCO, the U.S. National Commission on Libraries and Information Science, and the National Forum on Information Literacy, for use at the Information Literacy Meeting of Experts, Prague, The Czech Republic.

Bruce, C. S. and Candy, P. (eds.) (2000) *Information Literacy around the world: advances in programs and research.* Wagga Wagga, New South Wales: Centre for Information Studies, Charles Sturt University.

CIBER. (2008) *Information behaviour of the researcher of the future.* London: UCL,

Crawford, J. (2006) 'The use of electronic information services and information literacy: A Glasgow Caledonian University study', *Journal of Librarianship and Information Science,* 38 (1), pp. 33-44.

Crawford, J. (2008a) *A National Information Literacy Framework (Scotland).* Available at: http://www.gcal.ac.uk/ils/framework.html (Accessed: 14 Nov 2008).

Crawford, J. (2008b) *Scottish Information Literacy Project.* Available at: http://caledonianblogs.net/information-literacy/ (Accessed: 14 Nov 2008).

Crawford, J. and Irving, C. (2006) 'Information literacy: The link between secondary and tertiary education project and its wider implications', *Journal of Librarianship and Information Science,* 39 (1), pp. 17-26.

Ellison, N. B. (2007) 'Facebook use on campus: a social capital perspective on social network sites.*' ECAR Symposium,.* Boca Raton, FL

Franklin, T. and Harmelen, M. (2007) *Web 2.0 for content for learning and teaching in higher education.* JISC,

Heathcote, E. and Taylor, P. (2007) 'The potential contribution of change management literature to understand and support student transitions (author version)*', HERDSA 2007 Enhancing Higher Education, Theory and Scholarship.* Adelaide, South Australia

Irving, C. and Crawford, J. (2006) 'Begin at school', *Library & Information Update,* 5 (1-2), pp. 38-40.

Keen, A. (2007) *The Cult of the Amateur: How today's Internet is killing our culture and assaulting our economy.* London: Nicholas Brealey Publishing.

Leckie, G. J. and Fullerton, A. (1998) *Proceedings of the 9th Association of College and Research Libraries National Conference.*

Limberg, L. (1999) 'Experiencing information seeking and learning: a study of the interaction between two phenomena', *Information Research*, 5, (1), [Online]. Available at: http://informationr.net/ir/5-1/paper68.html (Accessed: Jan 2008).

Madden, A. D., Ford, N., J. and Miller, D. (2007) 'Information Resources used by children at an English secondary school: perceived and actual levels of usefulness', *Journal of documentation,* 63 (3).

Marton, F. (1981) 'Phenomenography - describing conceptions of the world around us', *Instructional Science,* 10 pp. 177-200.

Marton, F. (1994) 'Phenomenography', in Husen, T. and Postlethwaite, n.(eds.) *The International Encyclopedia of Education.* Pergamon, pp. 4424- 4429.

McGuinness, C. (2006) 'What Faculty think - exploring the barriers to information literacy development in undergraduate education', *Journal of Academic Librarianship,* 32 (6), pp. 573-582.

McKnight, C. (2000) 'The personal construction of information space', *Journal of the American Society for Information Science,* 51 (8), pp. 730-733.

Merchant, L. and Hepworth, M. (2002) 'Information literacy of teachers and pupils in secondary schools', *Journal of Librarianship and Information Science,* 34 (2), pp. 81-89.

Meyer, E. and Land, R. (2003) *Threshold concepts and troublesome knowledge : linkages to ways of thinking and practising within the disciplines.* Edinburgh: School of Education, University of Edinburgh,

Moore, P. (1999) *Revealing Thinking: Teachers Working Together on Information Literacy.*

Moore, P. (2002) *Information Literacy, what's it all about?* Wellington: New Zealand Council for Educational Research.

Moore, P. (2005) 'An Analysis of Information Literacy Education Worldwide', *School Libraries Worldwide,* 11 (2), pp. 1-23.

Peacock, J. (2003) *Outreach 2002: High School and University Information Literacy Partnering for the 21st Century.* Queensland University of Technology Library. unpublished report. Available in NTF Project Box of Accompanying Documentation.,

Prosser, M., Trigwell, K. and Taylor, P. (1994) 'A phenomenographic study of academics' conceptions of science learning and teaching', *Learning and instruction,* 4 pp. 217-31.

Robinson, K. (2008) 'Around the world in 80+ books: engaging with students to create reading lists and conversations', *ALISS Quarterly,* 4.

Shenton, A. (2004) 'Research into young people's information seeking perspectives and methods', *Aslib Proceedings,* 56 (4), pp. 243-254.

Shenton, A. K. and Dixon, P. (2003) 'Youngsters' use of other people as an information seeking method', *Journal of Librarianship and Information Science,* 35 (4), pp. 219-233.

Smith, M. and Hepworth, M. (2005) 'Motivating learners to become information-literate', *Library & Information Update,* 4 (1/2), pp. 46-47.

Smith, M. and Hepworth, M. (2006) 'An investigation of factors that may demotivate secondary school students undertaking project work: Implications for learning information literacy', *Journal of Librarianship and Information Science,* 39 (1), pp. 3-16.

Smith, M. and Hepworth, M. (2008) 'Perceptions of information: the Net generation*', LILAC conference.* Liverpool

Swain, H. (2007) 'Networking sites: professors keep out l', *The Independent,* October 18th.

Webber, S., Boon, S. and Johnston, B. (2005a) 'A comparison of UK academics conceptions of information literacy in two disciplines: English and Marketing', *Library and Information Research,* 29 (93), pp. 4-15.

Webber, S., Boon, S. and Johnston, B. (2005b) *LILAC : Librarian's Information Literacy Annual Conference.* London

Webber, S. and Johnston, B. (2000) 'Conceptions of information literacy: New perspectives and implications', *Journal of Information Science,* 26 (6), pp. 381-397.

Webber, S. and Johnston, B. (2002a) 'Conceptions of information literacy: New perspectives and implications', *Journal of Information Science,* 26 (6), pp. 381-397.

Webber, S. and Johnston, B. (2002b)

Williams, D. and Coles, L. (2003) *Teachers' Use of Research Information: information literacy, access and attitudes (a report on research funded by the ESRC, award ref: R000223842).* Aberdeen: The Robert Gordon University,

Williams, D. and Coles, L. (2007a) 'Evidence based practice in teaching: an information perspective', *Journal of documentation,* 63 (6), pp. 812-836.

Williams, D. and Coles, L. (2007b) 'Teachers' approaches to finding and using research evidence: an information literacy perspective', *Educational Research,* 49 (2), pp. 185-206.

Williams, D. and Wavell, C. (2001) *The impact of school library services on achievement and learning.* DfES,

Williams, D. and Wavell, C. (2005) *Teacher's conceptions of Information Literacy in relation to classroom practice - a workshop held at Robert Gordon University.* Aberdeen: The Robert Gordon University,

Williams, D. and Wavell, C. (2006a) *Information Literacy in the classroom: secondary school teachers' conceptions.* Aberdeen: Department of Information Management, Aberdeen Business School, Robert Gordon University,

Williams, D. and Wavell, C. (2006b) *Untangling spaghetti? The complexity of developing information literacy in secondary school students.* Scottish Executive Education Department,

Williams, D. and Wavell, D. (2002) *Recent research on the impact of the school library resource centre on learning.*

Yorke, M. (2004) *Retention and student success in Higher Education.* Maidenhead: Open University Press.