

Journal of Information Literacy

ISSN 1750-5968

Volume 3 Issue 2

December 2009

Article

Hegarty, N, Carbery, A and Hurley, T. 2009. Learning by Doing: Re-designing the First Year Information Literacy Programme at Waterford Institute of Technology (WIT) Libraries. *Journal of Information Literacy*, 3(2), pp.73-90

<http://ojs.lboro.ac.uk/ojs/index.php/JIL/article/view/PRA-V3-I2-2009-6>

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Learning by Doing: Re-designing the First Year Information Literacy Programme at Waterford Institute of Technology (WIT) Libraries

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Abstract

The purpose of this paper is to describe the process involved in re-designing Waterford Institute of Technology (WIT) Libraries' information literacy programme for first year students. It is written by some of the members of the library learning support team, who deliver the programme. It describes the steps involved in the programme's development and design, discusses the pedagogical principles that influenced the initiative, and summarises the evaluations we have undertaken to date.

These evaluations have yielded positive informal and formal feedback from the students and lecturers who participated in the programme. The value of a pedagogically sound, active learning approach to information literacy training is highlighted throughout the results.

By providing constructive solutions for incorporating active learning into library user education programmes, this paper is expected to be a useful source of practical information for libraries in similar positions, of similar scale, faced with similar challenges. It is likely to be of particular interest to librarians involved in information literacy education.

Keywords

information literacy; active learning; learning support; academic libraries; undergraduate provision

1. Introduction

This paper is informed by Boyer's claim that "great teachers stimulate active, not passive, learning and encourage students to be critical, creative thinkers with the capacity to go on learning after their college days are over" (Boyer, 1997, p. 23). It focuses on the information literacy programme for first year students at Waterford Institute of Technology (WIT) Libraries and is written by some of the members of the library learning support team who deliver the programme. Launched in 2001, this programme is the first of a range of information literacy programmes available to all undergraduate and postgraduate students at WIT. The main priority of this programme is to assist students in making the transition from second to third level education by helping them to become comfortable and confident using the library and its print and electronic resources.

The programme is delivered by the library learning support team, composed of two librarians and two library assistants, who offer information literacy training to all first year students. Training is consistently well attended, for example over 1300 students, equivalent to approximately half of all first year undergraduates, attended the information literacy programme in the 2008-2009 academic year.

The programme was traditionally delivered as a two hour blend of lecture and demonstration by a librarian, with a short period of time for hands-on practice at the end of the session. In a bid to change this pedagogical dynamic, taking a more active learning approach, the learning support team devised a new and innovative model for teaching library and research skills to all first year undergraduate students.

This model involves the students' development of a range of generic and transferable information literacy skills, including critical thinking, reflective and research skills to enhance their learning experience at WIT. The ultimate goal of the information literacy programme is the development of confident, competent library users, who are capable of "recognising when information is needed and [who have] the ability to locate, access, evaluate and use effectively the needed information" (Bundy, 2004).

The achievement of this goal represents a constant challenge for the learning support team. Following the ALA (2003) guidelines for best practice which recommends diverse approaches to teaching and the use of active, collaborative activities, the team has always relied on a blended training model. As mentioned above, this model combines the theoretical and the practical elements by complementing the lecture with hands-on practice.

Building on its class-based interactive elements, the team decided to re-design its first year undergraduate information literacy programme between Spring and Autumn 2007. The vision for the new programme was primarily student-centred and based on the following aims. It would move beyond a predominantly lecture-demonstration based format to incorporate a significant measure of interactivity and dialogue, engaging and involving students in all aspects of their learning, and providing them with a platform for lifelong learning. Crucially too, it would portray the library as an accessible, student-friendly environment, whose resources and services are freely available to its users.

2. Making a Change – Influencing Factors

The impetus behind the library's explicit commitment to active, student-centred learning was directly influenced by the WIT's Strategic Plan, which highlighted its commitment to a student-centred, active learning model: "Learning is an active process and the Institute is committed to ensuring that the learner is at the centre of the learning experience" (WIT, 2007, p. 45).

Following the theory that "what the student does is more important in determining what is learned than what the teacher does" (Shuell, 1986, p. 429), students at WIT are thus encouraged to underpin their own learning development with extensive use of the services and facilities that we provide.

From the library's point of view, first year undergraduate students broadly fall into two main categories; those continuing directly through to third level education from second level, and minority student groups, who are either returning to full-time third level education after a lengthy absence (mature students), or are arriving from overseas (international students). Both of these groups present a number of challenges to the learning support team in terms of making its information literacy programme more interactive and student-centred.

Current and recent school leavers equate, for example, with Smith's (2007) description of students aged 17-19, who are known as Millennials or Generation Y. These students are characterised by their low boredom thresholds and short attention spans. They are accustomed to being continually entertained and this has shaped their expectations for increased levels of interactive and participative information literacy instruction.

These students are also likely to suffer from IAKT (I Already Know This) syndrome as described by Bell (2007). The main symptom of this syndrome involves students being remiss during librarian-led demonstrations in the genuine belief they already know how to use the library systems. Bell's study shows that students only become aware of the gaps in their own knowledge when they are actively challenged in class. Bell observed that once they identified that they were not as knowledgeable as they first thought, the students experienced a change of mindset and became enthused and engaged during library training.

Research (Conteh- Morgan, 2002; Kamhi-Stein and Stein, 1998) also shows that, like the school leavers, international students prefer practical hands-on exercises and small group discussions to formal lectures. Likewise, one of the key characteristics of mature students is that they are task and problem centred in their approach to learning (Rogers, 1996). This style is appropriate to an active, 'learning by doing' model, whereby the teacher acts as a scaffold for the students, collaborating with them on a range of experiential learning activities.

Learning is characteristic of all real-life activities in which people take on different roles and participate in different ways. People learn by engaging in practice and their participation can be supported in new ways. Teachers can 'scaffold' these activities, enabling learners to develop new forms of expertise (Tusting and Barton, 2006, p. 45).

Based on its review of the first year undergraduate student groups at WIT, the learning support team concluded that the entire first year community may be best served by an increasingly active, participatory approach “involving students in doing things and thinking about what they are doing” (Bonwell and Eison, 1991, p. 2).

Learning is not a spectator sport. Students do not learn much just by sitting in classes listening to teachers, memorizing pre-packaged assignments, and spitting out answers. They must talk about what they are learning, write about it, relate it to past experiences and apply it to their daily lives. They must make what they learn part of themselves (Chickering and Gamson, 1987, p. 5).

3. Remembering Priorities

The library’s decision to incorporate increased interactivity into its information literacy programme was thus influenced by the student-centred strategy advocated at WIT. The team’s first step in re-designing its programme involved articulating its main priority in light of this strategy.

As mentioned earlier, the aim is to ensure that the students become confident, competent library users as a result of the information literacy training. The successful outcome of this aim is facilitated by incorporating practical and specific pedagogical examples and student-centred tasks into our programme. This approach helps students to develop a range of transferable skills and methods for dealing with information throughout their third level educational experience, and beyond.

The team also acknowledges that the fulfilment of this priority relies to a large extent on students’ perceptions of and attitudes towards the library, and that the success of the training programme is directly related to the promotion of the library as welcoming and student friendly. This involves the librarian acting as a friendly ‘guide on the side’ rather than an aloof ‘sage on the stage’. Students take pride of place within this framework and are directed towards independent learning through active learning techniques.

If transportation may be likened to learning, the goal of education is not to move learners passively from point to point but to help them learn to drive themselves. The classroom then ... should be regarded as a training vehicle for students (Gunderman and Wood, 2004, p. 897).

The learning support team has a crucial, motivational role to play within this vision as they claim the responsibility, as Smith (2007, p. 277) defines it, “to spark student enthusiasm for learning”. The active, ‘learning by doing’ approach is critical to the process because it stimulates the students’ intellectual curiosity and encourages them to take ownership of the library’s resources and facilities and to gain an independent attitude toward learning in that way.

4. Re-designing the Programme

Following a number of meetings in Spring 2007, the team re-designed its first year undergraduate information literacy instruction programme over the Summer period. The programme had traditionally been delivered as a two hour blend of lecture and demonstration by the librarian, with a small amount of time for hands-on student practice at the end of the session. In contrast, the revised programme consists of two separate one-hour sessions, encompassing:

1. Introduction to the Library
 - a. Introduces the students to the library resources with emphasis on print materials
2. Introduction to Electronic Resources
 - a. Introduces the students to scholarly and peer-reviewed research from library databases as well as other web resources
 - b. Introduces the concept of critical thinking and evaluation, applied to information sources

With the re-designed programme, much work was needed to develop a number of user-friendly, interactive learning materials for each aspect of training. The paper-based interactive learning materials come in the form of worksheets and are an integral part of the learning process.

All of the worksheets are designed to be user-friendly and visually appealing. These worksheets consist of a mixture of text and graphics, and where appropriate, also include screen captures and 'Top Tip' boxes to emphasise important features and to help promote better search techniques. Students are encouraged to keep their completed worksheets, and to refer to the strategies and guidelines for searching when applying the techniques in their own research and library use.

4.1 Books & Journals

Book and journal worksheets were prepared for the first part of training. The book worksheet requires students to identify various parts of a book, for example, its index and title page, and be able to record its reference details. The journals worksheet is based on students' ability to correctly identify and discuss the characteristics of a journal, either scholarly and peer-review, trade, or popular. The worksheet also deals with bibliographic citations and how to reference a journal article. Each worksheet is designed to fill one side of an A4 sheet and to be completed within five to ten minutes of class time.

The main purpose of these worksheets is to encourage student familiarity with different types of print resources. They also help to introduce some of the main concepts of referencing and evaluation. Students benefit from directly handling the books and journals, and as is evidenced by queries at the library information desk, once they have seen these materials in class, they are more inclined to seek them out again.

4.2 Library OPAC

In a bid to enhance the catalogue (OPAC) demonstration, the team also prepared a worksheet based on its use by undergraduate students. Title, Author, Keyword and Journal searches are highlighted in terms of five problem scenarios. Tom cannot, for example, find books for his ecotourism project, while Kate is wondering in which branch library and under which dewey decimal class number a particular title is shelved.

The worksheet prompts the students to resolve these kinds of practical catalogue problems in terms of a series of questions that they have to search the catalogue to find the solutions to. Students have responded very positively to this worksheet, claiming that it demonstrates the catalogue as a user-friendly and accessible resource.

4.3 Databases

Learning materials were also created for core subscribed database resources, including Science Direct, Emerald, ABI Inform and Wiley InterScience. These learning materials, primarily in the form of worksheets, are based on the main subject areas in WIT. They are designed to fill one A4 sheet, front and back, and to be completed within 15 to 20 minutes during library instruction class time.

In order to engage the students, the team decided to base the worksheets on popular television programmes. For example, by depicting students as forensic scientists, searching for research to solve a hypothetical crime, the *Science Direct* worksheet resembles elements of the *CSI* TV shows (see Appendix 1). Students work through the case, and if they succeed in answering specific questions, ultimately 'solve the crime'. Grounding the learning materials on scenarios like these allowed us to use a narrative to progress the learning, while also making it entertaining and accessible.

Regardless of the theme chosen, or the database focused on, each database learning material is structured to address and explore the following components:

- Basic Keyword Search
- Advanced Search (incorporating Boolean Logic, and other search options)
- Browse for Publications

The Basic Keyword Search is presented to the students as a starting point for research, and the benefits of using alternative keywords and formulating synonyms are emphasised as a way of counteracting the problems caused by a broad range search, such as lengthy, often irrelevant result lists. Following from the Basic Keyword Search, Advanced Search is used to demonstrate the usefulness of smart searching through use of Boolean operators, date limits, and other advanced options.

The difference between the two types of searches is particularly evident in terms of the results lists, with Advanced Search typically yielding more precise, focused results. The Browse for Publications section provides a useful means of demonstrating alternative methods of accessing full-text and specific citation material. This search allows users to navigate into individual online journal titles using citation and bibliographic data, rather than performing keyword searches.

4.4 Websites

The world wide web worksheet is designed to promote good practice in relation to web searching. It requires students to choose a website from the library's *Websites by Subjects* pages and to critique it according to three short questions regarding the author, main purpose and updates. By introducing the concepts of critical thinking and evaluation, this worksheet underlines some of the key principles of information literacy that underpin the evaluation of the quality of web-based information.

5. Testing & Piloting

The learning materials were tested with library staff in mock-library instruction sessions during August 2007. This testing phase proved very useful for identifying problem areas. Some examples include the need to use general questions for the Basic Search section, so that the regular database updates do not directly affect the results. Open questions, such as: "Are the results relevant to the research topic?" as opposed to specific questions on an article that might be difficult to track, are recommended. The testing phase prompted us to refine our worksheet drafts into concise, clearly structured learning materials for the pilot programme.

Piloted during the 2007-2008 academic year, the revised information literacy programme was fully implemented with first year undergraduate students by the start of the 2008-2009 academic year.

6. The Revised Programme

The information literacy training programme is held in the library's electronic learning centre, which caters for twenty five students per session. Following its commitment to active learning, the team has injected increased interactivity into all aspects of the programme. On the basis that 'first impressions count', the team is also conscious of promoting the library in a positive light and the current programme with its explicit emphasis on interactivity is certainly helping to achieve this goal.

The programme follows a workshop type format and is based on a blend of theory and practice. As described earlier, it consists of two sessions: *Introduction to the Library* and *Introduction to Electronic Resources*. The learning support team makes extensive use of interactive learning objects and specially designed worksheets to deliver instruction. Sessions are ideally delivered as two separate one hour classes, so that students attend the *Introduction to the Library* session early in the first semester and return for the *Introduction to Electronic Resources* session a few weeks later.

6.1 Introduction to the Library

This session introduces students to the library and focuses on print resources. Its main objective is for students to understand how an academic library is organised and how to identify and access the wide variety of print resources available.

The session begins with questions that are delivered according to an adapted version of the Cephalonian Method. The main feature of this method as described by Morgan & Davies' (2004, p. 5) is that "students drive the session forward by asking [us] a series of questions from cards distributed as they arrive." We used the method by prompting students to ask questions from pre-prepared flash cards at the start of class in a bid to establish a rapport between the students and the librarian. Small group work in the form of 'hands-on' book, journal and catalogue worksheets also features throughout the session.

Student groups are encouraged to work through the worksheet resources and attempt to discover the answers independently. During this time, the librarian walks around the classroom taking questions, observing each group's progress, and offering suggestions where appropriate. Students are assured that the worksheets are not graded or assessed, and that the librarian is available to help them with any questions they might have. This provides them with the security to experiment with the resources for their subject areas as well as the opportunity to initiate further discussion and debate with the librarian. Such interaction with the librarian acts as a motivating force and although some groups have had to be coaxed along, the majority of students are very open to active participation.

6.2 Introduction to Electronic Resources

This session focuses on the library website and introduces students to the library's electronic resources. Its main objective is for students to be able to use a selection of the key online resources relevant to their subject area, including databases and websites.

In this part of the programme, the librarian demonstrates the use of a topic-specific database, before dividing students into small groups and setting them the task of completing a related worksheet. Students are reassured that the worksheets are for constructive purposes only and are not assessment based, again providing them with a safe environment in which to ask questions and to experiment with the resources for their subject areas. In line with the approach taken throughout the *Introduction to the Library* session, the students are encouraged to actively participate within their group to find the answers to the worksheet questions and to interact with the librarian, who is walking around the classroom observing each group's progress. This 'point of need' assistance provides a further back-up for the student.

Following the principle that "students will search the Internet with or without us, it is imperative that librarians take leadership in making the Internet search experience a profitable one" (Wright, 2004, p. 285), the session also includes a section which focuses on the library's *Websites by Subject* pages and is reinforced by activities contained in the world-wide web worksheet.

7. Feedback from Students & Lecturers

Informal feedback from students and lecturers on the pilot programme, as collected during the 2007-2008 academic year, was very positive. Students appeared to be energised by the 'learning by doing' approach and class participation and self-sufficiency in the use of library resources were certainly evident. Anecdotal evidence from lecturers suggested that student groups left the sessions with high levels of satisfaction and a sense of confidence that they had successfully mastered the learning outcomes of the programme.

In order to gauge more formal feedback, we decided to conduct a small-scale evaluation study of the first year training programme throughout Semester 1 (September to December 2008). This involved designing and developing online end of session feedback forms for students and lecturers.

7.1 Student Feedback

At the end of the final hour of the first year library training programme, all participating students, including a mixture of traditional school-leavers, mature and international students, were invited to provide feedback on their experience of the learning support programme. Feedback was collected by survey, and participation in the survey was voluntary and anonymous.

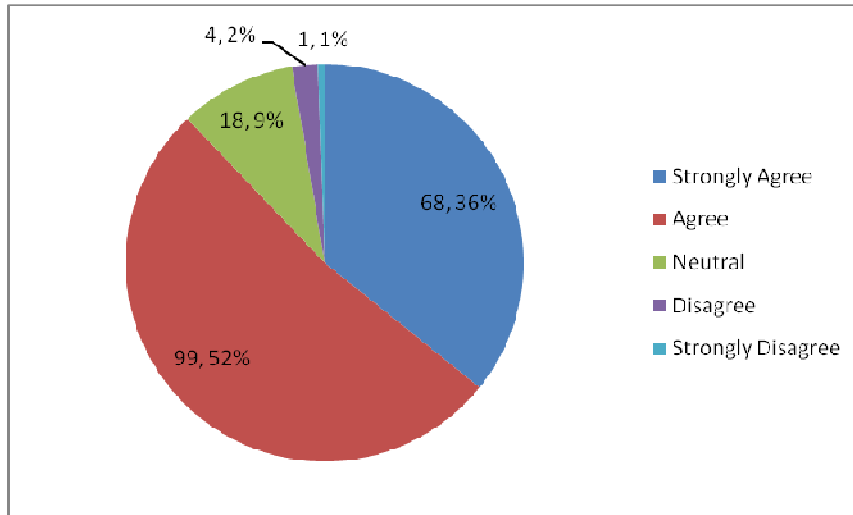
The survey was created electronically, using the Survey Monkey¹ software and hosted securely on the library's website. The survey entailed nine questions. The first question asked the student to identify their Faculty School. Questions two through eight used a 5 point Likert Scale (Strongly Agree to Strongly Disagree) for ranking various statements in relation to the programme. The final question was open, inviting further comments on the programme. In total, 190 responses to the survey were received. This represents approximately 27% of an approximate 700 students who were invited to complete the survey.

There was general coverage across all Faculty Schools, with a slight over-representation of students from the Schools of Engineering and Science as the majority of students in attendance at the training sessions came from these Schools. The number of responses received corresponds to approximately 15% of all first years at WIT.

Feedback received was very positive. When asked if they felt the programme was a practical and useful introduction to the library, 88% (167 respondents) 'Strongly Agreed' or 'Agreed' with this statement. (Figure 1).

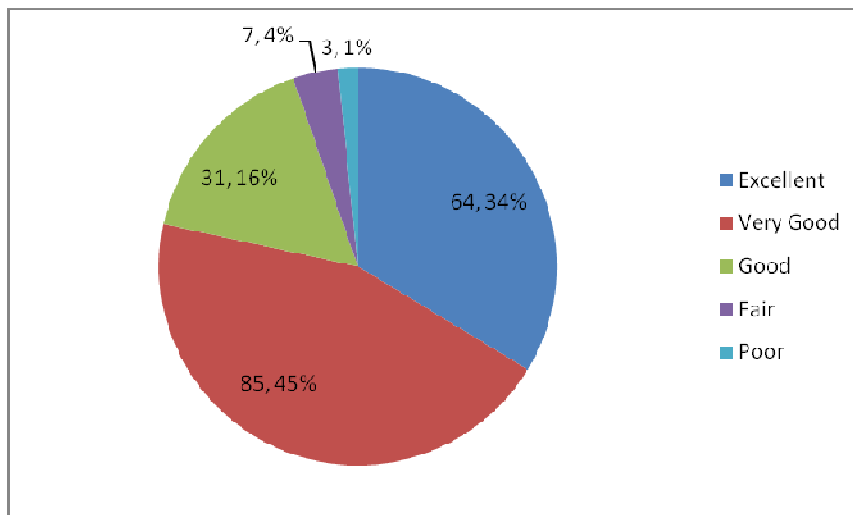
¹ Available at: <http://www.surveymonkey.com/> (Accessed 27 July 2009)
Hegarty et al, 2009. *Journal of Information Literacy*. 3(2).
<http://ojs.lboro.ac.uk/ojs/index.php/JIL/article/view/PRA-V3-I2-2009-5>

Figure 1: The programme was a practical and useful introduction to the library



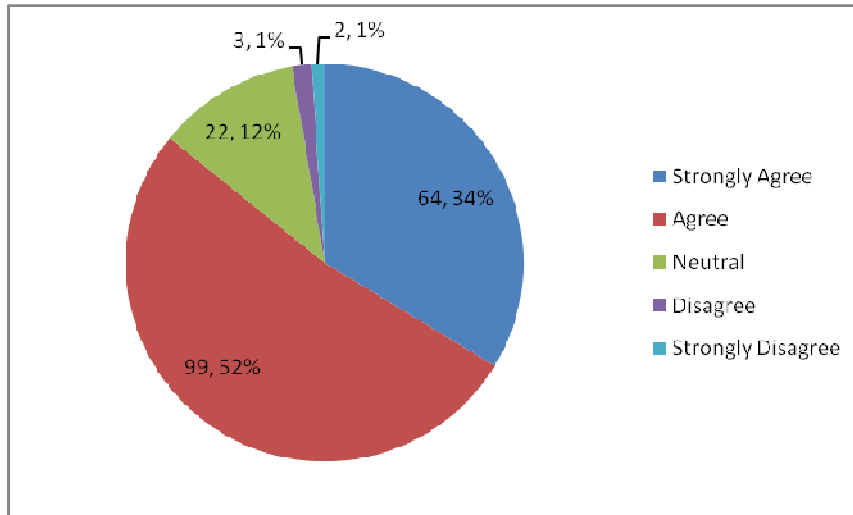
Similarly, 94% (180) rated the programme as 'Good, 'Very Good' or 'Excellent' (Figure 2).

Figure 2: Please rate the overall value of the library training programme



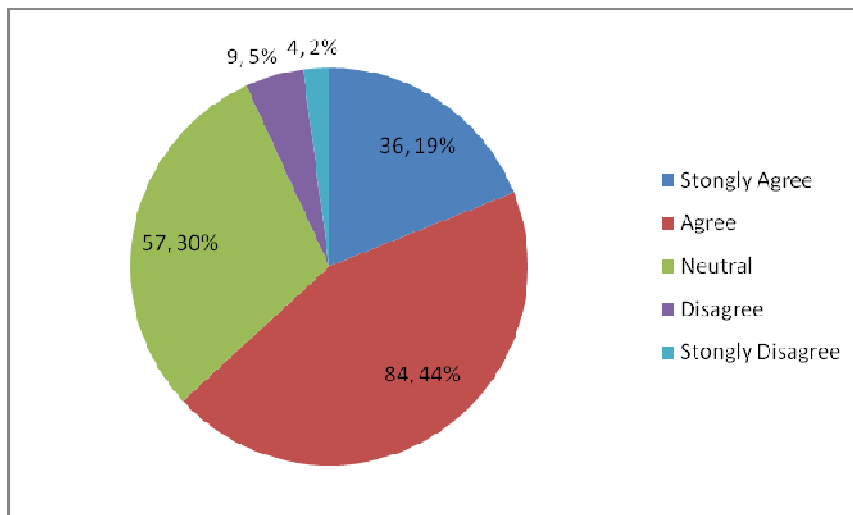
More importantly, 85% of students (163 respondents) either 'Strongly Agreed' or 'Agreed' that they felt comfortable and confident about using the library to source information for their assignments (Figure 3).

Figure 3: I feel comfortable and confident about starting to use the library to source information for my assignments



Finally, when questioned on whether they enjoyed getting involved in group-based worksheet activities, 63% 'Strongly Agreed' or 'Agreed' with that statement (Figure 4).

Figure 4: I enjoyed getting involved in the group-based worksheet activities



Overall, 97% said that they would recommend the library information literacy programme to a future first year student.

Some students used the final, open question on the survey to reiterate and expand on points made on earlier questions, for example:

- *It was helpful. I probably wouldn't have had a clue if I had not attended it.*
- *I was unsure of how to search for information before attending the classes. After the class was complete, I was reassured.*

The comments reveal that the programme is well received by all students: mature; international; as well as the more traditional school-leavers. Perhaps more importantly, students clearly feel their anxiety towards the library and library resources is reduced, and they feel more secure in completing their library and academic work following their attendance at the information literacy programme.

The following comment also illustrates that the overall objective of the information literacy programme, of helping students to make the transition from second to third level education and to become comfortable, confident library users, was successfully accomplished.

- *Using the library used to make me nervous, but now I think I could be confident and have started to use the library very well.*

7.2 Lecturer Feedback

A separate lecturer feedback form was also created using the Survey Monkey software. A link to the form was mailed to all of the individual lecturers who booked training for their students across all of their courses throughout Semester 1 in the 2008-2009 academic year. These lecturers were asked to complete the form on a voluntary, anonymous basis. The main questions on the form probe the impact of the information literacy programme upon student library usage and assignments. A representative sample of 8 lecturers, approximately one third of the total teaching staff population who booked their students for library training, responded to the survey.

Feedback was generally very positive. In accordance with the results of the student questionnaires, the lecturer responses also endorsed the value of the library training programme, for example:

- *I think what you do is fantastic and the feedback from students is very positive.*

Comments of this nature are very encouraging, as they reveal the extent to which the academic teaching staff appreciates the work of the library staff. Further comments illustrate the extent to which lecturers would recommend library training to their colleagues.

- *I'd happily recommend it to my colleagues. I feel that all courses should ensure that their first year students complete these tutorials in order to make them aware of the resources available in the library, both print and electronic.*

This comment is particularly revealing, in that it confirms the view of the students and also shows that the programme has the opportunity to expand due to word of mouth recommendations and endorsement by lecturing staff.

In terms of the impact of library training on assignments, while the lecturers generally agreed that the bibliographies included in the end of semester assignments indicated

that students had not yet used the library to its full capacity, although staff noticed some improvements in the quality of the students' work.

- *The quality of their reports has much improved and the external examiners have commented on this improvement.*

The lecturers ultimately expressed a general optimism regarding the long-term benefits of library training. The survey also yielded constructive feedback from these lecturers in terms of enhancements to the first year library training programme going forward. Recommendations include an increased emphasis on library tours as well as the development of drop-in information literacy sessions.

Based on the feedback received from students and lecturers, the learning support team believes that the evaluation surveys were very worthwhile. We intend to continue to apply them in the longer-term and to analyse them further so as to enhance the programme on an ongoing basis.

8. Conclusion

The learning support team is consistently energised by the creative challenge that active learning presents. Given that we aspire to be ranked amongst those "great teachers" that Boyer (1997, p.23) wrote about, we are delighted that our emphasis on a student-centred, active learning approach is proving so popular with first year classes.

Based on the successful re-design of our first year programme, we intend to continue to apply this model to our range of information literacy programmes for undergraduates and postgraduates provision. Following our overall aim for students to become information literate, lifelong learners, we are confident that the active learning approach to library skills training can be successfully implemented across all levels and disciplines at WIT.

Because information literacy forms the basis for lifelong learning, not only should it be part of the basic course in the first year, but also students should be encouraged to continue building upon their information literacy skills throughout all [their] years of college in other curricular areas. Students' information skills should be developed as they progress both horizontally and vertically through the college curriculum (Meyer et al, 2008 p. 31)

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Appendix 1

Science Direct Worksheet



Waterford Institute of Technology
WIT LIBRARIES

Science Direct



Can you solve that Crime Case with Science Direct?



You are a successful Forensic Scientist, with a tough case to solve.

Can you search Science Direct for research on the use of Finger Printing in Forensic Science?

Basic Search



ScienceDirect

Home Browse Search My Settings Alerts Help

Quick Search Title, abstract, keywords Author

search tips Journal/book title Volume Issue Page

Browse 9,049,921 Articles Why Register?

Carry out a Quick Search for *fingerprints*

How many results did you get?

Take a quick look at the titles of the first 10 articles retrieved.

Do these articles seem relevant to the research topic? _____

TOP TIP

Quick, general searches tend to yield a lot of results; some of which may not be relevant. To focus your results, try the Advanced Search

To ensure our results are more focused to our research topic, we should try an **Advanced Search**

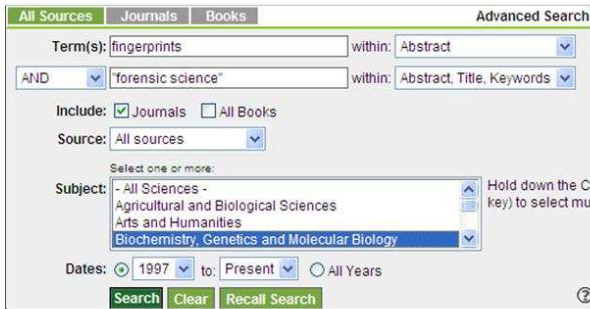
Home Browse Search My Settings Alerts Hel

Quick Search Title, abstract, keywords

Click **Search** in the Green Banner at the top of Science Direct.

You have arrived at the *Advanced Search Page*

Advanced Search



Search for *fingerprints* - Abstract

AND
 "forensic science" - Abstract, Title, Keywords

Subject = *Click on Biochemistry, Genetics and Molecular Biology*

Click Search

How many results have you retrieved? _____

Are they relevant to the research topic? _____

Have you found an article on how to identify fingerprints on wet surfaces? Give the full **reference details** (authors, full article title, journal title, journal volume and issue numbers, as well as page numbers) for this paper

TOP TIP

To focus your search, **combine multiple keywords**

To search a **phrase**, place the text within quotation marks; "forensic science"

To access full text articles, choose the **PDF** option to bring up the chosen Papers

Browse Search



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