

	<p style="text-align: right;">Date : 07/06/2007</p> <p>Spiral Training: Information Literacy Skills Development.</p> <p><i>Susan Scheepers and Maureen Brassel:</i> <i>Medical Library, University of Pretoria, P O Box 667, Pretoria, South Africa, 0001</i> Email addresses: susan.scheepers@up.ac.za Maureen.brassel@up.ac.za</p>
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Abstract

Information Literacy training is more effective when integrated with the curriculum. The Faculty of Health Sciences is presently using a problem-based method of training, which means that students must use a variety of sources to present their case studies.

This paper will give an outline of how we managed to incorporate Information Literacy training into the curriculum of the Faculty, be involved in small group panel discussions with the students/lecturers, marking of assignments and also incorporation of Google Scholar as a partner in the learning process.

1 Introduction:

"I want to know what good is a web search engine that returns 324 909 188 matches to my keyword. That's like saying, "Good news! We've located the product you're looking for. It's on Earth." - Bruce Cameron.

The role of the library in the education and training of our users are of utmost importance to all the staff in the Medical Library. We have to position ourselves as librarians in such a manner that information literacy becomes an integrated part of the curriculum, and that the Faculty of Health Sciences cannot do without the support of the Health Sciences Libraries.

As will be seen in this paper, we have over the past 10 years managed to integrate our information literacy training with the curriculum of the Faculty of Health Sciences in a "spiral" manner throughout their courses, but with the focus on the first 3 years of their training.

2 What is information literacy?

In our context information literacy can be defined as the ability to know when and what information is needed, to locate the information, to evaluate it and to use and apply the information that has been obtained. Being information literate is vital for successful studies at the university as well as for future use in the workplace. Life-long learning is an important aspect of keeping up-to-date, and even more so in the field of medicine, as incorrect decisions on diagnosis and treatment can cause a life!

Among information seekers these days, the phenomenon seems to be 'Google', if you need information the buzz will be: '.. just google it' and with the current availability of internet access, this is easily accessible, and very commonly the main source for information.

The literacy problem that the information specialists are faced with is that of creating a mind shift from access of general resources on the Internet to that of academic resources, and how to utilize these. Therefore, the objective of early involvement in the curriculum gives the information specialists the opportunity to do just that; training in academic resources, differentiating between library catalogue, bibliographic databases and Google Scholar, and how they can be used in collaboration with each other to add value to the end result, projects, study modules and assignments for MBChB (medicine) and BChD (dentistry) studies.

3 Compulsory study modules introduced by the University of Pretoria

Over the past decade information literacy became a very important issue concerning undergraduate students at the University of Pretoria. The Department of Information Science, within the School of Information Technology, together with the main academic library, developed a compulsory module: Computer and Information Literacy. It is currently presented independently of the library on the main campus by tutors from the School of Information Technology.

Due to the success of the training given by the Health Sciences Libraries long before the compulsory course, the Medical Library now has the official go-ahead to incorporate the Information Literacy course (CIL121) in the two Special Activity blocks, namely, SA1 (GNK120) and SA3 (GNK127) in the 1st year of study for the MBChB (Medicine) and BChD (Dentistry) students – thus emphasizing the importance of integrating information skills within the curriculum.

The School of Healthcare Sciences, which includes the Departments of Nursing, Physiotherapy, Occupational Therapy, Human Nutrition and Radiography, has also obtained the official go-ahead for the Health Sciences Library to provide the Information Literacy course (CIL121) as part of their curriculum – which makes it the only library on campus with this opportunity –

as stated in the official Regulations of the University of Pretoria Yearbook under the Faculty of Health Sciences:

- “- All courses will be presented by the staff of the Academic Information Service (Library) on the Prinshof Campus (in consultation with the School for IT);
- Students who pass the GNK120 and GNK127, will be exempted from the CIL121 course”

4 Research question

How effective is spiral training, in conjunction with the curriculum, when teaching information literacy to our medical students?

5 How do we go about anchoring information literacy skills in the Medical Library?

5.1 Background

The Faculty of Health Sciences at the University of Pretoria consists of four schools - the School of Medicine, School of Healthcare Sciences, School of Dentistry, and School of Health Systems and Public Health.

As part of the international community and changing national needs, faculty members noted the latest trends in medical education in the 1970's and 1980's, with the emphasis on problem-based learning, community-based training, information skills in the virtual environment and computer-based training. The competencies of the doctor of the future, aligned with the needs of the community in a changing South African environment, prompted the development of a new curriculum where doctors are taught to practice independently, work in the community as well as in “high tech” surroundings, and have the skills and attitudes to successfully survive in the future.

After extensive research and consultation with overseas institutions the Faculty decided on a hybrid model of a "problem-oriented" based model. Ten years ago, in 1997, the curriculum was implemented for the first time.

The library is considered a cornerstone of this curriculum, and information skills play an important role in the student's studies. This means that the library and Faculty work in close cooperation in order to integrate these skills as part of the curriculum.

5.2 Involvement

The Information Specialists have been involved with training of the 1st year students for a number of years, but have recently felt that it was important to have additional time allocated to us in at least the 3rd year to give more in-depth training in database search skills. Evidence-based medicine has become a very important part of the student's curriculum from their 3rd year

and they must be able to search the Cochrane Library database for systematic review articles. The Cochrane Library is a small, growing specialised database on evidence-based medicine and in the past we only had 30 minutes to demonstrate this database to 60 students at a time. A demonstration is never as good as hands-on training where each student is able to experience the intricacies of searching for himself. Last year we were approached by the lecturer of Block 9, which is a third year course and includes a 2-week module on Evidence-based medicine, and we were given 3 hours with smaller groups in which we could provide more specific training, including hands-on practice. This also gave us the opportunity of including more in-depth training on Medline as well as how to retrieve Evidence-based information on this database. Medline is the definitive medical database for our students but really too specialised for training in the first year. Therefore even though students are introduced to the basics of Medline in their first year they tend not to use it immediately.

We are also involved with the creation of web pages for each student block from the 1st to 6th year. This enables students to access their specific block for information and online lectures at any time. WebCT (now replaced by ClickUP) was the official student tool implemented by the University of Pretoria for online lectures. However at that time, it was not available for undergraduate medical studies.

The involvement in a student block starts off with a meeting held by the personnel involved in the lecturing of that specific block, the head of the Education Office, the head of the Computer laboratory as well as the Information Specialist for that specific department. By using the curriculum framework, relevant information from different sources are selected and made accessible via an allocated web page.

6 Spiral Integration with the curriculum

Basic orientation in their first year consists of training and the use of the library catalogue, journals, searching of databases, referencing techniques and the Internet. In their third year the students are given more in-depth training in searching methods and skills on how to effectively retrieve evidence-based medicine information on relevant bibliographic databases. This is what we mean by “spiral” training when the student’s knowledge-base spirals upwards as his knowledge is broadened and strengthened from one year to another.

6.1 1st Year

As part of the orientation week - the Medical Library gets 4 afternoon periods of 3 hours each during July as part of the Special Activities (SA1) Block. During these sessions the students are introduced to the library and are trained to use the library catalogue, electronic journals and web pages in such a way that they can fully utilize the sources available to them. An important function of medical studies includes research and effective

utilization or gathering of data from resources and databases.

During the first week of October we have the students again for several visits for the SA3 Block. The programme for each Special Activity block is as follows:

SA1 (GNK120) - Orientation

The First year Medical and Dental students number approximately 320. The students are divided into 4 large groups - A B C and D. These groups rotate between 4 different departments for practical work - one of the departments being the library. The A group would then be at the library on the Tuesday afternoon. (The B, C and D groups will rotate and visit the library on the Wednesday, Thursday and Friday and follow the same procedure). This group is sub-divided into 8 small and more manageable groups and then trained by an Information Specialist. It has a more personal touch and we make better contact with the students. All the Information Specialists follow the same programme, using the same PowerPoint presentations for each topic. The theory is then followed by a hands-on practical exercise, which each individual student must complete and submit. Each practical has different subjects/book titles/journals, etc so as to avoid students copying the answers from their colleagues! We then mark these practical and the marks are sent to the Department in charge of this Special Activity Block. These marks also form part of the compulsory CIL121 course for Information Literacy, which must be passed by every first year student - pass mark 70%. Should a student fail, the practical must be repeated.

The programme is very intensive and to enable the students to search successfully for information, locate books and journals and correctly reference their assignments during the next couple of months, all of the following must be covered:

- General Orientation of the library's rules:
 - o Library registration
 - o Network registration for login/password to use the computers
 - o Access to the library
 - o Photocopying
- Types of information sources
- Library's Online Catalogue
- Electronic Journals
- Internet
- Referencing, using the Vancouver referencing style
- Plagiarism / copyright
- Basic bibliographic/full text database e.g. Health and Wellness Resource Centre (an easy database to start with, which can be searched for basic information and includes the Gale Medical

- Encyclopaedia and other reference works);
- Tour of the library
- Practical Exercises

Assessment and Feedback of SA1 (Special Activity 1)

A summary of comments by students:

Was the content of the training comprehensible and useful?

- Complete programme was useful
- Learnt how to find different sources
- The Vancouver technique / referencing very useful
- Now understand the procedures of finding books/journals and references on electronic databases, the library and practical use thereof
- Hands-on training
- Library registration and relevant information
- Better understanding of computers and information searching in the library
- Informative power point presentation / (some said too long)
- Google Scholar was new to me / Advanced searching on Google Scholar

Was the presenter competent and how was their attitude towards the group?

- The computers are user-friendly and librarians are helpful
- Friendly and helpful

General comments:

- Everything about library useful
- Too long – need whole day
- Shorter programmes
- Working on computers from beginning
- A lot of information was new to me
- A break with tea/coffee and snacks
- Login – complicated
- Divide workload into different days
- No need for the test
- A more in-depth discussion on the databases

SA3 (GNK127) - Basic Orientation and database searching

This is the second part of the CIL121 training, which takes place during the first 2 weeks of October. This Special Activity 3 Block is on "People and their Environment" and involves the Departments of Family Medicine, Public Health, Psychiatry and the Library.

This block runs for 2 weeks, in which time the students are given the opportunity of evaluating a patient holistically, i.e. not only his/her medical

condition but also the environment in which he/she lives, including the psychosocial background of the patient. The students are once again subdivided into small groups of 6 or 7, and each group is sent to clinics, mainly in the rural areas, where they interview a patient with a medical condition, e.g. arthritis, TB, HIV, schizophrenia. This must be documented as a case study and must include the biopsychosocial aspects of the specific patient. If necessary, the students may re-visit the patients. They usually find this exercise an eye-opener as to how people in rural areas live, how clinics are run, and in the case of a city area, interviews with drug addicts, prostitutes, homeless people, etc

Where does the library come into all of this? During the first week the students once again come to the library for:

- Quick refresher on SA1 training (mainly to ensure that they are not having any problems using the Library catalogue, Electronic Journals and Referencing Style). We go through the following with them, viz:
- Internet and evaluation of web sites
- Google Scholar
- Bibliographic databases
 - African Healthline (for SA articles)
 - Medline – basic searching
 - MD Consult (which has 39 eBooks, full text journals, patient handouts on specific diseases, practice guidelines, etc)

This enables the students to access other bibliographic databases for information on their case studies. For their written assignments and literature study they must use a minimum of 3 books, 5 journal articles, 3 Internet references and the biopsychosocial condition of the patient seen by the group, must be emphasized.

Besides the written assignment, the students also present their case studies to student groups as well as to 3 lecturers from the relevant participating Departments and the Information Specialists. When doing the presentation the students are allowed to be as creative as they please with some surprising results, for example, a chat show, a drama, a video presentation, etc.

Both the presentation and the written assignments are formally evaluated with the library being allocated a percentage of the marks on the written assignment which forms part of the exemption for CIL121.

Assessment and Feedback of SA3

Number of Respondents: 203

KEY: 1 2 3 4 5

1 = Poor 5 = Excellent

	Mean
1. How did you experience the organization of the sessions?	3.98
2. Was the content of the training useful and comprehensible?	4.14
3. Was the staff member that did the presentation clued up and what was his/her attitude towards the group?	4.45
4. Were the sources (electronic and paper) available and could they be found?	3.90

Any comments/suggestions to improve future training:

- Sessions shorter and more computers for hands-on training
- Training satisfactory, useful and efficient
- Staff doing an excellent job, friendly and helpful
- Difficult to find relevant keywords for searching.
- Confused about search engines. Like to learn more about them.
- Very informative and helped a lot when searching

Although we are very fortunate that time has been allocated to us within the curriculum for Information Literacy, we have recently felt a need for more intensive, follow-up training for students on Medline.

Even with the training the students are given in their first year, which includes Medline, they tend to take the easy way out by searching Google. The problem with Medline is that the references they find are too specialised for their needs in the first year and sometimes even in their 2nd year. They usually want to find full text information quickly and easily, and Google does just that. This may suffice in the first two or three years, but when they are more advanced in their studies they need more academic and specific information.

During 2006 the Academic Information Service of the University of Pretoria decided to use the Google Scholar search engine as a federated search engine and all our full text journals are linked to Google Scholar. We train and give students access to Google Scholar, and in this way ensure that they are able to access over 30 000 academic journals, to which the University of Pretoria subscribes, on all subject areas. Therefore, instead of seeing Google as a threat we have incorporated Google Scholar as a partner in the learning process.

In the medical field however, Medline is a database that indexes more than 5 000 biomedical international journals and if students are taught how to search it correctly with the MeSH thesaurus, they can focus and limit their searches to find what they are looking for in a very more efficient and reliable manner.

6.2 3rd Year: Block 9: Pregnancy, childbirth, the neonate, child growth and development

During 2006, Block 9, which is one of the third year courses, gave us what we had been hoping, the opportunity to give more advanced training. This emphasizes the Spiral training concept to which we refer in this paper. The students have to do Special Study Modules based on Evidence-Based Interventions and must be able to search the Cochrane Library. This is a specialized Evidence-Based database with systematic Cochrane Reviews and meta-analysis graphs. In the past we only had 30 minutes to give a quick demonstration of the database and explain what is meant by systematic reviews. The students were then invited to come and see us if they needed help.

The lecturer approached us and gave us ample time for more detailed and hands-on training for the students. During this block the module on Evidence-Based Medicine runs for two weeks. The total period for this block is 8 weeks and the students are divided into 4 groups, viz A, B, C, and D with each group rotating for 2 weeks at a time for this module. Group A is subdivided into 4 smaller groups, with 2 groups coming on the Tuesday and 2 groups on the Wednesday for 3 hours each. We are therefore able to accommodate each group of approximately 16 students in 2 computer laboratories - which means that each student can work on a computer. (Thirty-two students per day).

Besides training them to use Cochrane we are also able to give more in-depth training on Medline, incorporating retrieval of Evidence-based medicine references. The following is included in the programme:

- Searching skills:
 - Boolean Operators
 - Search Strategies
 - Use of the Thesaurus (MeSH)
 - Types of Evidence-based medicine references
 - Medline
 - Cochrane Library

The students complete their assignments and submit them to the lecturer the Thursday morning of the following week. At the same time their search strategies, for both Cochrane and Medline are submitted to the library. The following day, the lecturers assess each group for 30 minutes when they are questioned on their topic and have to search for a relevant article on the Cochrane database. The same group is then assessed for their search strategies when feedback is given and discussed. Should any one of these assessments be unsatisfactory, the group and/or individual must repeat the assignment and/or search strategies.

In the following six weeks the same procedure is followed for Groups B, C and D.

Block 9: Assessment and Feedback

Number of Respondents: 206

KEY: 1 2 3 4 5

1 = Disagree entirely/Extremely poor 5 = Agree entirely/Very good

	Mean
1. I am now able to do a better literature search on Medline	4.27
2. I am very comfortable with searching the Cochrane Library	4.03
3. The content of the AIS training was very useful	4.14
4. The content of the AIS training was comprehensible	3.89
5. The staff member who presented the training course was sufficiently knowledgeable	4.09
6. The staff member who did the training was positive towards the group	4.39

General Comments:

Recommendations:

- Teach all 1st year students how to search Medline correctly – I now really understand exactly what to do.
- Start Cochrane in 2nd year.

Format and approach:

- One session not enough to learn everything.
- Shorter sessions – maybe 2 or 3
- More time to practice – under supervision/guidance
- More staff members to assist in teaching sessions (practical)

Request for guidelines and handouts:

- Clearer guidelines
- Step-by-step instructions on paper

Should anything be changed?

- Many responded with – No, training good, well organised

Other comments:

- Subject given was simple and unnecessary
- Prefer session to be in morning when more awake
- I'm confused right now
- Boring

How did you benefit from the training?

- Taught me how to search for right information, find it and analyse it
- Do not need to search Google anymore – can now find more relevant information

- Meaningful training – more competent in searching
- Can now search Cochrane
- Introduced us to new means of gathering information – good for the future
- Learnt to search effectively
- Excellent
- Improved searching skills
- Could have been less dragged out and more to the point
- Now know how to find evidence-based information

7 Web pages and ClickUP (Click University of Pretoria)

7.1 Web pages

A pilot project on the development of web pages for different blocks was started during 1999. The opportunity of combining a number of information sources on one page, but also leaving choices to students to develop their information literacy skills, was a way of integrating the library with the curriculum and linking eBooks, which is an alternative to purchasing multiple copies of textbooks. The first reaction from a number of faculty members was that we presented an answer for a question never asked, and within one year web pages for Blocks was a prerequisite.

These web pages have become part and parcel of each Block. Approximately 6 weeks before the commencement of the Block, a meeting is held which includes the lecturing staff of that specific block, the head of the Education Office and the Information Specialist for that specific department, after which a study guide is printed for the students. The Information Specialists are responsible for integrating relevant information on the web pages which includes library sources, databases, case studies, lectures, audiovisual material and any related information needed for the specific student block.

These student block web pages are also integrated with the Spiral process as informal information literacy training (without marks and assessments) takes place within some of these blocks, and the formal training in the first and third years forms the spiral support to the information provided on the web pages ranging from the 2nd to the 6th year of study.

7.2 ClickUP

The University of Pretoria has also, for the past couple of years, provided telematic education and online lectures, assignments, chat rooms, exam results, etc for post-graduate and distant students. This, however, has also recently been used more extensively for undergraduate online support as well. The Departments of Anatomy and Physiology are the first Departments of the Faculty who have placed all their modules and lectures on ClickUP (Click University of Pretoria), with a link to our student block web page.

As from this year, ClickUP will slowly begin to phase in the Student Blocks onto the ClickUP system, which means that all lectures and possibly the block books, will be online with links to the library Student Blocks web pages.

8 Conclusion:

In conclusion therefore, how effective is spiral training, in conjunction with the curriculum, when teaching information literacy to our medical students?

The results of the analysis on the evaluation questionnaires received from the students indicates that spiral training on information literacy, in conjunction with the curriculum, appears to motivate the students to search the bibliographic databases for their journal references and they definitely make good use of the electronic journals. They have also become very much more aware of citing their sources and applying the correct referencing style. The lecturers have also found that there is a general improvement in the quality of the assignments submitted by students and their referencing skills have greatly improved. The fact that the lecturers are prepared to allocate time for Information Literacy within the curriculum is proof that they are satisfied with the results. Taking all of this into consideration, as well as the positive comments from the lecturers it can be accepted that we are succeeding in achieving our objective.

The spiral also continues with our postgraduate students, as the Information Specialists are involved with various forms of training, ranging from individuals to group training. Continuous training is provided in modules relating to research and/or scientific writing where we are asked to give training on the following topics, for example - impact values of journals, ISI citation databases, Refworks as a tool for managing references and current awareness for keeping up-to-date on research.

In the future we hope to improve the training by taking note of comments made by the students. Additional computers, which will help towards more hands-on training, will be installed during the course of the present year. We are also in the process of having our student block web pages incorporated into the ClickUP system, which means that the students will have a one-stop online access to their study material.