

# *Training for Digital Reference: A South African Experience*

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The ever-changing digital environment has had significant impact on the scope and nature of reference work. The question explored in this article is whether the necessary skills for efficient digital reference librarianship are being taught in library schools. For students to become effective practitioners in the digital environment they need not only theoretical knowledge but also practical experience in the application of digital reference technology. This article provides an overview of a practical course in reference work that was devel-

oped at the Department of Information Science, University of Pretoria, South Africa, in 2005. Practical sessions in the computer laboratories covered a range of synchronous and asynchronous technologies providing students with insight into and hands-on experience with digital reference. Continuous assessment throughout the course, and feedback from the students, identified possible shortcomings in the practical training programme, and specific suggestions are made to address these in the future.

## *Introduction*

It is an acknowledged fact, and perhaps even superfluous to state, that the emergence and rapid development of technology has brought about a qualitative and quantitative transformation of the whole information industry (Limb 2004). Digitisation of resources and widespread access to the Internet where theoretically "you get the world" (March 1997) has changed the way people seek and use information. This has had considerable impact on libraries and library services and particularly on the way that reference services are provided (Chan 2005; Janes, Hill & Rolfe 2001; Stahl & Kresh 2001).

Reference services in the online digital environment take on many forms and various descriptions of digital reference are found, ranging from the conservative "use of intermediation to answer questions in a digital environment" (Lankes 2004), to the all-encompassing "network of expertise, human intermediation and resources placed at the disposal of users in an online environment" (Silverstein 2003). The overall consensus, however, is that digital reference services, no matter how they

are called, should be seen as the application of new technology to familiar services; providing help to clients in their quest for information by reaching them beyond the confines of a physical library.

Traditional reference, however, does not "translate seamlessly into digital reference" (Stahl & Kresh 2001). To be able to meet the challenges of successful service provision in the 21st century, reference librarians need a wide range of skills, expertise and knowledge covering the overall technical and human spectrum of digital reference (Anderson 2001; Heye 2006; Limb 2004). With this in mind, one of the most significant questions that is being asked in the reference arena at the moment is whether the necessary skills for reference librarianship in the digital environment are being taught in the traditional reference classes at university and/or college.

As early as 2000, Lankes, at the Virtual Reference Desk Conference, called attention to the need for virtual reference training (Harris 2004). Formal and informal surveys of syllabi for reference courses and specifically "digital reference" courses in America show a very small percentage of practical hands-on assignments, with a prevailing

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focus on collections rather than on services (Harris 2004). An informal survey of reference courses at South African universities showed a similar lack of practical digital reference experience.

This article reports on a course in practical reference work that was introduced in 2005 at the Department of Information Science at the University of Pretoria with the aim of addressing the above question. Although the module in reference work consists of both a theoretical and practical component, the article concentrates on the practical component, discussing its implementation against the background of the challenges faced by the reference specialist in the digital reference environment. Problems experienced by the students, and valuable feedback received during the course of the semester, afforded the opportunity to look into areas that needed to be refined and improved with the aim of helping our students acquire the essential reference skills and competencies to cope in the ever-changing technological world.

### *Approach to the reference course*

The Department of Information Science at the University of Pretoria is one of the largest of such departments in South Africa, offering courses in *inter alia* Library and Information Science, and prides itself to be on the forefront of information technology and its relevant applications in the various courses on offer. Taking this into account and looking at the outside world of digital reference, the need for a practical hands-on experience of the online digital reference environment for the students enrolled in the reference course in 2005 was self-evident. A previous endeavour between 2002 and 2004 that utilised WebCT to provide a Web-based reference course addressed the issue of exposing students to the online environment. Within the rapidly changing world of reference this, however, proved to be insufficient. Simulation of the reference experience alone was not enough. What was needed was a firsthand experience of real-life digital reference.

The module in reference work, which is offered in the second semester of the second year of study, consists of both theoretical and practical components. Regular classes are scheduled for teaching most of the theoretical work and one three-hour session per week is scheduled for practical ses-

sions in the computer laboratory. The curriculum for students in library science covers in their first and second years, amongst others, compulsory courses in basic computer and information literacy, basic programming, as well as a course in advanced information searching, evaluation and retrieval skills.

Experience with previous years' students has shown that, in spite of this seemingly adequate skills basis, many students still have difficulty in transferring these skills and competencies and applying them to the practical reference environment. Many of the students registering for the course in reference work at the department come from historically disadvantaged communities and educational systems, and often have not had early and widespread exposure to the latest technologies. This specific class of 2005 comprised 12 students, of which, prior to coming to university, only four had been exposed to some form of computer-based education at high school. With the development of the practical component of the reference course this had to be taken into consideration. Although there was no deliberate aim to concentrate on specific learning theories or computer-based educational theories, it is appropriate to mention some approaches that influenced the way in which the course was implemented.

We firstly found it essential to follow a learner-centred approach, applying elements of cognitive learning theory throughout the course. As many of our students may not be fully at ease in the sophisticated technological environment it is important to show concern and support on the emotional as well as learning levels of the students, planning content, where possible, around their needs and understanding in order to bring about successful learning (Anderson 2004; Zheng & Smaldino 2003). In the relatively small group of students taking the course in reference work, this was not difficult.

Interactivity is regarded as one of the crucial elements of successful online courses (Marold 2002; Zheng & Smaldino 2003), and effective use and meaningful application of information technologies in relevant situations form the core of efficient reference work. From a very practical and logical point of view therefore, it was imperative that active participation and interactivity form the foundation on which the practical component of the course would rest.

Taking into consideration the realities of digital reference work where both individual and teamwork are important, the practical sessions in the computer laboratories aimed at balancing personal with group learning. Sessions comprised supervised self-paced lab sessions where students were able to individualise their learning experience (Marold 2002), as well as opportunities for group learning experiences.

Theory and practice need to inform each other. As compulsory classroom teaching periods form part of the reference course, these meetings were used to provide sound theoretical grounding of the area of reference work. In addition, discussions were held around the areas that were to be covered in the practical classes in the computer laboratories with the aim of minimising fear/apprehension whilst introducing students to unfamiliar concepts (Hirko & Ross 2004).

The *main goals* for the course were therefore the following:

- To develop a practical course that made full use of all, or most of, the tools available in the digital reference environment.
- To effectively train students from diverse backgrounds with varying levels of competencies and knowledge of the relevant information technologies.
- To make sure that this practical component formed an integral part of the overall theoretical course.
- To make this a course that not only provided the skills and competencies needed to deal with the digital reference environment, but also to truly add value to the students' educational experience.

*Continuous assessment* throughout the semester was achieved by means of:

- Evaluating students' technological skills and knowledge of the subject matter during the practical sessions.
- Giving marks for level of involvement and participation in the practical sessions.
- Setting assignments in which they had to compare theory and practice.
- Asking test and examination questions that tested students' insight and connection of prescribed literature to their practical experience.

*Feedback from the students* themselves provided information on their personal experiences in interacting with the technology, and also their percep-

tions with regard to the advantages and disadvantages of the approaches followed for this course. This feedback was obtained by means of:

- Informal discussions during and after practical sessions.
- Essays asking for information on their personal experiences of the various technologies used.
- Comments provided on formal evaluation forms that have to be completed anonymously by all students at the University after completion of a course. In addition to answering the standard compulsory questions on the forms, the students were asked to add specific comments regarding the practical component of the course.

### *Implementing the practical course*

Practical classes were conducted in a computer laboratory under the supervision of the lecturer responsible for the course as well as an experienced senior student from the department to assist in one-on-one contact. The practical sessions covered the following.

### *Getting to know the digital reference arena*

The initial exercises during the practical classes were aimed at helping students to develop some solid understanding and knowledge of the area of digital reference. The most natural way of attaining online knowledge in general is to find web pages most useful to the topic under investigation (Hirko & Ross 2004; March 1997). Various reference sites that were thought to be of value and interest were thus provided for students to explore and appraise.

Thereafter the students were expected to find and visit relevant sites on their own, very much in the spirit of "treasure hunts" as expounded by March (1997). This was aimed at providing them with the opportunity of applying their newfound understanding of reference sites as well as exercising their skills in negotiating the Web successfully themselves.

### *Creating websites*

Students furthermore had to show that they were able to apply in practice the knowledge gained in the website exploration exercises. In the digital environment the reference worker's role has gradually expanded to include the challenging

role of getting involved in the actual structuring of websites. The design of online systems focuses on the needs of users with the aim of guiding them in finding relevant information, and is a natural extension of what reference work has traditionally entailed (Heye 2006; LaGuardia 2003; Rodkewich & De Vries 2001). Building on the initial searching exercises and subject literature covered in the theory classes, students had subsequently to design their own digital reference site as a "subject reference librarian" incorporating all the relevant services, links and resources necessary for the provision of an efficient and effective reference service.

### *Experiencing digital communication technologies*

The next major challenge was for students to experience the practical application of digital communication technology. The reference interview is regarded as the heart of the reference transaction, and all courses in reference librarianship include training in how to conduct a reference interview with the aim of effectively communicating with library users (Buckley 2006; Ward 2003). Three areas of communication were covered in the course, namely e-mail reference interviews, chat communication, and voice and video technologies.

- Traditional digital reference interviewing makes use of, amongst other things, e-mail as an asynchronous method of communication. For the practical sessions students were paired off to conduct simulated e-mail reference interviews, taking turns to act as the client and as the reference librarian. "Clients" were expected to prepare in-depth research questions to ask, and the "reference librarian" was expected to conduct a proper reference interview with the client and subsequently provide the best available answers in a professional manner. The aim of the exercise was twofold, namely to learn to understand how a client experiences digital communication, and to experience reference interviewing without face-to-face contact, providing meaningful feedback, and connecting the client to relevant sources.
- Online chat is a popular form of communication on the Internet and has become an essential way of interacting in the virtual reference environment. Reference librarians therefore need to learn to use chat software and feel comfortable with the Internet chat protocols and netiquette (Bobrowsky, Beck & Grant 2005; Lindbloom *et al.* 2006).

Providing practical experience of computer-mediated reference interviews in a synchronous virtual environment initially proved to be a problem as the relevant software was not available in the computer laboratories. We were, however, able to download mIRC share-

ware – a popular shareware Internet Relay Chat client for Windows® – for use as the tool for interactive chat sessions. A specific reference related topic for discussion was decided upon, and students were expected to prepare for the discussions by reading relevant articles provided. They were then divided into chat groups containing four students, with an experienced person brought in specifically for this session to serve as facilitator. The main aim of the exercise was for students to experience real-live chat contact in a group, and thus become comfortable with the chat communication environment.

- Even though most of the current virtual reference programmes rely heavily on text chat, it is felt by some that the phenomenon could be short-lived with the coming of reliable Voice-over-IP and the rapid development of reliable Video-over-IP (Lindbloom *et al.* 2006). VOIP technology brings together various channels of communication, and makes this an attractive and practical option for the reference interview.

Due to lack of access to relevant technology, it was not possible to provide the students with hands-on interviewing experience in either voice or video technologies. However, we were fortunate to arrange that they sit in on Voice and Video-over-IP discussion sessions conducted between University of Pretoria students (taking another course module) and students from a university in South Carolina in America.

### *Assessment of a digital reference service*

The effectiveness of any product or service can best be determined by asking the users for their opinion and evaluation of the product/service. This would also be a viable argument in determining the effectiveness of digital library services (Chowdhury 2002; Lindbloom *et al.* 2006). For the final part of the practical reference course, we regarded it as essential that the students experience digital references services in a real library so that they could evaluate the effectiveness of such as service from the personal point of view of a user.

The library at the University of Pretoria makes provision for both e-mail and chat reference services. The students were given the assignment to submit pre-determined subject-specific (in contrast to general reference) questions *via* the e-mail reference service, as well as use the chat facility provided by the library for similar queries. The staff at the reference desk were alerted to the exercise by the lecturer a week ahead of time, and were also provided with a list with the names of students in the class. After availing themselves of the digital reference services, the students had to write a report on their experience as a "user" of

the services, and the way in which their transactions were handled.

### *Outcomes of the practical sessions*

#### *Creation of a website*

Ten out of the total of twelve students were able to design a website on their own. Skills gained in the compulsory computer literacy course and the basic programming course contributed to this, and they thoroughly enjoyed this part of the activity. Searching for relevant reference sites and resources, however, proved to be a problem for at least two thirds of the students, indicating a worrying lack of proficiency in searching skills. More than half of the students also showed a lack of ability to effectively organise and integrate the information provided by them on their websites.

In their feedback, general complaints were levelled against the fact that in the formal evaluation of their sites by the lecturer, subject knowledge and content, as well as organisation and structure of components, were regarded as more important than how 'pretty or nice' their sites looked.

#### *E-mail reference interviews*

Interviews were evaluated as far as possible according to guidelines found in the literature and covered in the theory classes, such as taking into consideration whether open-ended questions were asked, the paraphrasing of questions, appropriate sources and/or referrals provided, and user-instruction given to the "clients".

Senior library science students at the department are expected to use the e-mail addresses issued to them by the university at registration actively for communicating with lecturers. The technology was therefore not new to them and they regarded conducting a reference interview by e-mail an interesting and novel idea. Although they were comfortable with e-mail, the students exhibited varying degrees of competency in this exercise. Four of the six client-reference librarian couples, for example, were clearly unable to apply the basic interviewing skills and techniques in the e-mail environment, although they had proved their proficiency in face-to-face interviews conducted in the theory classes. The one major complaint raised by 80% of the students in their feedback was that they

felt considerably inhibited by the fact that they were expected to use proper English – no SMS-type language – whilst conducting the interviews.

#### *Chat sessions*

The analysis of chat transcripts is regarded as a viable means for training in reference interviewing skills (Bobrowsky, Beck & Grant 2005; Ward 2003). Due to the fact that the chat sessions were not conducted as reference interviews, it was not possible to evaluate the transcripts strictly according to interview standards, so factors such as level of participation, and knowledge of and insight into the topic under discussion had to be taken into consideration. Correct use of language and correct typing were not evaluated.

Only two students in the class had ever used chat before. The rest of the group were therefore thrilled with the idea of this new experience. From the transcripts and the verbal student feedback provided it was clear, however, that they became frustrated by their inability to type quickly enough to respond to questions asked by the facilitator in the sessions. More than half of the students also found it very difficult to focus and organise their thoughts sufficiently in order to follow the arguments brought up during the discussions. Two of the students gave up and failed to take any further part in the session even though they were observed by the facilitator and a special effort was made to involve them again.

#### *VOIP sessions*

These sessions proved to be a valuable exposure to technology that not one of the students had ever heard of before. They were initially overwhelmed by the experience of actually seeing and hearing fellow students in another country in a live situation. Their formal feedback indicated that they regarded VOIP theoretically a very valuable, and probably the ideal, tool for reference, but with the exception of one student, they all felt that they would personally feel uncomfortable operating in such an exposed environment.

#### *Evaluation of digital library services*

Students were required to evaluate their e-mail and chat interviews according to their personal

experience as a user of the services. Half of the students in the class expressed their disappointment with this experience of real digital reference. Reasons for this can only be speculated upon. The students were in the first place inexperienced users of digital services and their expectations, especially after being exposed to the possibilities of excellent service as expounded in the literature, may merely have been unrealistically high. The formulation of their queries could also have been weak or unclear, and the subsequent responses therefore not according to what they expected.

### *General comments*

In their general feedback the students voiced the following:

- The majority of the students commented on how much they enjoyed the process of learning new skills, and the fact that they were given the chance to "try out new things". Only two of the group did not express specific positive opinions.
- During an informal discussion in the theory class, they also expressed the need for an opportunity to do actual practical work in the university library with the aim of experiencing first hand digital reference service provision.

### *Looking towards the future*

The aim of the course in reference work is to provide students with sound theoretical and practical training for application in a future work environment. Various aspects of the practical reference course presented us with problems that we had not foreseen. The most important areas which were highlighted and need to be addressed in future courses are: i) the question of skills transfer and application, ii) additional Internet access, iii) acquiring appropriate software, and iv) practical experience in a real digital environment.

### *Skills transfer and application*

#### *Applying existing knowledge and skills to reference work*

The problem of getting students to understand the connection between training provided in other subjects, and the importance of applying the ac-

quired knowledge and skills to reference work, is an important issue that needs serious attention.

Information searching and retrieval, evaluating sources in terms of relevancy and usability, and the conceptualisation of how services can be provided through the organisation and structuring of information, are essential competencies in a digital reference situation. All students who enrol at the University of Pretoria do a semester course in computer literacy as well as a compulsory semester course in information literacy in their first year at university. Students doing the library science degree and thus the reference course, apart from their various other subjects, also complete a course in the organisation and representation of information in the second semester of their first year, as well as two compulsory courses in information seeking/searching and retrieval in the first semester of their second year of study. In the light of this, it is assumed that they would have a fairly solid understanding of the principles underlying, for example, information searching and retrieval. Expecting them to implement this knowledge in a practical reference class therefore seemed, in theory, reasonable. In practice, as was demonstrated, this expectation was not realised.

The fact that the majority of the students were not able to apply their information searching skills effectively in the digital reference environment, and were unable to evaluate, organise and integrate their information, is a cause for concern. A solution to this problem is not obvious. Time constraints prohibit a refresher course or review of the necessary subject content before starting with the reference course. The ideal situation would be to allow only those students who have scored high marks in the core subjects mentioned above, to take the reference course. This would, however, not be fair towards the average but willing student, and would not be acceptable under the rules of the university which allow for a uniform pass mark of 50% in a subject.

The most logical approach is for the lecturer to stress the importance of prior knowledge from the start of the course, and to advise students to keep their notes from the previous semesters' classes with them for ongoing consultation. This was in fact done, but it is clear that the students were not convinced of the importance of this, or merely chose to ignore the advice. Whatever the reasons for failure, it is important that the lecturer is aware

of, and pays particular attention to the difficulties experienced in this crucial area in future.

#### *Other skills gaps*

The lack of typing proficiency was something that contributed to the frustration of students in their task performance. The University unfortunately does not provide any training in basic typing skills. For students who have not been working on a keyboard from early childhood, or even during high school, this lack inevitably manifests itself in practical classes. Only exercise and experience over time will bridge this gap.

#### *Access to the Internet*

In addition to working on the Internet in the scheduled practical class sessions the library science students should also be provided with access to the Internet and the relevant reference software outside class times. They will then be able to spend extra time on areas of their work that need more attention such as those pointed out above. It will also afford them the opportunity of self-scheduling their work and to practice their newly acquired competencies, either individually or in groups, without the pressure of a formal classroom setting. In this way students can develop confidence in their skills and abilities, something that will serve them well in the practical sessions as well as in the future workplace.

The department has a dedicated laboratory with Internet access for use by its students enrolled in the multimedia degree. Access to this facility is being negotiated for the reference work students as well.

#### *Software for digital reference*

Acquiring appropriate software for digital reference training is a further essential need. Exposure to real-life materials and situations will promote better learning and will be more relevant in terms of learning outcomes than some of the substitutes that had to be employed in this specific course.

The possibility of buying some of the needed software has been discussed and the necessary funds have been negotiated. It is foreseen that the relevant software will be available for use in the near future, either in the multimedia lab men-

tioned above or in another dedicated computer laboratory. Additional exposure to reference software will be available in the university library during experiential training (discussed below).

#### *Experiential training*

The idea of working at a real reference desk was expressly mentioned by the students. The possibility of introducing experiential training at the digital reference desk of the university library as part of the reference course within the next year has been discussed with the relevant authorities in the library as well as with the person who oversees the experiential training module at the department. A venture such as this would mean that students are brought into an operational digital reference environment where they are exposed to best-practice situations with reference librarians providing them the benefit of their experience.

#### *Concluding remarks*

This practical reference course moved away from merely integrating technology into the curriculum and providing a general broad-based online course, towards a meaningful hands-on experience of reference work. Different resources and applications were explored, and the course aimed at expanding the abilities and skills of the students, helping them to gain some expertise in actual digital reference interaction.

Students were exposed to a number of things that were new to them and helped them to understand and feel comfortable with these technologies. Within the South African context this point is very important. Although many of the applications, such as synchronous chat communication may seem 'old hat' in developed countries, some of our students come to university without previous exposure to the Internet at home or at school. The university also does not provide unlimited free access to the Internet, and with many students studying on a limited budget, they cannot surf as they please and so become familiar and at ease with the online environment and all that it offers.

In spite of not being acquainted with all the relevant online products and applications, the students demonstrated a satisfactory level of basic computer literacy. Their information literacy skills, however, were severely lacking and did not reflect

the level of training received in other courses that specifically focus on developing these competencies. In reference librarians this is a matter of particular concern and will be given special attention in future.

The general motivation, commitment, and participation of the students in the practical sessions, was good. Feedback provided by the students indicated that the course was on the whole favourably received. The fact that they mentioned areas where they felt improvements could be made was further indication of their interest and involvement in the experience.

This practical course in digital reference was an overall positive and fulfilling experience for both lecturers and students. What we learned helped us to make informed decisions aimed at meaningful adaptations for future practical courses. The need to equip students with the necessary skills and competencies to cope in a challenging digital reference environment is universal, and although this article focuses on our experiences at the University of Pretoria, it could be useful in similar teaching situations at other institutions.

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*Editorial history:*

*Paper received 1 August 2006*

*Revised version received 27 March 2007*

*Accepted 7 April 2007*