

Promoting Information Literacy Skills Through Web-based Instruction: The Chinese University of Hong Kong Library Experience

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Abstract

Purpose – The purpose of this paper is to reflect on the Chinese University of Hong Kong Library’s development of its Web-based Information Literacy Tutorial and how it was incorporated into the mandatory Student IT Proficiency Test.

Design/methodology/approach – The paper outlines the current trends faced by academic libraries in Hong Kong and the need to provide Web-based e-learning tutorials on information literacy skills to support diverse ways of learning. It describes the implementation of the Web-based tutorial at The Chinese University of Hong Kong as the courseware of the information literacy section in the IT Proficiency Test.

Findings – The reference librarian’s teaching role is expanding as information literacy instruction becomes increasingly valued by university administrators and faculty. The inclusion of information competencies as a graduation requirement provides opportunities to incorporate information literacy into the curriculum and foster collaboration between faculty and librarians.

Originality/value – This paper provides information on Hong Kong academic libraries and is useful for librarians planning to develop an interactive e-learning platform on information literacy.

Keywords Information literacy, Web-based information literacy tutorial, IT proficiency test, Hong Kong, Reference librarians, Teaching role

Paper type General review

Introduction

The delivery of information literacy instruction to students is becoming progressively more important due to the proliferation of electronic resources and the increased use of the Internet as an information source. Many students today are over-reliant on search engines such as Google to find information when researching topics. They often overlook quality academic resources available from libraries. This situation creates a new challenge for reference librarians, who must now play a more important teaching role: directing students to high-quality print and electronic sources and educating them on the need to evaluate Web resources. Reference librarians need to shift their focus from providing technical assistance on using library resources to user education, thus assisting students in developing information literacy skills to identify when information is needed, and to locate, evaluate and use the needed information effectively. Essentially, we must prepare students to become information literate in the 21st century.

The University Library System (ULS) of The Chinese University of Hong Kong (CUHK) identified the need to provide an e-learning tool that would increase students' information literacy skills by reaching more students and covering more comprehensive content than traditional time- and space-bound classroom instruction. The initiative was supported by university administrators who recognized the importance of information literacy as a fundamental skill to help students learn and work in the digital environment. In the academic year 2006-07, information literacy competency was incorporated into the mandatory Student IT Proficiency Test. Developed by the ULS, the Web-based Information Literacy Tutorial is the courseware for the new Information Literacy Section in the IT Proficiency Test. Clearly, there is an expectation that CUHK students become sophisticated users of information before they graduate.

Academic Libraries Face Two Trends in Hong Kong Higher Education

Four-Year Normative Curriculum

Higher education in Hong Kong is undergoing a major transformation with the change from a three- to a four-year normative degree in 2012. The new normative degree structure is designed to broaden the educational learning experience of students, making them more creative and adaptable to the global environment. With a four-year program, higher education institutions will be better able to develop a whole-person education by providing students with the necessary foundation for life-long learning, thus ensuring they are fully equipped to meet the challenges of the 21st century. A vital component of life-long learning is information literacy skills - the ability to locate, manage, critically evaluate, and use information for research, problem solving, decision making, and continued professional development (Bruce, 1995). To help students acquire transferable skills for life-long learning, academic libraries must consider how information literacy instruction can be effectively designed and delivered to students. Reference librarians share the responsibility to help produce information literate graduates.

Diversity of the Student Population

Diversification and internationalization are another major trend in Hong Kong higher education. Today, our library user groups are not limited to typical 18- to 22-year-old students, but also include part-time students encompassing a wide range of ages and

backgrounds, as well as increasing numbers of non-local students, particularly from mainland China.

Today's young generation is growing up in a digital world. Wilson aptly described that "Today's digital kids think of information and technology akin to oxygen. Interactivity is a hallmark of their lives. They live in a collaborative world that does not exist for most of us – hyper-linking, gaming, multi-tasking, always on, always interacting" (Wilson, 2004). As "digital natives", they are accustomed to being completely connected to each other via cell phones and the Internet all the time. When they need information, they want it immediately with little tolerance for delay. They have a strong preference for online sources, but may not be aware of the types of information available from the library's electronic resources, how it is organized, how it can be retrieved or how the quality of the information can contribute to their information needs. Instead, they turn to search engines for the sake of convenience and ease of use. Some students may simply type in a search keyword and use the first few search results as authoritative sources. However, the first few items in the result list may not be the most relevant or authoritative information available. Teaching students how to use quality library resources and evaluate information is part of the reference librarian's job. Using Web-based technologies to promote active learning for the young generation is crucial in our digital world.

In Hong Kong, there are a growing number of part-time students returning to university to update their knowledge and skills in a bid to maintain competitiveness in the marketplace. For instance, CUHK has more than 6,000 part-time postgraduate students in 2006-07. They are highly motivated and task-orientated. Some students are more comfortable with fast-paced change in the digital environment, while others are unaccustomed to the rapidly changing academic and technological environment. These students find it a challenge to use diverse electronic resources, but have no time to attend library instruction classes during working hours. As a result, they require library services such as remote access to electronic resources, document delivery, and off-campus learning.

Non-local students, including mainland students, have become a major segment of Hong Kong higher education in recent years. At the University of Hong Kong (HKU), more than 15% of the student population is from outside Hong Kong. As one of the leading universities in the territory, CUHK also has a strong exchange program with 180 partner universities from 23 countries around the world. CUHK's incoming exchange students amounted to 600 of its annual student intake (Chinese University of Hong Kong, 2006). More important, the number of mainland students has increased rapidly since Hong Kong higher education institutions received the green light from the Ministry of Education in China to recruit mainland undergraduates. In 2005, Hong Kong higher education institutions were allowed to join the National Colleges and University Enrolment System on the mainland to recruit students from across 17 provinces and municipalities. Currently, the Steering Committee on Development Hong Kong also suggested increasing the overall quota for non-local students from 10% to 20% (Our Way Forward, 2007). It is foreseen that the non-local student population, a large proportion of which will come from mainland China, will significantly increase in the near future.

Non-local students come from different cultures and backgrounds. Many will likely feel confused by the new technologies and lack the appropriate information skills with regard to electronic resources. Libraries must help these students become familiar with a new academic environment to improve their academic success and information literacy skills through library instruction.

With increasing student enrolment and the growing diversity of Hong Kong's student population, Web-based instruction on information literacy skills become essential to meet the needs of various student groups.

Information Literacy Programs at ULS

About the University Library System at The Chinese University of Hong Kong

Founded in 1963, CUHK is a comprehensive research university in Hong Kong. It is a bilingual (Chinese and English) and bicultural university with a total enrolment of 20,389 students, of whom 10,315 are undergraduate students and 10,074 are postgraduate students as at 30 September 2006. The ULS supports the teaching and research of the University by means of a campus-wide network of seven libraries with 200 staff. The collections comprise approximately two million items in print, as well as myriad online resources.

Face-to-face Classroom Instruction

The ULS offers an active user education program. Traditionally, reference librarians conduct the user education or information literacy instruction. In the academic year 2005-06, reference librarians conducted over 180 library instruction sessions for more than 3,200 students and staff members.

The instruction mainly comprises two major competencies: technical competencies that focus on using specific information tools or searching skills, and critical thinking skills that involve the use of information. The majority of scheduled library instruction sessions are allotted for 50 minutes or just over an hour to match with the duration of a formal class session.

To provide more structured and comprehensive workshops on information literacy competency, the five-course *Summer Certificate on Information Literacy Skills* is offered to all students every year. The courses include an introduction to information sources, effective database searching skills, locating information, evaluating information, and citing and managing references using bibliographic management software. Each session is 90 minutes in length and participants earn a certificate after completing four sessions. The summer course has gained popularity because it offers in-depth training on using information tools and critical thinking strategies. The total attendance in the summer of 2006 was 280 students.

Reference librarians also conduct library instruction upon request. More than 30% of instruction classes are course-related and conducted at the request of faculty members. In addition, ULS works closely with the Centre for Learning Enhancement And Research (CLEAR) to deliver information literacy instruction as part of the *Improving Postgraduate Learning* program to all postgraduate students each year.

The Need for a Web-based E-learning Tool

All scheduled instruction programs are optional. They are allotted short time periods to fit into students' formal class schedules. The sessions are usually content-packed and leave little time for interaction between librarians and students. Needless to say, they are not flexible enough to accommodate those who are unable to attend classes or who are geographically remote from the campus. This becomes an increasingly important issue as many Hong Kong universities have established educational programs in China in recent years. For example, CUHK and the Tsinghua University have jointly organized an MBA program in Finance in Beijing and Shenzhen. These students are entitled to the same library services and resources as CUHK students on campus. As these students live in mainland China, they have no means to use library resources other than through remote access. During orientation at CUHK, these students expressed strong interest in not only using library electronic resources, but also in learning how information of all types are structured and how it can be retrieved. They demonstrated a keen desire to learn. Obviously, there is a need to develop a Web-based tutorial that is less time-bound, more flexible, and more accessible for off-campus students or those who prefer to learn information literacy skills at their own pace and convenience.

Information Literacy and Student IT Proficiency Test

Information literacy and information technology are two distinct but inter-related concepts. Information technology skills enable students to use computers, software applications and databases, while information literacy is an intellectual framework for "understanding, finding, evaluating and using information – activities which may be accomplished by in part fluency with information technology, in part by sound investigating methods, but more important, through critical discernment and reasoning" (Association of College and Research Libraries, 2005). Information literacy forms the basis of life-long learning through developing one's abilities to use technologies and also look beyond such technologies. Both information literacy and information technology are essential for students to function and succeed in the digital age.

Since life-long learning is a major precept of the CUHK, we contacted university administrators for the development of campus-wide information competency programs for students. Both librarians and administrators agreed the implementation of an e-learning tool for information literacy training was an urgent need for out-of-classroom learning. Information literacy was therefore added to the University's agenda, which opened the door for further involvement by librarians. The proposal submitted by the Head of Public Services of adding information literacy to the IT Competence Program and the mandatory Student IT Proficiency Test was endorsed. The Student IT Proficiency Test now includes the basic operation of a computer, using computer application software, computer ethics and copyrights, information security, and the newly added component of information literacy. All students must pass the online IT Proficiency Test to complete their degrees.

The ULS used this opportunity to promote library instruction and created the Web-based Information Literacy Tutorial as the courseware of the new Information Literacy Section for the test. The Web-based tutorial is now listed in the new syllabus for students' self-learning.

Developing the Web-based Information Literacy Tutorial

The Organization of Content

The Web-based Information Literacy Tutorial at CUHK is an interactive e-learning platform that assists students in recognizing when information is needed, and in locating, evaluating and using the needed information effectively. To achieve this aim, we followed the Information Literacy Competency Standards for Higher Education defined by the Association of College and Research Libraries (ACRL) in the United States as a guideline in creating the tutorial. The ACRL Information Literacy Standard (Association of College and Research Libraries, 2005) states that an information literate student must be able to:

- Determine the extent of information needed;
- Access the needed information effectively and efficiently;
- Evaluate information and its sources critically;
- Incorporate selected information into his/her knowledge base;
- Use information effectively to accomplish a specific purpose; and
- Understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and judiciously.

Each standard contains a set of performance indicators. Based on the standards and performance indicators, the Web-based tutorial is organized into seven modules, including types of information sources and their characteristics; effective search strategies; use of the library catalogue; use of research databases; use of the Internet; evaluation of information sources; and citing information sources. In addition, a case approach was developed by building a general education course assignment to engage students with the research process.

Each module consists of learning outcomes, key points, core content, misconceptions, and a sample test:

- *Learning Outcomes* are the set of competencies we expect students to learn from the materials we are teaching.
- *Key Points* are the entry points of each module, which summarize the contents in table and short paragraph format.
- *Core Content* is the major concept of each module, containing animation, video clips, interactive activities, etc., to illustrate the information literacy concepts and skills and to capture students' interest. The core content also provides links to a specific section of the case to illustrate the concepts being discussed.
- *Misconceptions* address common myths and misconceptions of information resources and access.
- *Sample Test* contains quizzes which assess students' understanding of the contents. It also familiarizes students with the format and types of questions on the Student IT Proficiency Test.

To facilitate the needs of diverse students, the tutorial is in three language versions: English, traditional Chinese and simplified Chinese. Students can print out the contents of the courseware in a printer-friendly version.

Putting Information Literacy into Context

We believe online instruction is more effective if it is delivered in context with a course assignment. Hence a case approach was developed to supplement to the information literacy skills covered in the tutorial. In the case, the main character, Peter, is an undergraduate student submitting an assignment on the relationship between body image and eating disorders for his general education course. The case contains 34 sections, each of which starts with an information need. Problem solving is the focus and critical thinking becomes part of the process. Most sections can be linked to a relevant section in the core content, providing additional detail on related concepts or skills being applied in the case. Through the thoughts and actions of Peter, information literacy skills are explored and applied to a real problem.

Increasing Interactivity in the Web-based Tutorial

We extensively use a wide range of interactivity to reinforce the learning process and help students apply and retain the concepts learned. The interactive elements were created using a combination of Flash, HTML, JavaScript, CGI scripts, etc. Each module contains a hyperlinked table of contents, icons, action buttons, and clickable text words, allowing students to select any section of the content to review and find extra pages of information if they wish. This simple design enables students to select their own path of learning and provides flexibility to accommodate different learning styles.

The Web-based tutorial also provides different types of activities in the form of games, drag and drop, text entry, and questions and answers, which require students to interact with and receive immediate feedback from leaning objects. For example, an activity using JavaScript was designed for students to apply basic information literacy concepts by selecting keywords for a research topic, then identifying synonyms and related terms. Such skills prepare students to use any online search tool by identifying important keywords and using related terms. Other activities include directing students to conduct a real search in the library catalogue. These types of interactive exercises enable students to practice and apply concepts being learned, thus engaging students in the learning process. We also used CGI to design simple forms such as multiple-choice quizzes to measure learning outcomes. Tests are automatically scored once completed, giving students immediate feedback.

Our objective was to use the Web as a platform to enable more student participation and enrich their learning experience through attractive screen layout, interactivity, games, and diverse visual components such as video clips and animation. The tutorial was launched in September 2006, and therefore has not been in use long enough to generate valid statistics. A survey to evaluate the effects and benefits of using the Web-based tutorial will be conducted in the future.

Reference Librarian as Teacher

Information literacy instruction is becoming increasingly valued by university administrators and faculty. It provides opportunities for integrating library instruction into the curriculum, which can be achieved through first-year undergraduate courses,

general education courses, discipline-based courses, and competency-based mastery programs. Among these options for information literacy instruction, competency-based mastery as a graduation requirement is the most effective means to kick-start the incorporation of information literacy into the university's curriculum. Students are encouraged to take Web-based instruction to acquire information literacy skills and knowledge. Once confident in mastering the competencies, they can undertake the assessment. At ULS, we took the opportunity to embed the information literacy module in the Student IT Proficiency Test to reach a large number of students. We also arranged 20 three-hour, face-to-face instruction sessions this year to assist students in preparing for the Student IT Proficiency Test. The integration of information literacy into a university's competency-based mastery program does not diminish the reference librarian's teaching role, but rather strengthens it.

The Web-based Information Literacy Tutorial was designed to support the diverse ways in which students learn. It is a supplement to face-to-face classroom instruction rather than a replacement. The Web-based tutorial can be used as a prerequisite to face-to-face classroom instruction, so that reference librarians can focus on higher-level information literacy concepts or provide more hands-on practice for students. More instruction classes can be offered in different disciplines based on a systematic use of the Web-based tutorial. We envisage the combination of face-to-face and Web-based instruction will allow reference librarians to conduct more in-depth information literacy training in the academic environment.

The creation of the Web-based tutorial also provides new partnership opportunities to foster collaboration between faculty and librarians. Partnership strategies include teaching information literacy in a disciplinary context. Reference librarians can collaborate with faculty to deliver Web-based instruction in locating, evaluating, and using information in the context of a particular subject. For example, the Web-based tutorial can be modified by adding sources and research steps pertaining to a particular discipline. It can be further revised and incorporated into the e-learning platform of general education courses and discipline-based courses. However, finance and manpower for re-designing and updating the tutorial are required. Nevertheless, the integration of the Web-based tutorial into the curriculum provides students with quality resources on the subject and is a starting point in learning the research process. As information literacy experts on campus, librarians can form partnerships with faculty in teaching and supporting life-long learning.

The reference librarian's tradition role of waiting for library users to seek assistance at the Reference Desk has changed. Reference librarians now actively approach various users to provide instruction on information resources and assist them in acquiring skills to locate and evaluate information sources. We design and offer instruction in different formats, including face-to-face classroom instruction, self-paced online learning, in groups and with individuals. The role of the reference librarian in teaching and training users has expanded.

Conclusion

Hong Kong higher education will undergo tremendous change over the next ten years. The new four-year undergraduate degree structure provides an opportunity to integrate library instruction into the general education programs and curricular reform. Reference librarians must be more proactive and creative in making university

administrators and faculty aware of our expertise in information literacy skills training during this transformation period. Partnerships with faculty to integrate library resources and information literacy skills into the curriculum are not only the most efficient way of providing students with valuable learning experiences, but also enhance our teaching role in academic institutions. At the same time, we must prepare ourselves to be effective teachers by upgrading our technical knowledge skills, sharpening our teaching techniques, and focusing more on student learning outcomes. In our expanding role as teachers, we are able to engage and contribute to institutions' instructional mission. By establishing a significant and unique role in the teaching and learning arena of higher education, the librarian's professional identify and image can be enhanced and revitalized in the 21st century.

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