Educating Knowledge Professionals in Library and Information Science Schools

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Abstract

Knowledge management (KM) is a multidisciplinary subject which involves efforts from professionals with diverse backgrounds. This paper aims to investigate the needed educational background and skills for knowledge management professionals. In particular, the focus of the paper is to examine whether a master's degree in library and information science (LIS) is a preferred educational background listed in KM-related job postings. In addition, the preferred skills and knowledge required by KM employers are analyzed to reveal the association with graduate courses in library and information science. Job postings were collected from various sources during a specific timeframe. Content analysis was used to discover the kinds of backgrounds, skills, and knowledge that are expected from the employers. By examining both KM literature and the job postings, it is agreed that a certain set of skills can be taught and essential knowledge can be obtained through the LIS curriculum.

Keywords: *Knowledge management; Knowledge professional; Knowledge manager; Job posting; Master degree; MLIS; Information specialist*

The Problem and Its Setting

Statement of the problem

In recent years knowledge management has gained more attention than ever (Chen, 1998). The root of knowledge management (KM) can be traced back to the mid 1990's (Koenig, 1999, p. 17). Despite the fact that knowledge management is not a newly invented concept, its practices became feasible because of the advances of information technologies. It is also because of the rethinking and reapplication of KM in business organization that KM gains its popularity and plays an important role in organizations, particularly those that are knowledge intensive, such as high technology, management consultancies, pharmaceutical companies, and financial services (Chen, 1998, p.20). It is therefore essential that we, as professionals in the field of library and information science (LIS), start to think about how we can prepare future graduates to enter the job market of knowledge management.

Hypothesis and research questions

The focus of this study is centered on the assumption and hypothesis that a master's

degree in library and information science is one of the preferred educational backgrounds for a junior level position in knowledge management. If this assumption can be established and the hypothesis confirmed, it makes a strong argument that the LIS education should make appropriate changes to its existing curriculum so that LIS schools can react to the job markets and prepare well-qualified graduates.

Furthermore, the following two research questions will guide the data analysis and focus the discussion:

a. Is a master's degree in library and information science (or its equivalent degree) a preferred educational background listed in the KM-related job postings?
b. What required or preferred skills/concepts listed in the KM-related job postings are associated with the graduate degree in library and information science?

Definitions of terms

First, a definition of knowledge management is provided as the basis of discussion. Knowledge management is "the process of capturing a company's collective expertise wherever it resides — in databases, on papers, or in people's heads — and distributing it to wherever it can help produce the biggest payoffs" (Blake, 1998). The purpose of KM is to gain significant returns out of the data and information you produce and the way in which you produce it (Schwarzwalder, 1999, p. 65). To operationalize the purpose of KM, it is aimed at allowing users to capture, manage, and share corporate information assets offered via Internet/intranet, CDROM, DVD-ROM, or LAN (Blake, 1998).

King (1999) believes that the "core" of KM should involve "the acquisition, explication, and communication of mission-specific professional expertise in a manner that is focused and relevant to an organizational participant who receives the communication" (p. 70). To operationalize his definition, King further describes the essence of KM as the ability to capture and share focused and relevant knowledge in a timely fashion. In other words, an individual will be able to acquire his/her mission-specific knowledge at an appropriate time without incurring large search costs. King also draws a boundary for mission-specific knowledge. For instance, general information such as industry sales trends is not considered as an element of KM. Instead, only knowledge and information that has a direct impact on the professional expertise of the mission of the business is appropriately considered to be an element of core KM (p. 70).

Delimitations

In this paper, the researcher uses the curriculum offered by the Department of Library and Information Science within the School of Information Sciences at the University of Pittsburgh as an example. It should be noted that the characteristics of the LIS department at the University of Pittsburgh are not typical and therefore might not be representative for all the ALA accredited programs in the United States. However, the

educational issues discussed in this paper should be able to pinpoint similar problems occurring in the LIS programs somewhere else and thus provide insights into the needed changes, whether it is solely on the conceptual level or on the operational level as well.

Assumptions

The author believes that the primary assumptions underlying the study are that "all healthy organizations generate and use knowledge" and that "without knowledge, an organization could not organize itself; it would be unable to maintain itself as a functioning enterprise" (Davenport & Prusak, 1998). Based on these assumptions and the importance of knowledge within an organization, the author believes that the preparation of KM professionals is becoming an issue that is worth much attention.

Importance of the study

The history of Library and Information Science curriculum issue reveals that a great many changes occurred during the mid-sixties and early seventies in response to demands by the professionals in the filed. In the late seventies and early eighties, all library schools began to change more or less, some faster than others (Miller, 1996). A number of library schools renamed the schools or the programs to include "information and management or science, and [added] a few courses in information science, online searching, database construction, programming languages" (Miller, 1996, p. 45).

As the Internet and network technology begins to play vital roles in almost every work place, it is the time again for LIS schools to respond to the changes in the environment and quickly catch the "technology wave" in order to be able to survive in the field and to ensure that LIS graduates are competitive in the job markets. As mentioned before, knowledge management is one of the fields that is emerging (speaking from the library and information professionals'point of view) and requires various technical as well as non-technical skills. The majority of LIS graduates have been working in non-profit settings for decades. In recent years, there are more and more diverse jobs in for-profit organizations that might fit an LIS student's interests and capability as one can see from recent job postings. However, it is clear that there is a great many culture differences in the two kinds of organizations (i.e., non-versus for-profit). The question then becomes: how can an LIS school respond to such needs and find the new avenue for its graduates?

In this paper, the author first presents the needed education for professionals in knowledge management based on related literature. Following the related literature, the results of a content analysis of job postings within a specific timeframe is presented. The final step is to examine whether the literature echoes the requirements listed in the job postings in the real world, or there is a discrepancy between the academic and practical worlds.

By examining the kinds of skills or traits that KM employers look for from the candidates, we would be able to see how well LIS schools are prepared to face the challenge of knowledge management and how to adjust our curriculum and relocate the resources accordingly. In order to market the LIS graduates who are interested in a KM career, it is necessary that LIS schools take appropriate actions to fulfill the students' needs as well as the expectation of KM employers.

Related Literature

The needs for education for knowledge management

Since the growing demand of positions in knowledge management is a recent phenomenon, there is not very much written in the literature of library and information science about educating and preparing professionals for KM-related jobs. One of the articles that most directly addresses the issue of education for KM is written by Michael Koenig, who is a professor in the Graduate School of Library and Information Science at Dominican University. Koenig's article (1999) entitled "Education for Knowledge Management" is an important piece of work, which discusses some of the core issues related to education for knowledge management and will be referred to frequently in the present article. By taking a close look at the history of the evolution of knowledge management, Koenig asserts that the enthusiasm for knowledge management will be here to stay (p. 25). For this reason and because of the growing popularity for KM professionals in the job market, Koenig believes that the need for education for KM education is clear (p. 29).

Information technology related skills needed for knowledge management

Koenig presents a thorough discussion on the components that are needed for entry level KM professionals. He stated that

> "...an aspiring professional in knowledge management needs to know the basics of IT, particularly in the area of telecommunications and networks, particularly in the internet and its derivatives" (p.26).

In the age of post-technology, it is clear that a KM professional needs to know at least the basics of information technology— whether it is data communication, the network, or the Internet— in order to equip him/herself to carry out the task of incorporating the organization's intellectual capital in the most efficient and effective manner. In addition, without proper understandings of IT, it will be difficult for a knowledge manager to even communicate efficiently with IT staff.

The author agrees with Koenig that the ideal professionals need to know the principles and the techniques of how one structures and organizes information and knowledge. In other words, one needs to know all of the traditional core skills of library and information science, such as cataloging, indexing, and authority control. These skills can facilitate KM professionals to perform a better job when designing a KM system or paradigm that can retrieve and/or route right information at the right time. However, it should be noted that these buzz words that are heard so often in the world of library and information might be transformed and translated to the language that business professionals speak in a corporate environment. There may be a difference between the languages used by information professionals and business professionals, but ideas about the knowledge structure of the universe, which originated in library and information science, benefit what a KM professional needs on his/her job. Furthermore, once the knowledge, which resides in scattered places, is collected into a central system (e.g., an intranet) the corporate knowledge in a single realm can be viewed as a universe of knowledge about a particular corporation.

On the more technology-oriented spectrum, KM professionals should be familiar with computer data structures, inverted files, hash files, etc. Knowledge of database management systems on both conceptual as well as operational level would be also critical for the KM professional to be capable of managing projects in data warehousing and data mining, which are included within the domain of knowledge management. Koenig emphasizes that the KM professional should be aware of the distinction between data design and structure in the context of information retrieval known to the library and information science community and those design issues in the context of business databases, such as relational databases, “best practices” databases, etc.

Other skills needed for knowledge management

Working in a corporate environment is very different from working in an academic library. Working pace is an obvious example. In a corporate environment, the working pace is usually faster than that in a library setting. Associated with the working pace is the ability to present your ideas, both oral and written, in a concise and clear fashion so that the listener/reader can grasp them quickly. Therefore, the education for knowledge management should prepare students with proper understandings and expectations of corporate culture and its environment; on the other hand, the ability to make changes in such an environment and understanding of basic principles of organization dynamics and small group dynamics are also stressed by Koenig (p. 27).

Educational background needed for knowledge management

Koenig addresses the needed education for knowledge management according to both junior and senior level KM professionals. For the purpose of investigating issues of

LIS curriculum, the author will focus on the discussion of the educational needs for those who will be a KM professional in the junior level. As Koenig points out senior KM managers are most likely appointed from other senior managerial positions within the organization (p. 28). Therefore, it is outside of the scope of this paper to address the educational needs for those who are already in the field.

* **Knowledge in knowledge management**

It is apparent that people who are interested in a career of knowledge management should possess an in-depth knowledge about knowledge management. Such knowledge should include not only the basics of the history and development of knowledge management, but also the literature of information services and the applications in a corporate environment (Koenig, p. 27). Most of all, how the information services and related applications can enhance the organization's productivity is in particular a core issue that the KM professional should be able to address and justify.

* **Knowledge in business concepts (e.g., finance, market research, strategic planning, etc.)**

In addition to a strong background in the literature of knowledge management, the professional should have a proper background in business as well, so that he/she can communicate proficiently (both in written and oral form) using the same language that the business community speaks. To achieve this, the professional essentially needs to be exposed extensively in such an environment, whether it is through internships or business courses, that the professional can be educated to express his/her ideas and recommendations using appropriate business and economic concepts.

Data Collection and Treatment

Research methodology

Examining the job postings for systems librarians, Xu and Chen stated: "A typical advertisement describes the position and enumerates the required qualifications. Therefore, it is natural to examine job descriptions from job advertisements." (1999, p. 173). In this research project, the researcher collected KM-related job postings and analyzed the content of the job descriptions to discover the kinds of background and skills that are expected from the employers. In addition, the author was intended to uncover the kinds of non-technical and interpersonal skills that employers ask for in a KM candidate. Therefore, the author primarily looked for two themes from the job descriptions: background/skills and personal traits and analyzed the data based on these two observations. Different from Xu and Chen's study, in addition to the four variables identified in the study (i.e., degree requirements, work experience, job responsibility and knowledge and skills), this study will also examine the software and IT knowledge required by the KM employers.

Data needed and the means for obtaining the data

According to the researcher's knowledge and consultation with faculty members who have research interest in knowledge management, it is agreed that, at the time of data collection, there is not yet one single widely-recognized source for posting KM-related jobs. In other words, unlike the study by Xu and Chen, which collected the majority of job advertisements in the journal *American Libraries*, the sources for job postings for this current project are scattered.

In order to gain a profound view of the job postings for a KM-related position, the researcher conducted a search in three search engines (Lycos, Alta Vista, Google) as well as individual websites that are dedicated to knowledge management related issues. The search keywords used on the search engines are "knowledge manager", "knowledge analyst", and "knowledge management consultant". Other websites included in the search are professional KM associations, KM publishers, and commercial KM programs which certify individuals who pay a certain fee and complete their courses. When searching on the Web, the researcher realized another interesting phenomenon which is worthy of attention. It is found that the great demands for KM-related jobs have attracted many headhunters to work as agents to match up appropriate KM candidates with companies who are in need of such employees. The emergence of this kind of agent is another evidence that KM jobs are in greater demand than ever.

Essentially, the sources for KM job postings for this study are three search engines, professional associations, publishers, headhunters, and job banks. The time frame for locating the job postings is from December 8, 2000 to April 13, 2001. The number of postings chosen for the purpose of data analysis is 27. Only full-time positions were included in the study.

Data analysis

Twenty-seven job advertisements collected from various sources as described above were analyzed. The following five sections present the data analysis in areas of education requirements, work experience, knowledge and special skills, software and IT knowledge.

*** Education requirements**

Table 1 shows the number and percentage distribution of degree requirements and preferences specified in the job postings. Almost 60 percent of the KM employers specify as a requirement that future KM professionals to hold at least an undergraduate degree and 66.7 percent of them specify that an advanced degree is required or preferred. For those with undergraduate degrees, the disciplines of Engineering, Business, and Computer/Information Science are most welcomed. In one of the job postings, the employer asks for an undergraduate degree in Library Science. Also, 18.5 percent of all the job

postings ask for an advanced degree of Library/Information Science. Thirteen out of 27 (48.2 percent) job postings required or preferred an advanced degree in one of the IT-related disciplines, or an MBA. On the other hand, 11 out of 27 (40.7 percent) job postings list no specific degree requirement.

Table 1 Education Requirements

Degrees	No.	%
Advanced degree - Preferred/ recommended - An advanced degree in related field or IT desired - MBA - Background in Library/information Science, Information Architecture, Technical Communications or Instructional Design	18	66.7
BA/BS degree required - Business (e.g., Finance, Library Science, Journalism, Communications, or Graphic Arts) - Technical discipline (e.g., Computer Science, Engineering, or Management Information Systems)	16	59.3
Not specified	11	40.7

*** Work experience**

Data analysis reveals that a majority of employers (63 percent) heavily emphasize some years of work experience. The number of years ranges from “several” to 7; the preferred industries vary from KM, Library Science, and consulting firms to investment banks. The researcher believes that the required or preferred previous working experience depends on the kinds of industry that the future KM professional will be working in. Experience in developing and delivering a KM program and system is required by 12 (44.4 percent) of the job postings. Other related descriptions are “understanding of KM solutions in an integrated business environment”, “experience implementing KM solutions”, “experience with KM software and tools”, “demonstrated experience developing internal KM systems and processes”, etc.

Teamwork experience (25.9 percent) is the third most required work experience followed by an understanding of IT systems and web-based technologies (22.2 percent). The next highest ranking in work experience (18.5 percent) is the experience with content classification and content management systems (cataloging and classifying information). Other experiences include training, database management and project management, which weigh all at the same percentage.

Table 2 Work Experience

Qualifications	No.	%
Years of work experience (ranging from "several" to 7 years) in KM, Library Science, consulting firms, research/trade organizations, investment banks, the Internet industry, etc.	17	63
Proven experience in developing and delivering a KM Program/System	12	44.4
Team work experience	7	25.9
Detailed understanding of IT systems and leading-edge software, including web-based technologies	6	22.2
Experience with content classification and content management system (cataloguing and classifying information)	5	18.5
Sales and marketing experience with KM	4	14.8
Experience in training/demonstrating application software and tools; Online learning or new media design	2	7.4
Working knowledge of database development and management	2	7.41

*** Knowledge and special skills**

Knowledge and special skills affect the capability of performing KM tasks indirectly. In other words, the knowledge and skills may not be KM-related, but will affect more or less the task being done. It shows that excellent oral communication (51.9 percent) is the most important skill required by employers. Excellent writing skills and project management skills are the next two most often required. Some of the examples of excellent writing skills mentioned in the job postings are "able to present findings in a clear and concise fashion", "excellent presentation skills", "able to create accurate and concise documents" and "well organized".

The abilities to capture, analyze, disseminate, and manipulate data and information and to learn whatever is related to business needs, as well as the abilities to organize, synthesize and summarize raw information from diverse sources, represent almost a third of (29.6 percent) the requirements in work experience. Problem-solving and analytical skills are as important as those just listed. Other important experiences are strong knowledge of KM methods, leadership, the ability to multi-task, and being a self-starter. Some of the less often mentioned experiences are personality (being flexible, no "attitude", etc.), the ability to meet deadlines, be a good facilitator, exhibit strong client skills, be KM certified, enjoy dealing with technology and people, negotiate, etc.

Table 3 Knowledge and Special Skills

Qualifications	No.	%
Excellent communication skills (strong oral communication ability)	14	51.9
Excellent writing skills (strong written communication ability)	13	48.2
Excellent project management skills	13	48.2
Able to capture, analyze, disseminate and manipulate data and information and to learn as it relates to business needs; Able to organize, synthesize and summarize raw information from diverse sources	8	29.6
Problem-solving and analytical skills	8	29.6
Able to multi-task	5	18.5
Strong knowledge of KM Methods, KM Solutions, Management Consulting, Change Management, Mentoring, document management systems, information products, strategies management, Electronic Data Infrastructures (EDI)	5	18.5
Personality: no “attitude”/ down to earth/ friendly/ assertive/ can delegate/ flexible	4	14.8
Self-motivated/ Self-starter	4	14.8
Able to negotiate/achieve buy-in at all levels	3	11.1
Strong client focus/skills	3	11.1
Enjoys dealing with both technology and people	2	7.4
Excellent facilitation skills	2	7.4
KM certification	2	7.4
Proven able to learn/utilize new technologies	2	7.4
Able to energize disparate groups as to the benefits and practicalities of KM	1	3.7
Able to meet deadlines	1	3.7
Able to work quickly	1	3.7
Bilingual	1	3.7
Interviewing skills	1	3.7
Has an appreciation for ‘membership’ type organization	1	3.7
Highly motivated and enthusiastic	1	3.7
Understanding of the content specialty areas of Finance & Performance Management	1	3.7

*** Software and IT knowledge**

Table 4 shows 51.9 percent of jobs require the knowledge of KM technical architecture (Lotus Notes, KMS, Primus, ServiceWare, Deskartes, Microsoft BackOffice, Netscape SuiteSpot, Real-time Electronic Collaboration Tools, etc.). Knowledge of KM application development tools ranked the next highest (40.7 percent) on the list, which include HTML, XML Java, JavaScript, Visual Basic, ActivX, and WYSIWYG web editor. Close to a third of (29.6 percent) KM jobs ask for knowledge in Internet and intranet related technologies, standards and platforms. Other software and IT knowledge are Microsoft Office, E-business, Microsoft Project and online retrieval systems.

Table 4 Software and IT knowledge

Qualifications	No.	%
KM technical architecture (Lotus Notes, KMS, Primus, ServiceWare, Deskartes, Microsoft BackOffice, Netscape SuiteSpot, Real-time Electronic Collaboration Tools, etc.)	14	51.9
KM application development tools (HTML, XML, Java, JavaScript, Visual Basic, ActiveX, WYSIWYG web editor, etc.)	11	40.7
Internet/ intranet (related technologies, standards, and platforms)	8	29.6
E-Business/ IT application development experience	3	11.1
Microsoft Office (word processing, spreadsheet, database, e-mail, etc.)	3	11.1
Microsoft Project	2	7.4
Network knowledge (serves, networks, hubs, routers, switches, TCP/IP, etc.)	1	3.7
Online retrieval systems/ databases	1	3.7

*** Job responsibilities**

Data concerning job responsibilities in KM jobs postings show a great variety. Every job posting required the future KM professional to create and promote knowledge sharing/links with knowledge professionals/initiatives. KM system support and development represented 63 percent of the requests in job responsibilities. Knowledge codification/ classification and providing IT work (creative technology solutions, training session, etc.) are of equal importance (40.7 percent) in job postings. User needs analysis (at 37 percent) and feedback analysis/ effectiveness measure (at 33.3 percent) weight bout the same. Defining and maintaining a clear KM strategy (approach, methodology, or workflow model), leading a team of specialists engaged in providing research and knowledge management, managing resource and conducting information retrieval represented about a third (or 29.6 percent) of the job requirement. Seven cases (25.9 percent) list “identifying best practices and knowledge assets” and “supporting the mission of internal groups” in the job responsibilities. Others include teamworking with IT and facilitating at meetings, knowledge sharing events and special events (luncheons, etc.).

Table 5 Job responsibilities

Requirements	No.	%
Create and promote knowledge sharing/links with knowledge professionals/initiatives	28	100
KM system support and development	17	63
Knowledge codification/ classification	11	40.7
Provide IT work (creative technology solutions, training session, etc.)	11	40.7
User needs analysis	10	37
Feedback analysis/ effectiveness measure	9	33.3
Define and maintain a clear KM strategy/ approach/ methodology/ workflow models	8	29.6
Lead a team of specialists engaged in providing research and knowledge management	8	29.6
Facilitate at meetings, knowledge sharing events and special events (luncheons, etc.)	3	11.1
Willing to travel	2	7.4
Create, design and manage content for company website	1	3.7
Data analysis	1	3.7
Establish relationship with Management teams globally	1	3.7
Marketing	1	3.7
Vendor Relationship	1	3.7

Discussion

Answers to the research questions

Two research questions guide the discussion of the data analyzed in the above section:

a. Is a master's degree in library and information science (or its equivalent degree) a preferred educational background listed in the KM-related job postings?

b. What required or preferred skills/concepts listed in the KM-related job postings are associated with the graduate degree in library and information science?

*** Is Library and Information Science a required or preferred advanced degree?**

Based on the analysis of education requirements, an advanced degree is required or preferred by a majority of KM employers. Those listed as the most popular disciplines include MBA, IT-related, Library and Information Science, and Management Information Systems (MIS). More than a third (or 38.5 percent) of job postings, which require an advanced degree, specify that an LIS degree is preferred. Therefore, it is only fair to that an advanced degree in LIS is one of the preferred degrees listed in the job postings.

This finding reveals the multi-faceted nature of KM. In fact, it is reflected in the academic world that different disciplines address and concern with different issues of KM. For instance, in a scholarly journal dedicated to business management, one can find that most discussion of KM is focused on the importance of KM, strategic planning, cultural change, and steps for implementing KM. On the other hand, most discussion of

KM published in an IT-related journal is on the roles of information technology, methods for evaluating the KM system, and the methods of classifying, organizing and retrieving knowledge. This situation is also true in the real job market. It is therefore practical to say that LIS graduates are expected to compete with other KM candidates who have backgrounds in business and IT-related disciplines.

*** What requirements are associated with LIS education?**

Taking the curriculum in the School of Information Sciences at the University of Pittsburgh as an example, the researcher examines the kind of skills that can be acquired through LIS education in the following sections.

First, a "detailed understanding of IT systems and leading-edge software, including web-based technologies" is one of the highest-ranking requirements found in the job postings regarding work experience. Since the School of Information Sciences is composed of three graduate programs, i.e., Library and Information Science, Information Science, and Telecommunication, there are rich IT-related resources and courses available. Also, one of the concentrations in the LIS program is Information Technologies and Systems, so students who are interested in systems (courses such as Systems Administration, Database Design and Application) and web-based technologies (such as XML, Digital Libraries) can take full advantages of the resources offered by the School.

Second, "experience with content classification and content management" can be seen as cataloguing and classifying information, which is also one of the major areas that LIS educators want to make sure that the students understand. Organizing Information is one of the core courses offered by the LIS program, which introduces students the basic principles and skills of cataloguing, as well as its related issues. Subject Analysis, Indexing and Abstracting, and Descriptive Cataloging are three other courses that emphasize organization of information. All the four courses prepare students with solid understandings of classifying and cataloguing information. It is believed that such understandings will become one of the most valuable assets for LIS graduates to enter the KM job market. Furthermore, as revealed in the job postings, the abilities to organize and classify corporate knowledge will be a major qualification that KM employers look for in an LIS graduate.

"Teamwork experience" is another highest-ranking requirement found in the job postings that are associated with the LIS curriculum. Based on the researcher's previous experience as a graduate student in the LIS program, most students have teamwork experience through group projects and case studies in many of the School's courses. A few job postings list the "experience in training/demonstrating application software and tools" as a required work experience. One can say this description matches generally what a "bibliographic instructor" does. Bibliographic Instruction (including design, development, and implementation) was offered in the LIS program once as a Special Topic in the fall

term of 1999, and was offered again in the summer term of 2001 under the name of "Library Instruction". In such a class, students learn to design database manuals and course handouts for a bibliographic session. Also, students learn the techniques and skills to be a bibliographic instructor, which again are LIS graduates' strengths for the KM job market.

"Excellent oral communication skills" and "excellent writing skills" are the two highest-ranking special skills listed in the KM job postings. These skills are associated with the LIS curriculum in indirect ways, which means these skills may be part of the traits that LIS students generally have in common. LIS students in general exhibit a better command of speaking and writing compared to the students in the more IT-related disciplines. This difference may be explained by the undergraduate degrees in humanities or social sciences that many of the LIS students hold.

Finally, knowledge manager should be able to serve as a facilitator between technology and people; between users and corporate intranets. The nature of a librarian's work is at advantage in this regard because it is indeed a blend of people and technology. Also, a great many courses offered in the Resources and Services for Specific Patron Groups and User Needs and Information Services not only help LIS students be "client focused" and be sensitive to users' information needs, but also equip the students with proper understandings and skills of various information resources.

Findings in relation to the literature

Koenig states that to be an aspiring professional in KM, one needs to know the basics of IT, in particular in the areas of telecommunications, networks and the Internet related technologies (p. 26). The researcher found that these probably are the areas that most LIS students, who are interested in a KM job, need to work on in order to gain the competitive edge. Another IT-related area of knowledge that most LIS students are lack of is the profound knowledge of computer data structures and database management systems.

Before entering the KM job market, an LIS graduate should familiarize him/herself with different business writing styles. Needless to say, it is essential to develop concise and clear writing and presentation skills. Writing an executive summary, delivering a training session, or making a presentation to the higher levels requires different communication skills. Because of the fast-paced nature of a business environment, LIS graduates should be aware that the ways to accomplish these tasks are different from those learned in school or used in a traditional library setting.

Extensive understandings of KM literature and practices are prerequisites for all the LIS students who would like to work in KM-related positions. This is not only mentioned by Koenig, but is also confirmed by the data analysis of the job postings. If at all

possible, LIS students should also have some experience with current KM software and systems.

Koenig also noted that KM professionals should possess sufficient understandings of business and economic concepts. Since not every LIS student has a business-related undergraduate degree before entering the program, one needs to achieve the goal by taking business-related courses and through self-studying. In the LIS program at the University of Pittsburgh, Business Resources and Services is a service-related course offered on a regular basis, in which students are exposed to some of the important business concepts and terms.

In summary, by examining the findings of this study and the literature concerning needed education for KM professionals, the researcher found that the two correspond with each other. The requirements listed in the job postings in the real world are identified in the literature, in particular in Koenig's article. This study provides further evidence with empirical data that the qualifications listed and discussed in the previous sections are the essence of KM education.

Conclusion

In examining the KM-related job postings, the researcher found that a master degree in library and information science is one of the preferred advanced degrees required by KM employers. The data analysis also reveals that to a certain degree current LIS curriculum (using the School of Information Sciences at the University of Pittsburgh as an example) is associated with some of the knowledge and special skills listed in the KM job requirements. More technology-oriented courses should be incorporated into existing curriculum if LIS schools would like to react to the job markets and prepare well-qualified graduates. On the other hand, as Koenig noted, "[t]here is no one ideal place, and education for knowledge management is likely to emerge in various places" (p. 27). He stated also that

> "[knowledge management education] does not fit easily into any existing academic discipline or professional school..... effective education for knowledge management will require cooperation between different academic units. To accomplish that, both creativity and a certain entrepreneurial spirit will be required" (p. 29).

The study confirms the above statement. It is shown that LIS curriculum is capable of preparing the LIS students for a KM career to an extent. Further statistical analysis may be needed in order to confirm the significance of the findings as well as the generalizability of the results. However, by examining both KM literature and the job postings, it is agreed that a certain set of skills can be taught and essential knowledge can be obtained

through the LIS curriculum. In addition, the researcher believes that, as a multi-disciplinary subject as KM is, the education for knowledge management should be composed of different academic units so that the strength of each discipline can benefit and prepare LIS students as future KM professionals.

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