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Embracing Knowledge Management as a New Perspective for Librarianship

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Abstract

The emergence of Knowledge Management (KM) has raised an on-going debate on how it may relate to pre-existing fields and schools of thoughts. The main dispute focuses on whether Library and Information Science (LIS) and KM are distinct fields of specialisation. Whilst one school claims that KM is merely a new name for what librarians have been doing for years, or information science in new clothes; the other and more prevailing school believes that KM not only greatly overlaps with LIS, but also extends the scope of the field. The authors argue that KM can act as a vehicle for enhancing and transforming the professional image and role of librarianship. Information professionals should expand their traditional roles by actively engaging in KM initiatives in a variety of organisations. This progression and new perspective of librarianship elicit major challenges to the existing

structure of LIS education and in particular how KM is represented and taught. This paper revisits the conceptual basis of KM, presents a survey of KM education provided by the member schools of the iSchools Caucus, as well as shares experiences of teaching KM in Chinese library schools. Moreover, this paper advocates that a KM education framework should be developed through the collaboration of LS and KM researchers and educators across international borders.

Keywords: Knowledge, Knowledge management, Knowledge management education, Library science education

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1. Introduction

Knowledge has always been the foundation of any civilised society throughout the history of human civilisation. However, never like today have societies accessed, produced and consumed so much knowledge. Therefore, never like in today's "knowledge society" was it so vitally important to access and share information in organisational settings (Mertins, et al., 2003). In fact, contemporary organisations are clearly aware that their survival and competitiveness depends on the effective creation, storage, retrieval and utilisation, as well as the adoption of appropriate knowledge manage policies (Wiig, 1997).

The concept of knowledge management (KM) emerged around the mid and late 1990s and has its roots in business studies. According to Ipe (2003), KM is essentially the behaviour of making knowledge available to others within the organisation. This is a plain and over simplified definition, but one that fits well with the function of libraries that are embedded in larger organisations, for example academic and business libraries. KM is a complex construct however, it requires not only effective knowledge transfer processes, but also a constant and dynamic interpretation and transformation of both explicit and tacit knowledge (Nonaka and Takeuchi, 1995). A very comprehensive definition of KM is coined by Charles Townley (2001):

> "Knowledge management may be defined as the set of processes that create and share knowledge across an organization to optimize the use of judgment in the attainment of mission and goals. It involves capturing an organisation's goal-related knowledge as well as knowledge of its products, customers, competition, and processes, and then sharing that knowledge with the appropriate people throughout the organization" (Townley, 2001).

In the business world, KM is viewed as an effective approach for the promotion of innovation, performance, service quality and, most importantly, for increasing financial gains. Nevertheless, there is still a significant lack of concrete and conclusive evidence for the proposition that KM can lead to superior financial performance (Darroch, 2005).

This is of less relevance to libraries, KM has a long root in library practice and has much to offer to information professionals as well as library stakeholders. It is believed that the collection and maintenance of knowledge by librarians is a practice as old as civilization itself (Roknuzzaman and Umemoto, 2009). Historically, as a basis for collection, organisation, storage, and distribution of knowledge and information; libraries represent an important link to knowledge innovation and management. Culturally, libraries are rooted in human knowledge, and librarians are familiar to the schemes of organizing knowledge (Roknuzzaman and Umemoto, 2009). Also, it is widely acknowledged that KM brings opportunities for best practice in libraries, and libraries can improve their knowledge-based services for internal and external users through creating an organisational culture of sharing knowledge and expertise within the library.

Based on the well-established connection between KM and the library profession, KM education has been included and integrated, either explicitly or tacitly, into LIS education. This paper reviews essential theoretical constructs of KM and provides an overview of KM education in LIS schools (iSchools) around the world. Moreover, based on an analysis of a case study (Library Science Undergraduate Program in Wuhan University), this paper calls for developing an integrated KM education model by uniting efforts of library science educators, KM researchers and library professionals.

2. Theoretical Underpinning

2.1. Definition of Knowledge

The role of knowledge as a source for economic and social growth is not new and back in the late nineteenth century (Vasconcelos, 2008). Interestingly, there is still no unified definition of knowledge. This debate dates back to ancient Greece, when Plato made probably the very first attempt to define knowledge, as true and justified belief

(Zhou and Nunes, 2015). However, from our modern perspective, Plato's definition is criticised by Nonaka et al. (2000) as an "absolute, static and non-human view of knowledge […] fails to address the relative, dynamic and humanistic view of knowledge" (Nonaka et al., 2000). Although now it is still not possible to define knowledge accurately, the current debate on knowledge is mostly around two main issues, the construction of knowledge and the taxonomies of knowledge.

The construction of knowledge includes two distinctive institutions of philosophies: an objectivist epistemology of knowledge, and a practice-based epistemology of knowledge. The objectivist epistemology of knowledge is rooted in the positivism of the mid nineteenth century (Stenmark, 2002). It views knowledge as an object and as an absolute and universal truth. In this perspective, knowledge is something that can be stored and manipulated and is separated from the knower. From this epistemological stance, knowledge is defined by distinguishing data, information, and knowledge (Alavi and Leidner, 2001):

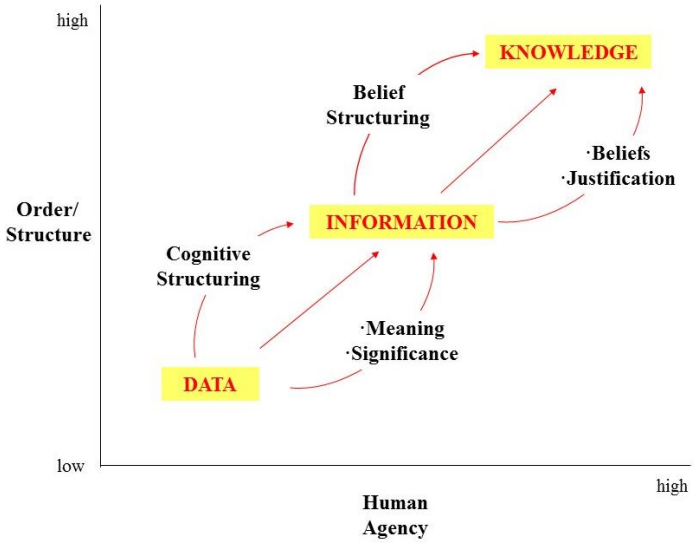

Figure 1. Data, Information and Knowledge Continuum (Choo, 2006)

It is necessary to point out two basic assumptions underlying this data-information-knowledge continuum diagram. Firstly, knowledge is objective and is universal. Secondly, the object of knowledge is evolved from two more fundamental objects (data and information) from lower in the hierarchy (Sheffield, 2008). The practice-based epistemology of knowledge is very different from this view.

The practice-based school of understanding is rooted in the critique of the positivism and quantitative approach to science. It is believed that knowledge cannot be viewed as an object and cannot be defined universally. Knowledge is generated, shared, and utilized through continuous interactions with the social and physical world rather than being transferred as an object (Zhou and Nunes, 2015). Knowledge in this perspective is described as "a state or fact of knowing", in which the knowing is a condition of knowledge obtained from experience or study (Alavi and Leidner, 2001: 110). Evidently, the differences between these two philosophical stances are significant, the real construction of knowledge is still unknown, probably is "a little bit of both" (Stenmark, 2002).

For the taxonomy of knowledge, there are several very different definitions. Blackler (1995) defines five different types of knowledge: embrained, embodied, embedded, encultured, and encoded. Choo (2000) identifies explicit, tacit, and culture knowledge in the organisational environment. Boisot (1995) categorises knowledge into proprietary, public, personal, and common-sense knowledge. Cook and Brown (1999) propose explicit, tacit, group, and individual knowledge. Nonetheless, the commonly agreed definition, widely used in the KM field, is provided by Nonaka (1994), who divides knowledge into two forms: tacit and explicit knowledge.

All knowledge is either tacit or rooted in tacit knowledge (Polanyi, 1966). This type of knowledge is highly personal and hard to formalize, making it difficult to communicate or to share with others. Subjective insights, intuitions, and hunches fall into this category of knowledge. Furthermore, tacit knowledge is deeply rooted in an individual's action and experience, as well as in the ideals, values, or emotions he or she embraces (Nonaka and Takeuchi, 1995:8). Tacit knowledge is embedded in people's heads and is 'spoken understanding' rather than written down in a document or recorded in a database (Servin, 2005).

Very different from tacit knowledge, explicit knowledge can be externalized and formalized, is much easier to share with others. Explicit knowledge can be expressed in language, data, instruction manuals and other documents and records. It is easier to share and transmit from individual to individual, as well as from organization to

organization (Salmador and Bueno, 2007). Moreover, Servin (2005) further divides explicit knowledge into structured explicit knowledge (such as documents, databases and spreadsheets) and unstructured explicit knowledge (such as e-mails, images, training courses, and audio and video archives).

Despite the great differences, tacit and explicit knowledge are complementary to each other, as discussed by Nonaka et al. (2000: 8): "Explicit knowledge without tacit insight quickly loses its meaning. Written speech is possible only after internal speech is well developed". Both types of knowledge are fundamental to KM and library works. In fact, Nonaka and Takeuchi (1995) stress that continuous transfer of knowledge between tacit and explicit becomes a constant job in KM.

2.2. Knowledge Management in Libraries

KM and libraries are natural partners, librarians have strong ties with the broader information science field and as such have encountered principles of KM throughout their training and career. KM encompasses five core principles: knowledge acquisition, knowledge organization, knowledge retention, knowledge sharing and knowledge generation (Davenport and Prusak, 1998; Jashapara, 2004). It becomes clear that all five are areas that libraries have an involvement in; this is particularly true for explicit KM activities related to the organization of information, data and knowledge, and increasingly for tacit KM activities, acknowledged as early as 1993 by Florance and Matheson (1993). Specific activities, such as organizing workshops and other educational activities at the point of need, facilitating exchange between stakeholders through displays and conferences and the organization of digital literacy (public and school libraries) and scholarship (academic and legal libraries) programs have become more prominent in library science over the past two decades. The following section highlights activities taking place in each of the five core principles of KM:

Knowledge acquisition: Libraries are by default responsible for gathering valuable resources to enable knowledge acquisition by its key-stakeholders. Researchers rely on libraries to find the latest information on their subject areas and apply this information

in their development of new knowledge, libraries play an important part in supporting these activities (Hoffman, 2016). Libraries are also responsible for identifying shifts in the relevance of resources - for example by keeping track of performance indexes of journals or by signposting relevant online material, which aids appropriate acquisition of knowledge.

Knowledge organization: The acquired resources have to be organized in a manner that enables retrieval by stakeholders. In this process the library is responsible for appropriate storage, providing access to resources, ensuring fair distribution of resources and developing new methods for retrieval. It is (often) also responsible for creating awareness of new resources and organizing the promotion of knowledge created within the organization, for example by recommending optimal journals for publication impact or by organizing and publishing newsletters and updates within the organization.

Knowledge retention: Most libraries have different types of archival support available. Online repositories are an important part of developing access to knowledge and information created throughout the organization (Bangani, 2018; Arlitsch and Grant, 2018). Increasingly libraries are also involved with large-scale research data-storage and retrieval projects (Cox et al., 2017) and traditionally have facilitated access to data and information in expired formats, such as microfiche or cassettes.

Knowledge sharing: Open Access is pushing the agenda for accessible research output and this has a major impact on the role of libraries in sharing knowledge to a far greater audience (Farida et al., 2015). To aid with the sharing of research output, libraries utilize the aforementioned online repositories, provide advice and guidance on Open Access Journals and other means of open access publication (Sabharwal and Natal, 2017) and increasingly, through the provision of scholarly communication departments, provide training and development opportunities to researchers in achieving more success in getting their research output published, either through traditional channels, or by facilitating access to appropriate media and events.

Knowledge generation: Through scholarly communication and digital scholarship

services, as well as more traditional support, libraries are increasingly involved as key-stakeholders for researchers within their host-institutions (Hoffman, 2016). Libraries facilitate multi-disciplinary events and act as a link between researchers and library-users who might not be aware of each other's existence but encounter each other through, for example, the online repository of the host-institution, or through scholarly communication training events. Subject and legal librarians are traditionally involved with research projects to aid access to appropriate resources and in some cases help develop the research by (co-) conducting literature reviews and analysis.

All these activities demonstrate that libraries are already contributing to core KM activities in organizations, and, as Florance and Matheson (1993) stated; library staff are knowledge workers that play an important role in the development of KM activities. It is therefore important that KM plays a part in the education of future librarians.

3. An Overview of KM Education in LIS Schools

KM has been envisioned as a vehicle for enhancing and transforming the professional image and role of librarianship. Information professionals should expand their traditional roles by actively engaging in KM initiatives in a variety of organisations. This progression and new perspective of librarianship elicit major challenges to the existing structure of LS education and in particular how KM is represented and taught.

In the academic community, the movement of KM in LIS is both evident and promising. In fact, some studies have confirmed that LIS schools are the most active in KM education among the competing disciplines (Sutton, 2007). Curiously, LIS schools are perceived as more active than those schools in business and management.

The education of KM should be based on the definition of knowledge and include all necessary KM concepts and skills required for library works and professional development. Many researchers propose that LIS schools have assimilated the core concept of KM through combining major perspectives and skill-sets of KM with an emphasis on information management and information technology-oriented courses. These include models focusing on information and knowledge organisation, content

development, database management, record management, portals and information architecture, data mining, information storage and retrieval, indexing, networking, information policy, and information literacy (Roknuzzaman and Umemoto, 2013).

It is necessary to note that these modules are more focused on the explicit side and are really not significantly different from the traditional LIS courses. Thus, Hazeri et al. (2007) suggest that the management of tacit knowledge should also be included through the teaching of some management-oriented modules, such as organisational behaviours, human resource development and management, organisational learning, and information and knowledge society.

Due to the interdisciplinary and versatile nature of KM, Sutton (2007) advocate that it is necessary to consider a KM Education Manifesto to establish a joint interdisciplinary curriculum by combining the perspectives from business, management and LIS. However, the problem is that there remains unclear the extent of KM inclusion in LIS programs.

In response, the website of the major LIS schools around the world are visited in order to gain a comprehensive overview. Specifically, the members of the iSchools organisation were included and reviewed. The iSchools organisation is an association of LIS schools, colleges and departments dedicated to the advancement of the research and education of the information field. This study included Tier 1 iCaucus members, a total of 29 iSchools located in North America, Europe and Asia. These iSchools are the leading LIS education institutions in the world.

A systematic search and review of the selected iSchools' homepage was carried out to obtain first-hand information in the following categories: university, school name, program name, module name, module type (mandatory/selective), module level (undergraduate/postgraduate). A tabular presentation of the review findings is shown in Table 1.

ID	University (Country)	iSchool	Program Name	Module Name	Module Type	Module Level
1	Carnegie Mellon University (USA)	School of Information Systems and Management	MSIT: Information on Technology Management	IT Project Management	Mandatory	Postgraduate
2	Drexel University (USA)	College of Computing & Informatics	MS: Library and Information Science	Data and Digital Stewardship	Mandatory	Postgraduate
3	Florida State University (USA)	College of Communication and Information	MS: Information; MS: Information Technology	Management of Information Organizations	Mandatory	Postgraduate
4	Georgia Institute of Technology (USA)	College of Computing	Not Specified	Not Specified	Not Specified	Not Specified
5	Humboldt University of Berlin (Germany)	Berlin School of Library and Information Science	Library and Information Science	Communication and Knowledge Management	Selective	Postgraduate
6	Indiana University (USA)	School of Informatics, Computing, and Engineering	MA: Information and Library Science	Organisational Informatics	Selective	Postgraduate
7	Pennsylvania State University (USA)	College of Information Sciences and Technology	MS: Information Sciences and Technology	Knowledge Management	Selective	Postgraduate
8	Rutgers, The State University of New Jersey (USA)	School of Communication and Information	MLIS: Information	Knowledge Management in Organisations	Selective	Postgraduate

9	Syracuse University (USA)	School of Information Studies	MS: Library and Information Science	Knowledge Management	Selective	Postgraduate
10	Singapore Management University (Singapore)	School of Information Systems	Not Specified	Not specified	Not specified	Not specified
11	University of California, Berkeley (USA)	School of Information	MS: Information Management and Systems	Managing in Information-Intensive Companies	Selective	Postgraduate
12	University of California, Irvine (USA)	The Donald Bren School of Information and Computer Sciences	BS: Informatics; MS: Informatics	Project Management	Not Specified	Undergraduate & Postgraduate
13	University of California, Los Angeles (USA)	Graduate School of Education and Information Studies	MLIS: Library & Information Science	Information in Society; Introduction to Economics of Information; Global Media and Information	Selective	Postgraduate
14	University of Copenhagen (Denmark)	Department of Information Studies	MSc: Information Science and Cultural Communication	Knowledge Organisation	Mandatory	Postgraduate
15	University of Illinois (USA)	School of Information Sciences	MS: Library and Information Science	Information Organization and Access	Mandatory	Postgraduate
16	University of Maryland	College of Information Studies	MLIS: Library and	Knowledge Management	Selective	Postgraduate

	(USA)		Information Science			
17	University of Michigan (USA)	School of Information	MS: Information	Organisation of Information Resources	Selective	Postgraduate
18	University of North Carolina (USA)	School of Information and Library Science	MS: Library Science	Special Libraries and Knowledge Management	Selective	Postgraduate
19	University of North Texas (USA)	College of Information	MS: Library Science	Information and Knowledge Professions; Information Access and Knowledge Inquiry	Mandatory	Postgraduate
20	University of Pittsburgh (USA)	School of Computer and Information	MLIS: Library and Information Science	Knowledge Organisation	Selective	Postgraduate
21	University of Sheffield (UK)	Information School	MSc: Digital Library Management	Information Organisation	Mandatory	Postgraduate
22	University of Texas, Austin (USA)	School of Information	MS: Information Science	Knowledge Management Systems	Selective	Postgraduate
23	University of Toronto (Canada)	Faculty of Information	MS: Information	Knowledge and Information in Society	Mandatory	Postgraduate
24	University of Washington (USA)	Information School	MS: Library and Information Science	Knowledge Management	Selective	Postgraduate

25	Wuhan University (China)	School of Information Management	BA: Library Science MA: Library Science	Knowledge Management	Selective	Postgraduate and Undergraduate
26	University College Dublin (Ireland)	School of Information and Library Studies	MLIS: Library and Information Studies	Research Data Management	Selective	Postgraduate
27	Sungkyunkwan University (Korea)	Library & Information Science and Data Science Department	Not Specified	Not Specified	Not Specified	Not Specified
28	University of Tampere (Finland)	School of Information Sciences	Not Specified	Not Specified	Not Specified	Not Specified
29	Northumbria University (UK)	Department of Computer and Information Sciences	Not Specified	Not Specified	Not Specified	Not Specified

Table 1: KM or Related Modules Offered by the iSchools

As shown in Table 1, the iCaucus members in the iSchools organisation offer a good sample to capture a holistic picture of the KM education in LIS schools. Among the 29 schools, there are 21 (72.4%) North American schools, 19 in the U.S. and 1 in Canada. Comparatively, European and Asian schools are significantly less. There are only 5 (17.2%) European and 3 (10.3%) Asian schools included in the analysis. This indicates that North American schools are leading the iSchools movement and development of LIS education.

The table demonstrates that almost all of the schools investigated have strong background in LIS, or originated from library schools, except the College of Computer at Georgia Institute of Technology, which is essentially a computer science school. However, these schools can be extremely different in nature.

Eleven (37.9%) schools can be considered as traditional LIS schools, which perform research and provide education programs from a traditional view with a tendency to include more informatics elements. These schools include the School of Information and Library Science at the University of North Carolina in North America; the Berlin School of Library and Information Science at the Humboldt University of Berlin in Europe; and the School of Information Management at Wuhan University in Asia.

Also, it has become clear that ten (34.5%) schools have clearly departed from the traditional focus on 'library', have become increasingly focusing on 'information'. However, these schools still have strong connections with social sciences. This type of schools includes: the School of Information at the University of Michigan in North America; the Information School at the University of Sheffield in Europe; and the Library & Information Science and Data Science Department at the Sungkyunkwan University in Asia.

On the other hand, 6 (20.7%) schools have merged with computer science schools. These schools have been increasingly adopting computer science perspectives and using computer technologies for the research of information from a computer science perspective. This type of schools include: the College of Computing & Informatics at Drexel University in North America; the School of Information Sciences at the

University of Tampere in Europe; and the School of Information Systems at Singapore Management University.

The research findings show that although none of the schools investigated provide a KM program, almost all schools have included some degrees of KM teaching in their education programs. KM is often included as a course module or included in a related course module. Also, the table shows that nearly half of these KM (or KM-related) modules are selective (51.7%), only 8 (27.6%) modules are mandatory. Furthermore, all these modules are provided at postgraduate level, except Wuhan University and University of California, Irvine provide KM modules in both bachelor's and master's programs.

In general, KM education in these schools can be divided into three categories. LIS schools in the first category provide the highest importance to KM education. It can be seen that 11 schools (39.3%) with strong library science background provide KM modules, e.g. the Knowledge Management module provided in the University of Washington; the Knowledge Management module provided in the University of Syracuse; and the Knowledge Management module in both BA and MA programs in Wuhan University. These KM modules are named: Knowledge Management, Special Libraries and Knowledge Management, Information and Knowledge Professions, Information Access and Knowledge Inquiry.

In the second category, KM education in 8 schools (27.6%) is perceived not as valued when compared with the schools in the first category. In these schools, KM is included in informatics or information systems modules, e.g. the Information Organisation and Access module provided in the University of Illinois, the Information Organisation module provided in the University of Sheffield, and the Organisational Informatics module provided in the Indiana University. These modules do not specify fundamental differences between information and knowledge, theorise that KM as an integrated component of information management and its operation can be facilitated through the implementation of information systems.

In the third categories, KM education in four schools (13.7%) have become more

technology- and data-oriented, e.g. the Research Data Management provided in the University College Dublin, the IT Project Management module provided in the Carnegie Mellon University, and the Data and Digital Stewardship module provided in the Drexel University.

4. KM Education in the School of Information Management at Wuhan University

KM as an emerging concept has gained the attentions of Chinese researchers and educators since the early 2000s. Qin and Tie (2005) claim that KM represents the latest achievement of management research in the field and is believed capable of substantially promoting organisational efficiency and financial performances. Based on their observation, these authors propose a KM education framework, which offers a base structure for the development of KM programs in Chinese universities.

The framework proposed by Qin and Tie (2005) indicates that KM programs in Chinese universities should at least include the following three main components: (1) KM in business and corporal environments: how information and data can be effectively transformed to knowledge; and how organisations enhance their innovation and competition advantages through knowledge identification, retention and utilisation. (2) KM in public sectors: how public services handle and process information and knowledge through knowledge sharing, information services, knowledge and information systems development, decision making optimization and the analysis of policies. (3) Information architecture and services: how to provide knowledge and information services in response to the requirement of information users.

However, after reviewing postgraduate program catalogue published by China's Ministry of Education, Sun and Chu (2012) assert that, out of more than 2,500 higher education institutions in China, only three offer postgraduate programs: School of Management Science and Engineering at Dalian University of Technology, School of Economics and Management at Tongji University, and School of Management at Xi'an University of Finance and Economics.

In fact, Zhao et al. (2014) reveal that KM education is mostly included in business schools in China as one of the pertinent research directions for postgraduate students, not as a stand-alone program. Moreover, Zhao et al. (2014) point out that no KM undergraduate program has been made available for students, which according to Zhao et al. (2014) presents a significant problem in the current education structure.

Nevertheless, and when compared with business and management schools, KM education is more valued by LIS researchers and educators (Zhao et al., 2014). KM has been seen as a logical and reasonable continuation of the management of data and information resources. Actually, in the LIS field, the School of Information Management, Wuhan University arguably offers not only the first KM module in China, but also the most comprehensive KM education in its undergraduate and postgraduate programs, as shown in Table 3 below:

<table>
<tr><td>Level</td><td>Program</td><td>Module Name</td></tr>
<tr><td>Undergraduate</td><td>Library Science</td><td>Knowledge Management</td></tr>
<tr><td>Undergraduate</td><td>Archival Science</td><td>Knowledge Management</td></tr>
<tr><td>Undergraduate</td><td>Information Management & Information Systems</td><td>Knowledge Management</td></tr>
<tr><td rowspan="3">Postgraduate (Master)</td><td>Management Science and Engineering</td><td>Knowledge Management</td></tr>
<tr><td>Information Science</td><td>Knowledge Management</td></tr>
<tr><td>E-Business</td><td>Corporal Knowledge Management</td></tr>
<tr><td rowspan="4">Postgraduate (Doctoral)</td><td>Management Science and Engineering</td><td rowspan="3">Knowledge Management and Knowledge Science Research; Knowledge Management and Information Law Research; Knowledge Management Research</td></tr>
<tr><td>Information Science</td></tr>
<tr><td>Information Resource Management</td></tr>
<tr><td>E-Business</td><td>Corporal Knowledge Management</td></tr>
</table>

Table 3: KM Modules Provided by the School of Information Management at Wuhan University

According to Table 3, at Wuhan's School of Information Management, KM modules are involved in nearly all degree programs, from bachelor's, master's to doctoral levels. Nevertheless, these KM modules are delivered by different professors from the school through different perspectives. In this school, information science students, as well as management science and engineering students are strongly technology-oriented; whereas students in library and archival sciences are much more social science-oriented. In the library science undergraduate program, considering the students' backgrounds in arts and humanities, the KM module for Wuhan's library science students is very theoretical and more focused on the management of tacit knowledge through encouraging tacit-explicit transformation and formulating management strategies.

The KM module is one of a series of selective modules, which offers 3 selective credits to 2nd-year library science students. As a selective module, students are not mandatorily required to study this module and allowed to choose a large collection of selective modules. According to the experiences gained in the recent 5 years, more than 90% selected this module. That is, out of a total of 45 students enrolled in Wuhan's library science undergraduate program each year, more than 40 selected KM module in their 2nd year of study.

This module spans across 17 teaching weeks, 3 teaching hours per week throughout a semester. The teaching arrangement is demonstrated in Table 4 below.

Week Number	Teaching Content	Teaching hours
1	Knowledge definition and taxonomy	3
2	The definition and basics of KM	3
3	Organisational KM strategies (I)	3
4	Organisational KM strategies (II)	3
5	Organisational knowledge auditing and acquisition (I)	3
6	Organisational knowledge auditing and acquisition (II)	3
7	Organisational knowledge creation (I)	3
8	Organisational knowledge creation (II)	3

9	Organisational knowledge storage and utilisation	3
10	Organisational knowledge sharing and transfer	3
11	KM from organizational behavior perspective	3
12	KM evaluation	3
13	Personal KM (I)	3
14	Personal KM (II)	3
15	KM in libraries	3
16-17	KM research seminar	6

Table 4: KM Teaching Content for Library Science Undergraduate Students at Wuhan University

In order to earn the 3 module credits, students are required to attend all lectures (10%), make two group presentations (30%) and submit a 3,000 words research report (60%) at the end of the semester. As perceived, 1/3 of students were really participative and interactive when in class, whereas the majority of LS students are considered as neutral, as they are not highly participative and not completely disengaged either. However, there were also 1/5 of students seemed 'careless'. This can be considered as normal in the teaching of library science modules in China's LIS schools as reported in Zhou et al. (2017).

Also, it can be perceived from heavily involved in the teaching of this KM module, although the existing design covers the basis of KM from a traditional view, that the education model can be considered as obsolete and presents the following problems:

- The module is delivered based on the premise that knowledge is developed through the articulation of information, which is formed through the process of data. This is not wrong; but the practice-based view of knowledge construction should be included in teaching, so that students can compare the two contrasting views and thus have a better understanding in differentiating knowledge from information, as well as KM from information management.

- Despite the same KM theoretical foundation, the implementation of KM in libraries are different from its implementation in business environment. That is, the delivery of KM module in LIS schools should be different from those modules provided in business and management schools.
- It is necessary to explicate relationships with other modules in the LS program. Only on this basis, students can truly understand the basics of KM, the implementation of KM in library operation and service provision, as well as using information systems to facilitate KM operation.

6. Conclusion

KM is a subject area taught both in business schools and iSchools. This paper seeks to establish that KM is increasingly relevant to 'traditional' library operations across the sector. As such it is time for a clarion call to program leaders and educators across the sector to start thinking about how KM can be integrated into library programs. The advent of digital repositories, open access initiatives and increased research support activities are changing the face of libraries yet again. By utilising existing theories and narratives from KM, iSchools, and others involved in the education of librarians, can introduce a broader understanding of these subjects to prospective students. Further research is required into the relationship between these emerging paradigms and existing KM literature.

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