A Study on Developing Library and Information Science Core Course Syllabi

Le développement de programmes de cours de base en sciences de l'information et bibliothéconomie

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Abstract: This research aims at developing course content for the core curriculum in library and information science departments based on current curricula and data from a job analysis. Sample syllabi were developed for six core courses after reviewing syllabi from different departments in South Korea and abroad. The content was then rated by current field librarians for relevancy. The six courses developed were Introduction to Library and Information Science, Information Organization, Information Services, Library and Information Centre Management, Information Retrieval, and Library Field Studies.

Keywords: library and information science, curriculum, courses, librarians' perception, developing syllabi

Résumé : Cette recherche a pour objet le développement de contenus de cours pour les programmes de base des départements de bibliothéconomie et de sciences de l'information, à partir de données provenant de curricula et d'analyses de l'emploi. Des échantillons de plans de cours ont été développés pour six cours de base en nous appuyant sur l'examen des programmes d'études de différents départements en Corée du Sud et à l'étranger. Les contenus ont ensuite été évalués pour leur pertinence par des bibliothécaires de terrain en exercice. Les six cours développés étaient : Introduction à la bibliothéconomie et aux sciences de l'information, Organisation de l'information, Services d'information, Gestion d'une bibliothèque et d'un centre d'information, Recherche d'information, et Études de terrain en bibliothéconomie.

Mots-clés : bibliothéconomie et sciences de l'information, curriculum, cours, perception des bibliothécaires, développement de plans de cours

Introduction

The curriculum is an essential part of college education, and it is the most important tool used by each department to produce capable, well-educated professionals in their fields. Because of its importance, curriculum studies have been conducted both in the field of education and within each discipline.

As in other disciplines, curriculum research is a long-standing topic of study in the library and information science (LIS) field. Such research serves to enhance the quality and maintain the consistency of education across universities, so that all students earning the same degree are truly on an equal footing when entering the field.

Course content has been developed to enhance the quality of education all across the world (Y. Noh, Ahn, and Choi 2012b). When the LIS field was first being established in Korea, the main body of research was devoted to identifying proper courses for the curriculum by analysing courses offered in other institutions internationally. In the 2000s the focus shifted to suggesting proper courses for the knowledge and information era. In the United States, adjusting courses to this changing environment has been the subject of many studies by many different researchers (Saye2001; Jaeger 2008; Tenopir 2000), and many studies in the same vein have been conducted all over the world, including in Europe (Bawden 2007; Juznic and Badovinac 2005) and Africa (Kavulya 2007).

Recently, Korean studies (D.-J. Noh 2009; Kwack, Shim, and Yoon 2009) have suggested that some core courses need to be assigned as requirements in all LIS departments, and Y. Noh, Ahn, and Choi (2012b) attempted to propose a required curriculum in a follow-up study. Y. Noh, Ahn, and Choi 2011 provided selective lists of required courses, core courses, and elective courses based on an analysis of curricula in Korea and other countries, a survey of field librarians, and a job analysis for various types of libraries. The required curriculum thus devised consisted of the following six courses: Introduction to Library and Information Science, Information Organization, Information Services, Library and Information Centre Management, Information Retrieval, and Library Field Studies.

This previous study identified the core courses for an LIS education, but many researchers pointed out that the content of these core courses also needed to be standardized in more detail to effectively achieve the goal of educational consistency (D.-J. Noh 2009; Kwack, Shim, and Yoon 2009; J.-S. Kim 2006). Moreover, the Korean LIS Professor's Association meetings in 2010 and 2011 named the standardization of course content an important priority to ensure that all students receive adequate training in the core skills necessary for a career in the LIS field.

This research attempts to develop course content for the core curriculum to educate professional librarians who are able to adapt to the changing knowledge and information society. Though a standard LIS curriculum for Korean schools is the focus, the methods and results can be applicable to departments in other countries with minor modifications. The results are based on an analysis of curricula in LIS departments in Korea and other countries, as well as a job analysis

for each library type. To achieve this goal, this study first developed a standard model of LIS course content, attempting to enhance the value of the previous research's core course suggestions by providing detailed content for them. This study then summarized the current status of LIS core courses in Korea and other countries. To this end, researchers collected the syllabi of these courses provided by LIS departments in Korea and other countries, and analysed the content, teaching and grading methods, and main and auxiliary textbooks. The results also take into account standard occupational skills, which reflect the needs of the field, through a job analysis survey. Taking into account all of the above information, this study then proposed detailed course content for the LIS core courses to educate professional librarians ready for work in the knowledge and information society. This model for determining optimal course content in core courses could also be used to develop content for courses in other subjects.

Naturally, the proposed curriculum developed for this research would best be used with modifications determined by specific LIS departments and professors to best meet their students' needs, especially if implemented outside Korea, which was the focus of this study. Further studies based on this research using improved or different approaches are also necessary to enhance the future quality of education.

Literature review
Since the beginning of the LIS field, research on developing LIS courses and their contents has been conducted to accommodate social changes. Especially in the current knowledge and information society, consistent efforts have been made to reflect the rapid development of information technology in LIS course content. Research related to curriculum development has been conducted not only in Africa as a whole (Baro 2011), Kenya (Kavulya 2007), and Kuwait (Alqudsi-Ghabra and Al-Ansari 1998) but also in the United States, United Kingdom, Canada, and Korea. Among this research, Hazeri, Martin, and Sarrafzadeh (2009) included new fields within LIS, such as knowledge management. In addition, there has been a volume of literature suggesting the inclusion of various specific subjects into standard course content. For example, there has been research emphasizing the importance of the organization of electronic resources (Saye 2001), e-government (Jaeger 2008), and information architecture (Robins 2002) and suggesting a model for unifying information literacy subjects and tools for evaluating information literacy (Brown and Krumholz 2002). Al-Daihani (2011) emphasized the necessity of information and communications technology.

Curriculum development has gained much attention in Korea. The trends here in LIS curriculum development research topics can be grouped into five categories: (1) the need to change the LIS curriculum based on societal change (Koo and Park 1998; Hahn 1999; Koo 2000; Y. Noh 2005; Lee et al. 2005);(2) analysis of LIS curriculum development from many different perspectives (Park 2000; Y. Noh 2005; Oh and Chang 2006);(3) LIS development under the academic department system in Korea (S. Kim 1998; Hahn 1998; Um 2003);(4) curriculum development for educating professional librarians, including subject specialist

librarians (Nam and Heo 2005; Jeong and Cha 2007); and (5) the standardization of the LIS subject (Kwack, Shim, and Yoon 2009; D.-J. Noh 2009).

Beyond these, there has been research covering a wide range of other time periods and locations. Bawden (2007) analysed curricula in LIS departments all over Europe and suggested knowledge organization and information literacy as core courses. Y. Noh, Ahn, and Choi (2012a) have studied the changes in the Korean curriculum over 20 years by dividing the time period into six- to seven-year intervals. The research identified an imbalance in the number of courses offered in different areas and found that the proportion of newly opened subjects is increasing as time goes on.

Relatedly, the US Department of Education (2007) suggested five steps for university textbook development: (1) analysing the current curriculum, (2) setting up the objective of the program, (3) developing the program, (4) running a program implementation team, and (5) monitoring the developed program and assigning a program coordinator. Nazarova and Gospodarik (2006) proposed a strategy for developing educational textbooks and developed a priority map and program. Branscome (2005) analysed the history of musical education textbooks to develop a national standard for music education. The National Association for Music Education approved nine core curriculum standards in 1994 as part of their effort to standardize musical education in the United States following heavy criticism about the decrease in quality and the lack of consistency in education.

As described above, research on curriculum has been conducted all over the world by various researchers from various perspectives. A volume of literature suggests the inclusion of various specific subjects into the standard course content as well as attempts to include new fields within LIS, such as knowledge management. These research efforts on course content development aim to educate information professionals in such a way that they are able to readily adapt to changes over time (Juznic and Badovinac 2005).

Research questions
Based on the wide body of research on developing LIS core courses, many universities offer and assign required courses in their degree programs. Moreover, some universities assign students core courses according to their chosen career paths (academic librarian, public librarian, school librarian, etc.). However, students taking the same course at different universities in Korea can receive quite different levels and quality of education depending on the professors, textbooks, and departments offering the courses. Therefore, the objective of this study is to standardize the course content of these core courses to provide a minimum content baseline to ensure that students are consistently educated with the knowledge and skills they need to be successful in the Korean LIS field. The questions motivating this research are as follows:

> Research Question 1: Is there a high focus on course content development in Korea and other countries?

Research Question 2: How many universities offer the suggested core courses that this research develops?
Research Question 3: Is there a notable difference in course content between Korea and other countries?
Research Question 4: Will the course content developed by this research accurately reflect demand in the field?

Research design and method

Research method and procedure

The courses chosen for this research were determined as core to the LIS curriculum in a previous study conducted by the same team. The methods and results of this previous study are summarized below.

The primary research (a study performed in 2011–2012; Y. Noh, Ahn, and Choi 2011, 2012a, 2012b) progressed through a total of five steps: investigating the background of why the current courses in LIS were offered (interviews), determining the current courses in LIS (website search and phone interviews), finding out which courses students have actually completed among those available (literature and resource research), evaluating the practicality of the available courses according to librarians in the field (survey), and exploring the demand for new courses (survey). In addition, this study analysed the process of change in the courses offered by investigating the curriculum over the last 20 years.

The research procedure and phases for this secondary research are summarized as follows and are shown graphically in figure 1.

Phase I: Analysis of core course syllabi at home and abroad

1. Literature survey and analysis: This study surveyed and analysed the previous studies related to core courses in LIS and course content development, in Korea and in other countries.
2. Survey and analysis of core course syllabi from major LIS departments internationally: This study collected and analysed core course syllabi from 39 LIS departments in Korea, as well as syllabi from 28 universities in other developed, English-speaking countries, selected from the previous study.

Phase II: Derivation of course content from job analysis results

1. Job analysis data developed for each library type in Korea and other countries were gathered and studied using the KJ technique[1]:

   - School library job analysis results (completed in 2011)
   - University library job analysis results (completed in 2008)
   - Public library job analysis results (completed in 2007)
   - National library job analysis results (completed in 2007)
   - Subject specialist librarian job analysis results (completed in 2007)

2. This study used those data to derive course content through systematic curriculum and instructional development.
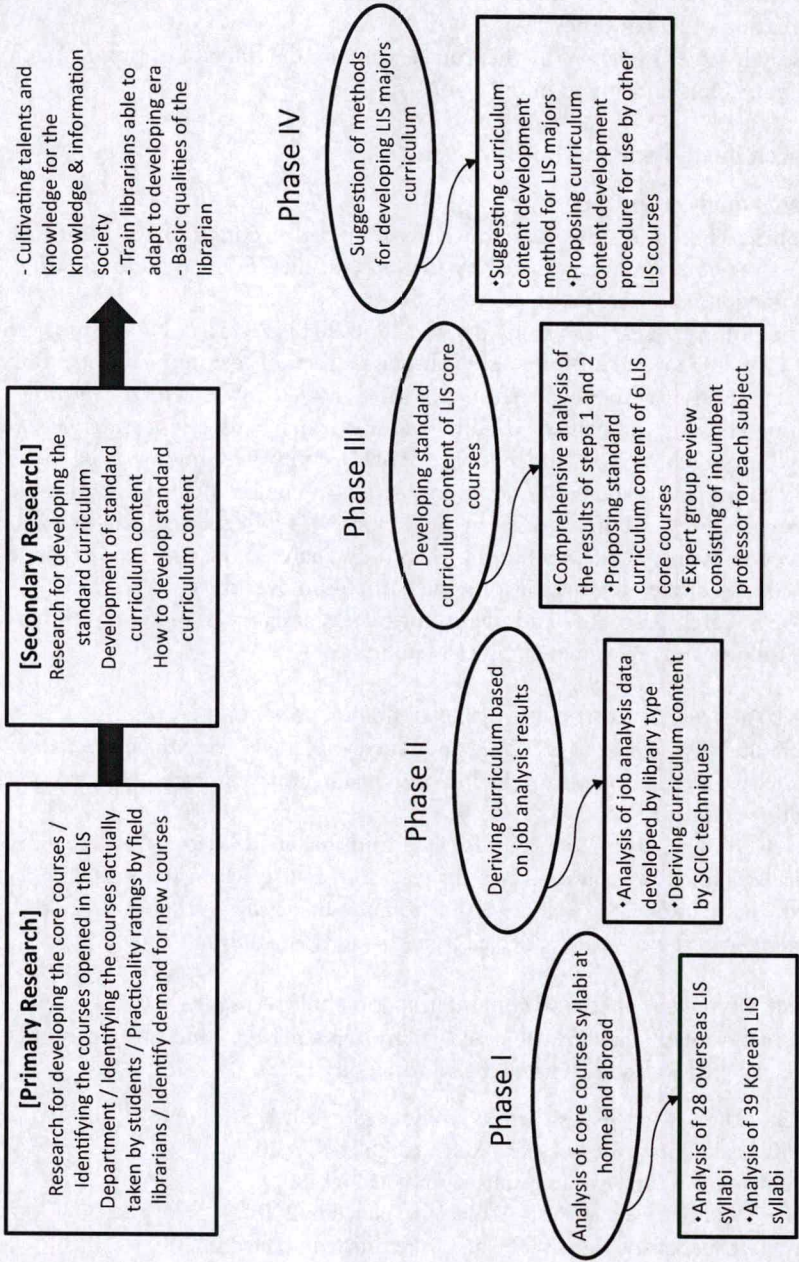
- Cultivating talents and knowledge for the knowledge & information society
- Train librarians able to adapt to developing era
- Basic qualities of the librarian

[Secondary Research]
Research for developing the standard curriculum
Development of standard curriculum content
How to develop standard curriculum content

[Primary Research]
Research for developing the core courses /
Identifying the courses opened in the LIS Department / Identifying the courses actually taken by students / Practicality ratings by field librarians / Identify demand for new courses

Phase IV

Suggestion of methods for developing LIS majors curriculum

- Suggesting curriculum content development method for LIS majors
- Proposing curriculum content development procedure for use by other LIS courses

Phase III

Developing standard curriculum content of LIS core courses

- Comprehensive analysis of the the results of steps 1 and 2
- Proposing standard curriculum content of 6 LIS core courses
- Expert group review consisting of incumbent professor for each subject

Phase II

Deriving curriculum based on job analysis results

- Analysis of job analysis data developed by library type
- Deriving curriculum content by SCIC techniques

Phase I

Analysis of core courses syllabi at home and abroad

- Analysis of 28 overseas LIS syllabi
- Analysis of 39 Korean LIS syllabi

Figure 1. Research procedures

- Constructing core tasks/knowledge table and skill matrix table from job analysis results for five different library types
- Deriving course content based on knowledge and skill grouping

Phase III: Development of the core courses in LIS and standard curriculum content

This study proposed standard curriculum content for the LIS core courses. The required subjects proposed by the previous research (Y. Noh, Ahn, and Choi 2012b), sponsored by the Korea Research Institute for Library and Information, were compared and unified with the required major courses in the standard curriculum suggested by the Korean Ministry of Education, Science, and Technology (Act Number2011-18, 2011.3.22). This study also examined the table of contents and the focus of different textbook chapters and proposed standard curriculum models verified by faculties, lecturers, and textbook authors. An expert group consisting of professors examined and approved the developed content.

Phase IV: Suggestions for LIS course content development method

This study also proposed a course content development method which is suitable for all LIS subjects, not just core courses. A course content development model is provided in the form of a detailed flowchart to facilitate the development of elective subjects other than the core courses. Moreover, since this research models the course content development procedure, it can be considered a model for the standardization of the course content development process.

Data collection and analysis method

To analyse the syllabi for LIS courses in other countries, this research chose 28 universities in the United States, Canada, Australia, and the United Kingdom selected from the previous research (Y. Noh, Ahn, and Choi 2011) and investigated their websites. Unfortunately, the survey uncovered that many universities do not upload their syllabi to their websites, and the representatives contacted at many universities failed to provide syllabi for the purposes of this research. Therefore, this research was conducted for only those universities that provide their syllabi on their websites. The universities in the United Kingdom and Australia provide some of their syllabi on their websites, but their number was quite limited, and they were therefore excluded from the study. Finally, 11 universities were selected for data collection, though not all of the universities provide online syllabi for all six core subjects. The universities and the course names for the collected syllabi in this research can be found in table 1.

Table 1 shows that this study investigated nine universities in the United States and two universities in Canada. The types of departments are categorized into LIS oriented, information science oriented, and unified (with communication, media, and/or archive-oriented studies), depending on the name of the department. The collected syllabi include 5 for Introduction to Library and Information Science, 11 for Information Organization, 7 for Information Retrieval, 12

Table 1. Universities and courses selected for survey

Country	University	Type of Department	Name of Department	Course Name
United States	University of North Carolina at Chapel Hill	Library and Information Science	School of Information and Library Science	Foundations of Information Science Resource Selection and Evaluation Organization of Information Organization of Materials I Information Resources and Services Information Retrieval Management for Information Professionals Professional Field Experience
	Syracuse University	Information Science	School of Information Studies	Information Resources: Organization and Access Introduction to Library and Information Professions Collection Development and Management Organizing Information Cataloging and Classification Reference Source and Services Information Retrieval Management of Libraries and Information Centers Field Experience: Non-school Library Media
	Rutgers, the State University of New Jersey	Unified	School of Communication and Information	Collection Development and Management Reference Information Retrieval: Theory and Practice Library Management
	Indiana University, Bloomington	Library and Information Science	School of Library and Information Science	Information Services: Theory, Techniques, and Subject Areas
	University of Texas at Austin	Information Science	School of information	Cataloging & Classification Information Users and Services Information Access and Resources Information Retrieval Systems
	Drexel University	Information Science	College of Information Science and Technology	

Table 1. (continued)

Country	University	Type of Department	Name of Department	Course Name
	Simmons College	Library and Information Science	School of Library and Information Science	Information Organization Reference/Information Services Evaluation of Information Services
	University of Maryland	Information Science	College of Information Studies	Information Access Services Information Retrieval Systems
	University of Tennessee	Information Science	The School of Information Sciences	The Information Environment Development and Management of Collections Cataloging and Classification Information Representation and Organization Information Access and Retrieval
Canada	University of Western Ontario	Unified	Faculty of Information and Media Studies	Perspectives on Library and Information Science Collection Development Organization of Information Information Sources and Services Managing and Working in Information Organizations
	University of British Columbia	Unified	School of Library, Archival, and Information Studies	Foundations of the Information Society and Information Organizations Foundations of Information Sources and Services Information Retrieval Concepts and Practice Information Retrieval Systems: Structures and Algorithms Practicum

Table 2. Number of Korean courses analysed in each subject

Course Name	Number of Courses Analysed	Universities That Offer Course (%)	Notes
Introduction to Library and Information Science	25	100	All colleges offered this course
Information Organization	Classification 23, Cataloging 23	92	Most universities offered classification and cataloguing courses separately
Information Services	25	100	
Library and Information Centre Management	23	92	
Information Retrieval	24	96	
Library Field Studies	13	52	

for Information Services, 4 for Library and Information Centre Management, and 3 for Library Field Studies courses.

This study also collected syllabi for core courses offered in Korea. Thirty-nine LIS departments in both four-year and two-year institutions were surveyed via phone and e-mail, and departments were notified of the purpose of the research being conducted in official letters requesting cooperation. Syllabi were collected via letter, phone, and e-mail with approval from the lecturers or department chairs. As a result, 25 departments out of 39 responded, a 64.1% response rate.

This study analysed syllabi in six overall areas, and the sample size for each subject shows some variation because certain courses are not offered in some universities, or approval for collecting their syllabi could not be obtained. Introduction to Library and Information Science is offered in all 25 universities, and Library Field Studies is offered in only 13 universities. The number of syllabi in each subject is given in table 2.

To analyse the selected syllabi, the contents were deconstructed into the university name, department name, LIS department type, subject name, prerequisite courses, description, abstract, teaching method, assignments and grading, textbook, and course schedule. All of these data points were used to construct an analysis frame. Then the six subjects were analysed according to the above components, and the results were summarized by constructing a table of extracted keywords. A table of major textbooks for each subject was also constructed along with one summarizing the grading and teaching methods. Taking all of the above into account, a standard syllabus for each subject was proposed by synthesizing the common contents in syllabi from different universities.

Expert evaluation
Finally, this study attempted to reflect demand from the field in the newly developed syllabi to ensure that the course content prepares students well for their future careers. To this end, weighted scores were given to the developed course content. A panel of experts consisting of two to three LIS faculty members and

20 field librarians from different types of libraries evaluated the importance of each content concept in the syllabi with a 5-point Likert scale. All concepts received an average score of above 4 points. The mean scores are listed in the "field opinion" sections of the syllabi found in the "Results" section.

Results

Introduction to Library and Information Science

1. Comparison of analysis results from Korea and other countries
After analysing syllabi from this subject, five of which came from other countries, this study put together table 3, giving the most common course keywords and key subjects of study as well as data points about course grading, teaching, textbooks, and length. Keywords were extracted through cognitive tasks and analysed for frequency using Excel.

2. Job analysis results
Deriving course content from job analysis requires converting the knowledge and skills for work in the field into educational objectives. Such conversion is not an easy task when developing introductory courses, which are often more theory based and not particularly related to specific fieldwork. In this procedure, the data from Korea and other countries were combined, and only those keywords that appeared in both were selected for inclusion.

Out of the 15 keywords from Introduction to Library and Information Science courses, 7 were related to the job analysis: library and information centre, collection development and management, information resources organization, information services, digital libraries, information and databases, and library cooperation. Two of them were related to the understanding of institutes, and the other 5 were related to major job areas.

The selected content based on the job analysis included library and information centres, library and information centre organization and management, collection development and management, selection and collection of information resources, acquisition and disposal of information materials, information resources organization, classification and cataloguing, indexing and abstracts, information services, reference resources and reference services, user information services, digital library information technology, digital library service, information retrieval, databases, library cooperation, and library and information networks.

Information Organization

1. Comparison of analysis results from Korea and other countries
Unlike the nine courses surveyed from other countries, only 3universities of the 25 surveyed in Korea offer one unified Information Organization and Classification and Cataloguing course. Most of the Korean universities surveyed offered classification and cataloguing as two separate courses. Therefore, for the syllabi in Korea, this study dealt with classification and cataloguing courses separately, as shown in the table 4.

Table 3. Introduction to Library and Information Science syllabi summary results

	Korean Results	US and Canadian Results
Syllabi keywords	Knowledge and information society; library and information centre; LIS academic system; information professionals; collection management; information resources organization; digital libraries; information service; the future library; library cooperation; library ethics	History of information professionals; role of information in society; professional librarian overview; LIS overview; information policy; information justice; information science definition; information definition; user need and information-seeking behaviour; intellectual property rights and privacy; intellectual freedom and censorship; mission and expert models; professional ethics and values; library and archive
Main textbooks	*Understanding of Modern Library and Information Science* (Compilation Committee for Understanding of Modern Library); *General Library and Information Science* (Chung and Cho); *Introduction to Library and Information Science* (Moo-Ja Noh)	*Fundamentals of Information Studies: Understanding Information and Its Environment* (Lester and Koehler); *Foundations of Library and Information Science* (Rubin)
Textbook top-level subjects	Knowledge and information society development, information resources, academic system of LIS, LIS in the East, LIS in the West, LIS in Korea, information professionals and institutes, change in information materials, establishment and development of libraries, library and information centre organization, metadata, information service, library communication, digital library development and service, databases, information retrieval, information sharing and ethics	N/A
Teaching method	Lecturing (11 cases), presentation (9 cases), discussion (7 cases)	N/A
Grading method (ordered by weight)	Final exam, midterm exam, assignments, attendance	Course participation, exam, and assignment results
Time frame	15 weeks	15 weeks

2. Job analysis results

To derive course content in Information Organization through job analysis, this study determined the knowledge and skills required of professionals in five library types: public, university, subject specialization, school, and national libraries. The five selected necessary skills were classification, cataloguing, development of standards (metadata), organization of materials, and digital library systems management.

Table 4. Information Organization syllabi summary results

	Korean Results (Classification Course)	Korean Results (Cataloguing Course)	US and Canadian Results
Syllabi keywords	Knowledge and academic classification; principles and methods of information organization; library classification systems; history of classification; classification tools; classification regulation and processes; understanding call numbers; controlled vocabulary; shelving methods; classification of academic disciplines; categorization concepts; knowledge structure; thesauri; indexing and knowledge structures; the present and future of library classification	Cataloguing theory; cataloguing rules; heading/access point; descriptive cataloguing; Korean Cataloguing Rules; MARC; Korean Machine Readable Cataloging (KORMARC); Anglo-American Cataloguing Rules; MARC21; organization of electronic materials and Internet information; Korea Laboratory Accreditation Scheme (KOLAS) program; qualifications for cataloguing experts; metadata; cataloguing practice; authority control and subject cataloguing; Korea Education and Research Information Service (KERIS) Union Catalog; RDA; FRBR; history of cataloguing; ISBD; bibliographical relations type	Library cataloguing and classification; information representation and organization; classification tables and cataloguing theory; classification tools; classification techniques; indexing; metadata; controlled vocabulary; recent trends in information organization; structure of knowledge organization (LCSH, LCC, DDC); selection and form of access point; AACR2; MARC; ISBD; FRBR; XML; authority control; subject analysis and classification
Main textbooks	*Classification Theory of Information Resources* (Yoon); *Library Classification*	*Cataloging Rules* (Lee); *Understanding Cataloging* (Kim); *The Reality of Cataloging* (Kim)	*The Organization of Information* (Taylor); *Introduction to Cataloging and Classification* (Taylor); *Cataloging and Classification: An Introduction* (Chan)
Textbook top-level subjects	Knowledge and information society development, information resources, academic system of LIS, LIS in the East, LIS in the West, LIS in	N/A	AACR, AACR2, LCSH, SLSH, LCC, DDC, information organization, metadata, subject analysis, controlled vocabulary

Table 4. (*continued*)

	Korean Results (Classification Course)	Korean Results (Cataloguing Course)	US and Canadian Results
	Korea, information professionals and institutes, change in information materials, establishment and development of libraries, library and information centre organization, metadata, information service, library communication, digital library development and service, databases, information retrieval, information sharing and ethics		
Teaching method (ordered proportionally)	Lecturing, practice, discussion, presentation, assignments	Lecturing, practice, presentation, practice, discussion	Lecturing, discussion, practice, presentation, workshop
Grading method (ordered by weight)	Final exam, midterm, assignments, attendance	Final exam, midterm, assignments, attendance	Course participation, exam, and assignment results
Timeframe	15 weeks	14 weeks	14 weeks

Among these, classification schemes such as Korean Decimal Classification (KDC), Dewey Decimal Classification (DDC), LCC, and Colon Classification, as well as MARC. Cataloguing and processing have the highest importance as course content.

Information Services

1. Comparison of analysis results from Korea and other countries
After studying syllabi for Information Services courses, both from Korean universities and from universities in other countries, the following information was collected and tabulated (table 5), including important key concepts and details about the dynamics of the course.

2. Job analysis results
In the job performance training required for all libraries, user studies and user education were considered very important. In job performance training for public libraries, reading coaching, library cultural programs, and small library management were found to be important as well. School library job performance

Table 5. Information Services syllabi summary results

	Korean Results	US and Canadian Results
Syllabi keywords	Overview of information service; theory and practice of information service; searching strategies; organization and management; evaluation of information service; reference interview; reference librarians; online information service; user education; reference resources; document delivery service; networks; information guiding services; ethics of information service	Information service; search and use of information resources; search and evaluation of reference tools; communication; information retrieval; comparison of print and electronic media; information needs; use and evaluation of retrieval systems; reference interview; information needs; information-seeking behaviour; index and abstract databases; bibliographic control and search techniques; user-tier service; reference service guidelines and policies
Main textbooks	*Information Services* (Park); *Reference Services and Reference Resources* (Noh)	*Reference and Information Services: An Introduction* (Bopp and Smith); *Reference and Information Services in the 21st Century: An Introduction* (Cassell); *Conducting the Reference Interview* (Ross, Nilsen, and Radford)
Textbook top-level subjects	N/A	virtual reference interview; answering reference questions; Reference 2.0; information services of the future
Teaching method (ordered proportionally)	Lecturing, individual or group presentation, discussion	Lecturing, discussion, activities
Grading method (ordered by weight)	Final exam, midterm, assignments and reports, attendance, class participation	Course participation, exams, assignments, reference interviews, web database searching practice
Timeframe	15 weeks	15 weeks

training emphasized reading coaching and library user education, and national library job performance training placed great importance on services for under-served minority groups such as services for those with disabilities.

To derive optimal course content for Information Organization courses through job analysis, this study determined the knowledge and skills required by professional services in the five library types (public, university, subject specialization service, school, and national libraries). The 11 selected items were user reference consulting, user studies, information literacy education, reference resources, information searching, Internet information service, user-specific services, personalized user services, copyright law, service statistics, and subject study. Among these, information literacy education, reference resources, information searching, and user-specific services had the highest importance as course content.

Table 6. Information Retrieval syllabi summary results

	Korean Results	US and Canadian Results
Syllabi keywords	Information retrieval; environments; theory and practice; systems; tools; information structure; information management; information organization and acquisition; indexing; classification; automatic summarization; user models; evaluation; next-generation information retrieval; databases; information provider qualifications; information representation and retrieval language; information storage; indexing and thesauri; automatic indexing; text structuring; clustering; text categorization; strategies for improving search performance; interfaces; information representation and retrieval with artificial intelligence; online information retrieval	Information retrieval systems; theory; implementation and evaluation; text processing; interactive multimedia; structure and processing; indexing and query processing; vector space models; user interface; probabilities and language models; ranking and user feedback; search engine techniques and design; recent topics in information retrieval
Main textbooks	*Information Representation and Retrieval in the Digital Age* (Chang, trans.); *Information Retrieval Research* (Chung); *The World of Information Retrieval* (Lee)	*Search Engines: Information Retrieval in Practice* (Croft, Metzler, and Strohman); *Text Information Retrieval Systems* (Meadow, Boyce, and Kraft); *Modern Information Retrieval: The Concepts and Technology behind Search* (Beaza-Yates and Ribeiro-Neto); *An Introduction to Information Retrieval* (Manning, Raghavan, and Schütze)
Textbook top-level subjects/ keywords	N/A	Information retrieval; user searching interface; query specification; term weighting; TF-IDF weighting; search evaluation; text word analysis; text classification; clustering; indexing and searching; web crawling
Teaching method (ordered proportionally)	Lecturing, presentation, practice, discussion	Lecturing, discussion, activities
Grading method (ordered by weight)	Final exam, midterm, assignments, projects, attendance	Course participation, exams, assignments
Timeframe	16 weeks	15 weeks

Information Retrieval

1. Comparison of analysis results from Korea and other countries

The most common results found in both Korean and US and Canadian syllabi for the Information Retrieval courses are shown in table 6.

2. Job analysis results

In the course abstracts, understanding of information retrieval, understanding of information retrieval environments, theory and practice of information retrieval, important components in information retrieval, understanding of information retrieval systems, tools for information` retrieval, the structure of information and knowledge, information management, organization and acquisition of information, concepts in indexing, concepts in classification, automatic summarization, exploring user models, information retrieval engines, information retrieval evaluation, next generation information retrieval, databases, and qualifications of information providers all appeared within the highest category of the key concepts hierarchy.

Within the course content, the key concepts that appeared most often are overview of information representation, information representation and retrieval language, information storage and retrieval, indexing and thesauri, automatic indexing, text summarization, text structuring, clustering, text categorization, databases, retrieval techniques and query expressions, information retrieval models, information retrieval systems, special information retrievals, information retrieval and evaluation, strategies for improving search performance, interfaces, information representation and retrieval with artificial intelligence, and internet information retrieval.

The most common teaching methods in Information Retrieval classes were lecturing, presentation, practice, and discussion. The most important grading components were, in order by weight, final exam, midterm exam, assignments, projects, and attendance.

We investigated the main and the auxiliary textbooks separately, and the most popular main texts were *Information Representation and Retrieval in the Digital Age* translated by Haeran Chang (six cases), *Information Retrieval Research* by Young-Mee Chung (five cases), and *The World of Information Retrieval by* Susang Lee (four cases). The total course schedule lasted 16 weeks, and lectures focused on theory more than practice.

Library and Information Centre Management

1. Comparison of analysis results from Korea and other countries

The results from the Korean and the US and Canadian syllabi for the Library and Information Centre Management course are shown in table 7.

2. Job analysis results

In job performance training in all types of libraries, management as well as marketing and promotion was considered very important. Public library training placed additional importance on library construction, and user studies and consulting were also considered important in education for subject specialist librarians.

To derive optimal course content for Information Organization courses through job analysis, this study determined the knowledge and skills required by

Table 7. Library and Information Centre Management syllabi summary results

	Korean Results	US and Canadian Results
Syllabi keywords	Libraries and library management; planning; library resource management; budget planning and management; human resources; principles and practices of management; managerial control and evaluation; the future of library management; the role of libraries; library construction; building management; service management; changes in library and information systems	Management theory; planning; budget and financial management; organization theory; human resources; leadership; organizational change; managerial ethics; communication; motivation; organizational culture; teamwork; management history; changing organizations; group meetings; organizational foundations; efficient organization design; accounting
Main textbooks	*Library and Information Center Management* (Chung); *Library and Information Center Management*(Stueart and Moran)	*Fundamentals of Management* (Griffin); *Library and Information Center Management*(Stueart and Moran)
Textbook top-level subjects/ keywords	N/A	Organization; organizational culture; motivation; leadership; communication; utilization of library management and teams
Teaching method (ordered proportionally)	Presentation, case studies, lecturing, discussion	Lecturing, discussion, presentations
Grading method (ordered by weight)	Final exam, midterm, assignments, attendance	Course participation, exams, assignments, projects
Timeframe	14 weeks	15 weeks

professional services in the five library types (public, university, subject specialization service, school, and national libraries). The 12 selected core concepts were library management policy, user studies, library budgets, library organization, library marketing, reading programs, formation of organizing committees, creation of work flowcharts, one-person library management, standards for library facilities, library cooperation, and digital archiving. Among these, library management policy, library budgets, library organization, library marketing, library cooperation, and digital archiving were the course contents of the highest importance.

Library Field Studies

1. Comparison of analysis results from Korea and other countries
According to course abstracts, the goal of the Library Field Studies course is to teach skills that can be directly applied to practical situations and to give students an opportunity to experience field tasks in a library environment for training purposes. The Library Field Studies course is therefore highly adaptable, depending on the university and the particular students and locations where they undertake

Table 8. Library Field Studies syllabi summary results

	Korean Results	US and Canadian Results
Syllabi keywords	Skills; practical situations; field experience; library tasks; information professionals; orientation	Leaders and professional leading; expert experience; meeting participation; meeting minute keeping; reports; job training; reference skills; installing web server software; analysing service programs
Teaching method (ordered proportionally)	Practice, lecture, presentation, and discussion	Practice
Grading method (ordered by weight)	N/A	Practice, leader evaluation, minute keeping, job manual writing, practice report writing
Timeframe	N/A	150 hours

field experience. As such, the 13 Korean and 3 US and Canadian syllabi studied to develop a core set of key concepts were more general and less descriptive than those analysed for other courses (table 8). For instance, the course has no required textbook, and relatively little time spent in class as a group.

2. Job analysis results

Field study contents naturally are those relevant to skills rather than knowledge or theory. Depending on the type of field study students engage in, they may encounter various tasks in a wide range of different library roles. One of the major categories students will undoubtedly encounter is library development and acquisition, including acquisition procedures and types, specification writing, material inspection, material reservation, material processing, legal deposit, evaluation of donated material, material exchange, library self-produced databases, and so on.

Information resources organization management could also be the subject of student field study, although it is far less common as library departments in this area have shrunk over the years. Still, students may be exposed to classification, cataloguing, authority data construction, annotated catalogue construction, construction of indexes and abstracts, material processing, automated cataloguing, and data input technique.

Important tasks in the information service sector of field study included circulation, lending regulations, return regulations, borrowing services, and library management regulations.

Suggestions for standard curriculum content

In this section, this study suggests standard curriculum content for a total of six subjects based on the syllabi and job analysis results from field librarians summarized in the previous section. The first subsection introduces the final syllabi development method and process.
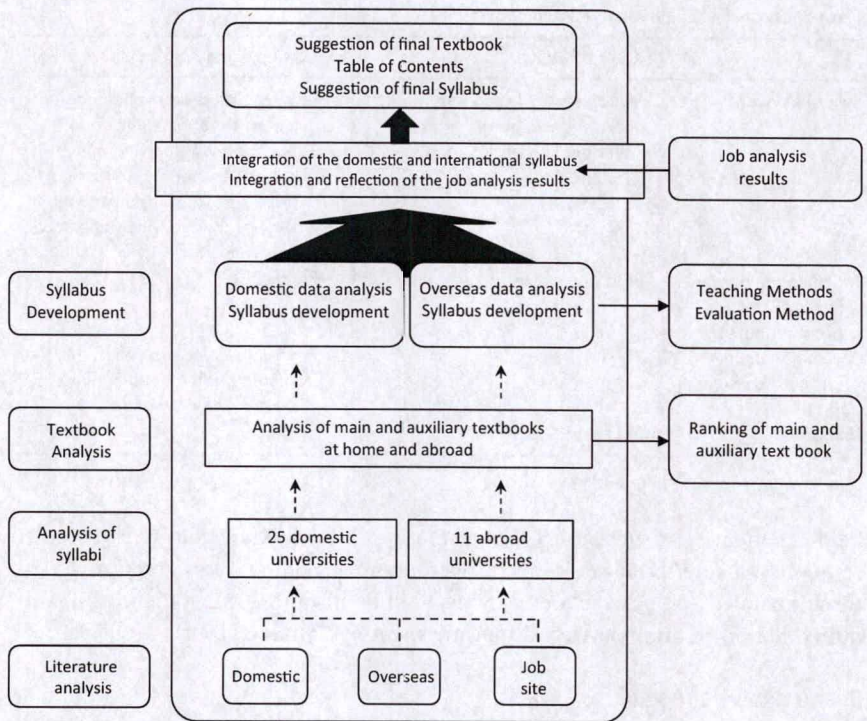
Figure 2. Syllabus development process

Development process for standard course content

In this research, the standard curriculum content development process and method in the relevant literature were analysed. The process consisted of analysis of the main and auxiliary textbooks, analysis of syllabi, brainstorming, and panel consultations, as summarized in figure 2. In the sixth and seventh steps, six researchers conducted an intense review and revision. A brief summary of this study's curriculum development process is as follows:

1. Derive research methodology and process through literature review.
2. Analyse syllabi for the six subjects from 39 LIS departments in Korea.
3. Analyse syllabi for the six subjects from 11 LIS departments in the United States and Canada.
4. Analyse the main textbooks and auxiliary textbooks listed in the syllabi.
5. Develop two separate syllabi, one based on the data from Korea and the other based on the data from the United States and Canada.
6. Construct a syllabus for each subject by unifying the two syllabi from step 5.
7. Check consistency between the weekly course schedule and the textbook contents because the course schedule is often determined by textbook organization and flow.

Finally, this study attempted to reflect the demands from the field in the newly developed syllabi to ensure that the course content prepares students well for their future careers. To this end, weighted scores were given to the developed course contents. A panel of experts consisting of two to three LIS faculty members and 20 field librarians from different types of libraries evaluated the importance of each content concept in the syllabi with a 5-point Likert scale. All subjects received an average score of above 4 points. The mean scores are listed in the "field opinion" fields in the syllabi found in the following sections.

Introduction to Library and Information Science standard curriculum content
As explained in the preceding subsection, this study developed a standard syllabus for Introduction to Library and Information Science courses, as shown in table 9. A course description and five detailed objectives are provided. The five objectives give a comprehensive introduction to the course contents in the subject.

Moreover, this study categorized the concepts and contents into "from Korea," "from other countries," and "from job analysis" using classifiers (marked by "√") in the table. The major course contents in the standard curriculum syllabus for Introduction to Library and Information Science are listed in table 9. In the expert evaluation results for the proposed contents of this syllabus, information service (4.75) received the highest score, followed by information resources organization (4.55), collection development and management (4.45), digital libraries (4.45), and information and databases (4.40). The average evaluation score for contents in Introduction to Library and Information Science was above 4, but library history (3.70), library cooperation (3.85), knowledge and the information society (3.95), and the library and information centre (3.95) received relatively low scores. The overall mean score was 4.19.

Table 9. Introduction to Library and Information Science syllabus

Course name	Introduction to Library and Information Science
Prerequisites	None
Outline (goals and objectives)	This course's objective is understanding the basic theory behind library and information science, acquiring expert knowledge, learning skills necessary for library and information practice, and improving adaptation ability for the knowledge and information society.
	1. Understanding information, information resources, and information circulation in the knowledge and information society
	2. Understanding core concepts and the outlook of library and information science
	3. Understanding the skills, qualities, and attitudes with which information professionals and librarians should be equipped
	4. Understanding the organization, management, functions, and services of a library and information centre
	5. Understanding digital library development and digital library service
Teaching method	Lectures, presentations, discussions, exercises, and field trips
Evaluation method	Midterms, final exams, assignments, attendance, class participation, presentations, group projects

Table 9. (*continued*)

Main textbook	• Korean Society for Library and Information Science, Compilation Committee for Understanding of Modern Library and Information Science. 2008. *Understanding of Modern Library and Information Science*. Seoul: KLA. • Dong-Youl Jeong and Chan-Sik Cho. 2004. *General Library & Information Science*. Seoul: KLA. • Moon-Ja Noh et al. 2007. *Introduction to Library and Information Science*. Daegu: Book Publishing Tale Company. • June Lester and Wallace C. Koehler Jr. 2007. *Fundamentals of Information Studies: Understanding Information and Its Environment*. 2nd ed. New York: Neal-Schuman. • Richard E. Rubin. 2010. *Foundations of Library and Information Science*. 3rd ed. New York: Neal-Schuman.

Course Schedule	Course Content	Korea	International	Job	Field Evaluation
1	Knowledge and the Information Society	√	√		3.95
	Concept and development of the knowledge and information society	√	√		
	Knowledge and the information society and the library	√	√		
2	Information and Information Resources	√	√		4.25
	Concepts and values of information	√	√		
	Resources and academic information resources	√	√		
	Information circulation	√	√		
3	Academic Systems of LIS	√			4.10
	Concepts and fields within LIS	√			
	Practical direction of LIS	√			
4	Information Professionals	√	√		4.10
	Changes in information professionals	√	√		
	Functions and roles of information professionals	√	√		
	Qualifications and qualities of information professionals	√	√		
5	Library History	√	√		3.70
	Evolution of information materials	√	√		
	Establishment and development of libraries	√	√		
6	Library and Information Centre	√	√	√	3.95
	Understanding the library and information centre	√	√		
	Organization and management of library and information centres	√	√	√	
7	Library Types and Functions	√	√		4.05
	The national library	√	√		
	The public library	√	√		
8	Library Types and Each Type's Functions (cont.)	√	√		4.15
	The school library	√	√		
	The university library	√	√		
	The special library	√	√		

Table 9. (*continued*)

Course Schedule	Course Content	Korea	International	Job	Field Evaluation
9	Collection Development and Management	√	√	√	4.45
	Understanding information resources	√	√		
	Selection and collection of information resources	√	√	√	
	Acquisition and disposal of information materials	√	√	√	
10	Information Resources Organization	√	√	√	4.55
	Classification and cataloguing	√	√	√	
	Metadata	√	√		
	Index and abstracts	√	√	√	
11	Information Service	√	√	√	4.75
	Reference resources and reference services	√	√	√	
	User information service	√	√	√	
	Academic communication and the library	√	√		
12	Digital Libraries	√	√	√	4.45
	Information technology	√	√	√	
	Development of digital libraries	√	√		
	Digital library services	√	√	√	
13	Information and Databases	√	√	√	4.40
	Information retrieval	√	√	√	
	Databases	√	√	√	
14	Library Cooperation	√	√	√	3.85
	Knowledge sharing	√	√		
	Library and information network	√	√	√	
15	Library Policy and Information Ethics	√	√		4.10
	Library laws	√	√		
	Library policy	√	√		
	Information ethics	√	√		
Average					4.19

Information Organization standard curriculum content

Table 10 shows the syllabus for Information Organization, developed by the process explained above. The course description is provided as well as eight detailed objectives, which give a comprehensive introduction to the subject matter. The syllabus for Information Organization includes the contents for both a classification course and a cataloguing course, but this course can also be divided into a theory-centred course and a practice-centred course.

The overall expert evaluation for the Information Organization syllabus received a mean score of 4.39, which is relatively high. Among those, KDC and Korean Cataloguing Rules and KORMARC (Korean Machine Readable Cataloging) received the highest score of 4.71, followed by DDC, cataloguing rules, descriptive cataloguing, and understanding MARC, with a score of 4.57. Other library classification schemes received the lowest score, 3.81.

Table 10. Information Organization syllabus

Course name	Information Organization (Classification and Cataloguing)
Prerequisites	None
Outline (goals and objectives)	This course introduces information representation and the basic principles in the library and information centre. The goal is to acquire skills and knowledge about record medium description methods, classification and controlled vocabulary, authority control, metadata standards, and MARC construction.

1. Understanding the principles and techniques of information organization and representation
2. Understanding subject expression by classification and classification tables and controlled vocabulary
3. Understanding modern classification systems including KDC, DDC, LCC, UDC, etc.
4. Understanding the cataloguing outline, cataloguing rules, and descriptive cataloguing
5. Understanding MARC and Integrated MARC
6. Understanding KCR & KORMARC and AACR2 & MARC21
7. Understanding RDA and metadata
8. Understanding authority control and subject cataloguing

Teaching method	Lectures, presentations, exercises, discussion, question-and-answer
Evaluation method	Midterm, final exam, assignments, attendance
Main textbook	• Hee Yoon 2010. *Classification Theory of Information Resources*. Daegu: Taeil.

• Po-Ok Kim and Hang-Ki Paik. 2011. *Library Classification*. Pajoo: Joen Geulteo.
• Kyeongho Lee and Jung-Hyun Kim. 2009. *List of Material Law*. Daegu: Printing Mading.
• Tae-Soo Kim. 2008. *Cataloging of Understanding*. Seoul: Korea Library Association.
• Priscilla Caplan. 2003. *Metadata Fundamentals for All Librarians*. Chicago: American Library Association.
• Lois Mai Chan. 2007. *Cataloging and Classification: An Introduction*. Lanham, MD: Scarecrow.
• Heting Chu. 2010. *Information Representation and Retrieval in the Digital Age*. Medford, NJ: Information Today.
• Mary Mortimer. 2007. *Learn Descriptive Cataloging*. 2nd North American ed. Friendswood, TX: Total Recall.
• Arlene G. Taylor. 2006. *Introduction to Cataloging and Classification*. Westport, CT: Libraries Unlimited.
• Arlene G. Taylor and Daniel N. Joudrey. 2009. *The Organization of Information*. 3rd ed. Westport, CT: Libraries Unlimited.

Course Schedule	Course Content	Korea	International	Job	Field Evaluation
1	Understanding Classification	√	√	√	4.29
	Knowledge classification	√	√		
	Concept and theory of classification	√	√		
	Importance and type of classification	√			
	History and development of classification	√			
2	Type and Selection of Materials Classification Table	√		√	4.43
	Understanding the classification table	√	√	√	
	Type of classification table	√	√		

Table 10. (*continued*)

Course Schedule	Course Content	Korea	International	Job	Field Evaluation
3	KDC (Korean Decimal Classification)	√		√	4.71
	Overview of KDC	√			
	Configuration and utilization of KDC	√		√	
	Process and regulations of materials classification	√			
4	DDC (Dewey Decimal Classification)	√	√	√	4.57
	Overview of DDC	√	√		
	Configuration and utilization of DDC	√	√	√	
	Process and regulations of materials classification	√	√		
5	Other Major Library Classification Schemes	√			3.81
	UDC, LCC	√	√	√	
	European Classification, Subject Classification, Nippon Decimal Classification	√	√		
6	Understanding and Applying Call Numbers	√	√	√	4.52
	Concepts and functions of call numbers	√	√		
	Book numbers	√	√	√	
	Shelving management	√	√	√	
7	Understanding Cataloguing	√	√		4.29
	Significance of cataloguing	√	√		
	History of cataloguing rules	√	√		
	Cooperative cataloguing and bibliographical service	√	√	√	
8	Cataloguing Rules and Descriptive Cataloguing	√	√	√	4.57
	Understanding cataloguing rules	√	√		
	Understanding descriptive cataloguing	√	√		
9	Bibliographic Relationship Type and Headings	√			4.24
	Bibliographic control		√	√	
	Bibliographic relationship type	√	√		
	Headings	√	√		
10	Subject Cataloguing	√	√		4.33
	Subject heading list system	√	√	√	
	Thesauri and knowledge structure	√	√		
	Understanding vocabulary control	√	√		
	Understanding thesauri and indexing	√	√		
11	Authority Control and Subject Cataloguing	√	√	√	4.19
	Authority control	√	√	√	
	Subject headings	√	√	√	
12	Understanding MARC	√	√		4.57
	Concept and development of MARC	√	√		
	Structure of MARC records	√	√	√	
13	Korean Cataloguing Rules and KORMARC	√		√	4.71
	Understanding Korean Cataloguing Rules	√			

Table 10. (*continued*)

Course Schedule	Course Content	Korea	International	Job	Field Evaluation
	Overview of KORMARC format	√		√	
	Understanding KORMARC data fields	√		√	
	Integrated MARC	√	√	√	
14	Anglo-American Cataloguing Rules and MARC21	√	√	√	4.10
	Understanding Anglo-American Cataloguing Rules	√	√		
	Overview of MARC21 formats	√	√		
	Understanding MARC21 data fields	√	√		
15	RDA and Metadata	√	√		4.52
	Concept and content of RDA	√	√		
	Features and structure of RDA	√	√		
	Concepts of metadata	√	√	√	
	Types of metadata	√	√	√	
Average					4.39

Information Services standard curriculum content

Table 11 shows the syllabus for the Information Services course, developed through the process explained above. The course description and 10 detailed objectives are provided, designed to give a comprehensive introduction to the course content in this subject.

Table 11. Information Services syllabus

Course name	Information Services
Prerequisites	None
Outline (goals and objectives)	This course deals with the theory and philosophy of reference services necessary for their execution. The goal is to become a reference librarian who can deal with various reference questions.
	1. Understanding the significance and philosophy of information services
	2. Understanding the organization, evaluation, and management of information services
	3. Understanding the reference interview and searching process
	4. Understanding online information services and digital reference services
	5. Understanding the roles, qualities, and qualifications of reference librarians
	6. Understanding the field and management of information guiding services
	7. Understanding the significance and administration of user education
	8. Understanding the required personnel and evaluation of information services
	9. Understanding the type and utilization of Korean and international reference resources
	10. Understanding the future of information service
Teaching method	Lecture, presentation/team project, discussion

Table 11. (*continued*)

Evaluation method	Midterm, final exam, homework/reports, attendance and class participation, presentations
Main textbook	• Joon-Shik Park. 2011. *Information Services.* Daegu: Keimyung University Press.
	• Ock-Soon Noh. 2000. *Reference Service and Reference Resources.* Seoul: Ewha Womans University Press.
	• Richard E. Bopp and Linda C. Smith. 2011. *Reference and Information Services: An Introduction.* Englewood, CO: Libraries Unlimited.
	• Kay Ann Cassell and Uma Hiremath. 2009. *Reference and Information Services in the 21st Century: An Introduction.* 2nd ed. New York: Neal-Schuman.
	• Catherine Sheldrick Ross. 2009. *Conducting the Reference Interview.* 2nd ed. New York: Neal-Schuman.
	• Marie L. Radford and R. David Lankes, eds. 2010. *Reference Renaissance: Current and Future Trends.* New York: Neal-Schuman.
	• Diane Kaye Kovacs. 2007. *The Virtual Reference Handbook: Interview and Information Delivery Techniques for the Chat and Email Environments.* London: Facet.

Course Schedule	Course Content	Korea	International	Job	Field Evaluation
1	Significance of Information Services	√	√		4.30
	Concepts and attributes of information services	√	√		
	Functions of information services	√	√	√	
2	Philosophy and Development of Information Services	√	√	√	4.05
	Philosophy of information services	√	√		
	Development of the information services	√	√		
	Theory of information services	√	√		
3	The Reference Interview	√	√	√	4.10
	Significance of the reference interview	√	√		
	Types of reference questions	√	√		
	Communication	√	√	√	
	Interview processing	√	√		
4	Virtual Reference Interviews	√	√	√	3.75
	Types of virtual reference interviews	√	√		
	Virtual reference interview procedures		√		
	Skills and knowledge for communication		√		
	Skills and knowledge for virtual reference services		√		
5	Information Search and Results	√	√		4.30
	Search strategy	√	√		
	Search process	√	√		
	Online search	√			
	Results and evaluation	√	√		
6	Online Information Services	√	√	√	4.50
	Internet environment and library services	√	√		
	Digital information services and virtual reference shelves	√	√	√	
	Cooperative digital information services	√	√	√	

Table 11. (*continued*)

Course Schedule	Course Content	Korea	International	Job	Field Evaluation
7	Cooperation Networks and Services	√	√	√	4.10
	Significance of library cooperation networks	√			
	Development of library cooperation networks	√			
	Functions of library cooperation networks	√			
	Types of library cooperation networks	√			
8	Information Guiding Services	√			4.15
	Significance of information guid ng services	√			
	Types of information guiding service	√			
	Management of information guiding services	√			
9	User Education	√	√	√	4.20
	Significance of user education	√	√		
	Types of user education	√	√	√	
	Performing user education	√	√		
10	Evaluation of Information Services	√	√	√	3.90
	Significance of information service assessments	√	√		
	Valuation factors and valuation criteria for information services	√	√		
	Types and techniques of information service evaluations	√	√		
11	Information Service Organization and Management	√	√		3.60
	Significance and development of information service organization and management	√	√		
	Types and features of information service organization	√	√		
	Information service management	√	√		
12	Reference Librarians	√	√		4.20
	Significance and qualities of reference librarians	√	√		
	The role of reference librarians	√	√		
13	Significance and Development of Reference Resources	√	√	√	4.30
	Development of reference collections and significance of reference resources	√	√		
	Evaluation and selection of reference resources	√	√		
14	Reference Resources, Type I	√	√	√	4.20
	Bibliographic information sources	√	√		
	Indexes and abstracts	√	√		
15	Reference Resources, Type II	√	√	√	3.90
	Encyclopedias, dictionaries	√	√		
	Biographical sources, geographical sources	√	√		
	Ready-reference sources (yearbooks, handbooks, directories)	√	√		

Table 11. (*continued*)

Course Schedule	Course Content	Korea	International	Job	Field Evaluation
	Government publications, statistical information	√	√	√	
16	Future of Information Service		√		4.10
	Reference 2.0		√		
	Providing a new service model		√		
	The future of reference		√		
Average					4.10

Online information services received the highest score of 4.50. Significance of information services, information search and results, and significance and development of reference resources all received the second highest score of 4.30. Organization and management of information services received the lowest score (3.60), and virtual reference interviews (3.75), evaluation of information services (3.90), and reference resources type II (encyclopedias, dictionaries, biographical sources, etc.) (3.90) also received relatively low scores. The overall mean for all concepts was 4.10.

Information Retrieval standard curriculum content

The syllabus for Information Retrieval describes the course and provides seven detailed objectives (see table 12). These objectives give a comprehensive introduction to the course contents in this subject area. Information representation, and indexing and thesaurus, received the highest score of 4.45, followed by information retrieval and users (4.35), search interface (4.30), and retrieval language (4.25). Searching and artificial intelligence received the lowest score of 3.85. A total of six entries received scores lower than 4, and the overall mean was 4.11.

Table 12. Information Retrieval syllabus

Course name	Information Retrieval
Prerequisites	None
Outline (goals and objectives)	This subject introduces information retrieval theory, which is the basis of all search applications, the theory of retrieval systems, design and models of retrieval systems, principles of information retrieval implementation design, management and characteristics of experimental retrieval systems, and evaluation of information retrieval systems.
	1. Understanding the concept and configuration of information representation and retrieval language
	2. Understanding information retrieval techniques, query expressions, and information access method
	3. Understanding information retrieval models, information retrieval systems, and special information retrieval
	4. Understanding information retrieval and users' information needs
	5. Understanding information retrieval evaluation, strategies for improving search performance, and artificial intelligence retrieval

Table 12. (*continued*)

	6. Understanding indexing, thesauri, and abstracts
	7. Understanding clustering and search interfaces
Teaching method	Lectures, discussions, presentations, practice
Evaluation method	Midterm, final exam, homework/team project, attendance
Main textbook	• Hye-Rhan Chang (trans.). 2011. *Information Representation and Retrieval in the Digital Age.* Seoul: Korea Library Association.
	• Younghee-Mee Chung. 2005. *Information Retrieval Research.* Seoul: Gumi-Trade.
	• Soo-Sang Lee. 2011. *The World of Information Retrieval.* Seoul: Korea Library Association.
	• Bruce Croft, Donald Metzler, and Trevor Strohman. 2009. *Search Engines: Information Retrieval in Practice.* Boston: Addison Wesley.
	• Christopher D. Manning, Prabhakar Raghavan, and Hinrich Schütze. 2008. *Introduction to Information Retrieval.* New York: Cambridge University Press.
	• Ricardo Baeza-Yates, and Berthier Ribeiro-Neto. 2011. *Modern Information Retrieval.* New York: Addison-Wesley.
	• Charles T. Meadow, Bert R. Boyce, and Donald H. Kraft. 2000. *Text Information Retrieval.* 2nd ed. San Diego: Academic Press.

Course Schedule	Course Content	Korea	International	Job	Field Evaluation
1	An Overview of Information Retrieval	√	√		4.10
	History of and advances in information representation and retrieval	√	√		
	Concepts and configuration of information retrieval	√	√		
2	Information Representation	√	√	√	4.45
	Indexing, abstracting, and categorization	√	√		
	Metadata, full text	√	√	√	
3	Retrieval Language	√	√		4.25
	Natural language and controlled vocabulary	√	√		
	Retrieval in the digital era	√	√		
4	Information Retrieval Techniques and Query Expressions	√	√		4.20
	Retrieval techniques	√	√		
	Query expressions	√	√		
	Searching methods	√	√		
5	Information Retrieval Models	√	√		3.90
	Boolean search, the vector space model, the probability model	√	√		
	Inference network search, neural network search	√	√		
6	Information Retrieval Systems	√	√	√	4.05
	Overview and development of information retrieval systems	√	√		
	Types of information retrieval systems	√	√		
7	Special Information Search	√	√		3.95
	Multimedia search	√	√		
	Video-text search	√	√		
8	Information Retrieval and Users	√			4.35

Table 12. (*continued*)

Course Schedule	Course Content	Korea	International	Job	Field Evaluation
	Users and information needs	√	√	√	
	Interaction between user and system	√	√		
9	Evaluation of Information Retrieval	√	√	√	3.95
	Overview of evaluation and rating scale	√	√		
	Evaluation criteria and ranking	√	√		
	Strategies for improving search performance	√	√		
10	Retrieval and Artificial Intelligence	√	√		3.85
	Semantic Web and information retrieval	√	√		
	Next-generation information retrieval	√	√		
11	Indexing and Thesauri	√	√	√	4.45
	An overview of indexing and types of indexing	√	√		
	Automatic indexing	√	√		
	An overview of thesauri and their construction	√	√	√	
12	Text Summarization	√	√		3.90
	An overview of text summarization and types of text summarization methods	√	√		
	Automatic summarization and performance evaluation of automatic summarization	√	√		
13	Text Documents Clustering	√	√		3.90
	Overview of clustering and clustering techniques	√	√		
	Text categorization and learning-based classifiers	√	√		
14	Search Interfaces	√	√		4.30
	Types of user interfaces	√	√		
	Design of search interfaces	√	√		
15	Social Searching		√		4.10
	An overview of social searching		√		
	User tags and manual indexing		√		
	Community searching		√		
	Filtering and recommendation		√		
	P2P and meta searching		√		
Average					4.11

Library and Information Centre Management standard curriculum content

The developed syllabus describes Library and Information Centre Management and provides seven detailed objectives (see table 13). These objectives give a comprehensive introduction to the course contents in this subject.

Note that while library marketing is not represented in syllabi from universities in Korea, concepts such as the meaning of library marketing, library marketing planning, marketing elements, library public relations, and marketing evaluation are listed in the syllabi in other countries. The job analysis revealed librarians' desire for staff training, showing that this concept would be useful on a syllabus and is in demand in the field.

Table 13. Library and Information Centre Management syllabus

Course name	Library and Information Centre Management/ Introduction to Library Management
Prerequisites	None
Outline (goals and objectives)	The goal of this course is to provide future library managers with excellent management skills based on a theoretical background in library management. Students will understand organizational theory, strategic planning, financial management, human resources, labour relations, policy and ethics, leadership, decision-making, and communication through this course.

1. Understanding library and management theory
2. Understanding changes in the library management environment and library management resources
3. Understanding library budgeting and budget management
4. Understanding library organization management and business planning
5. Understanding principles and applications of supervising and evaluating
6. Understanding the meaning and techniques of library evaluations
7. Understanding the future of library management

Teaching method	Presentation / case study presentations, lectures, discussions, research/ assignments
Evaluation method	Midterm, final exam, homework, attendance, group studies, presentations, class participation
Main textbook	• Dong-Youl Jeong. 2011 *Library and Information Center Management*. Seoul: Korea Library Association. • Myeong-Sun Yiem, and Dong-Guen Oh. 2000. *Libraries & Information Center Management*. Daegu: Keimyung University Press. • Stephen P. Robbins and David A. DeCenzo. 2007. *Fundamentals of Management*. 6th ed. Upper Saddle River, NJ: Prentice Hall. • Robert D. Stueart and Barbara B. Moran. 2007. *Library and Information Center Management*. 7th ed. Westport, CT: Libraries Unlimited.

Course Schedule	Course Content	Korea	International	Job	Field Evaluation
1	Changes in the Library Management Environment	√	√		4.30
	Understanding the library and information centre	√	√		
	Understanding library management	√	√		
	Library management innovation			√	
2	Libraries and Management Theory	√			4.25
	Concept of library management	√			
	Development process of library management theory	√			
	Library management principles and techniques	√			
3	Analysis of the Role of Libraries	√			4.10
	Management of environmental factors	√			
	Content of role analysis	√			
	Methodology of role analysis	√			

Table 13. (*continued*)

Course Schedule	Course Content	Korea	International	Job	Field Evaluation
4	Management Resources of the Library	√			4.35
	Physical resources	√			
	Human resources	√			
	Financial resources	√			
	Technical resources	√			
5	Library Management Planning	√	√		4.40
	Establishing management planning	√	√	√	
	Techniques of management planning	√	√	√	
	Management planning and decision-making	√	√		
6	Library Marketing		√	√	4.45
	Significance of library marketing		√		
	Marketing planning		√	√	
	Marketing elements		√		
	Library public relations		√	√	
	Marketing evaluation		√		
7	Compilation and Management of the Budget	√	√	√	4.40
	Concepts of budgeting and types of budgets	√	√		
	Budget planning process and costs	√	√	√	
	Budgeting methods	√	√		
	Settlement and audits of the budget	√	√	√	
8	Formation and Management of the Organization	√	√		4.35
	Concepts and elements of organization	√	√		
	Basic principles of organizational structure	√	√		
	Types of organizational structure	√	√		
	Organizational culture and teamwork		√		
9	Planning and Management of Human Resources	√	√	√	4.15
	Concepts and principles of human resource management	√	√		
	Duties and personnel management	√	√	√	
	Recruitment and hiring	√	√	√	
	Salary and labour relations management	√	√		
	Discipline and grievances	√	√		
	Human resource policy and management	√	√		
10	Library Personnel Training	√		√	3.85
	Planning staff training			√	
	New employee training			√	
	Established employee retraining			√	
11	Physical Resource Management	√		√	4.05
	Library architecture management	√			
	Buildings and facilities management	√		√	
	Collection management	√		√	
12	Principles and Applications of Management	√		√	3.75

Table 13. (*continued*)

Course Schedule	Course Content	Korea	International	Job	Field Evaluation
	Concepts of management and motivation of staff members	√	√		
	Leadership and organizational communication	√	√		
	Ethics	√	√		
13	Understanding of Leadership	√	√		3.60
	Functions and techniques of leadership	√	√		
	Requirements and guidelines of leadership	√	√		
14	Library Evaluation	√		√	4.15
	Meaning and targets of evaluation	√			
	Evaluation techniques and writing of evaluation reports	√			
15	The Future of Library Management	√			4.35
	Library management paradigm shift	√			
	Changes in human resources	√			
	Issues and prospects of the library and information centre	√			
	Management changes				
Average					4.17

In the evaluation results, library marketing shows the highest score of 4.45. Management planning, and compilation and management of the budget, received the second-highest score of 4.40. Understanding of management (3.60) received the lowest score, and the principles and applications of supervising (3.75) and library personnel training (3.85) received scores below 4 as well. The overall mean was 4.17.

Library Field Studies standard curriculum content

In creating a standard syllabus for this course, we placed more importance on the content needed and practiced in the field than the course content suggested by academic LIS departments. The syllabus provides a course description and nine detailed practice objectives (table 14). The overall mean for the syllabus concepts is above 4.48, which is remarkably higher than in other subject areas. The Library Field Studies section, which takes up 11 weeks in the schedule, received the highest score of 4.55. All the course contents received above 4 points.

The contents of the Library Field Studies course must be different from that in other courses since the mentoring relationship between the students and the field librarians is more important than that between students and professors. That is, as well as course materials, the practice site manager and manuals are important to ensure the efficient transfer of expertise in the field. It is important to develop a Library Field Studies standard manual to encourage optimal practical experience depending on different institutions and instructors.

However, simply improving practical skills through field study and application of knowledge to the field may not be enough; the LIS curriculum needs

Table 14. Library Field Studies syllabus

Course name	Library Field Studies
Prerequisites	Library system automation (recommended)
Outline (goals and objectives)	This course's goal is to improve the qualities and abilities of information professionals through fieldwork experience at various library and information centres after they have learned theoretical knowledge through the LIS curriculum.

Practice guidelines are as follows:

1. Field study is done by the individual student in the library and information centre.
2. All students must complete at least 150 hours (more than four weeks), not including lunch hours or breaks.
3. Advising professors must interview students individually or in groups during the semester schedule.
4. Students must be punctual.
5. Students must keep a journal.
6. Advising professors should communicate with both students and field leaders if necessary.
7. Students should submit a report after completing library field studies.
8. Field leaders should submit performance evaluations of students depending on the evaluation presented by advising professors after library field studies.
9. Students should have an evaluation interview before they finish their library field studies.

Teaching method	Exercises, lectures, presentations, discussions
Evaluation method	Practice, assessment by field leaders, journal writing assignments, job manuals, reports, etc.
Main textbook	Library Field Studies manual

Course Schedule	Course Content	Korea	International	Job	Field Evaluation
1	An Overview of Library Field Studies (Orientation)	√	√	√	4.45
	Understanding library field studies	√	√		
	Attitudes for library field studies	√	√		
	Purpose and significance of library field studies	√			
2	Advance Preparation for Library Field Studies	√	√		4.45
	Investigating and analysing the trainees' career choices	√			
	Investigation and selection of field practice agency	√			
	Site visits and student interviews of director librarians	√			
	Practice plan preparation and review	√			
3	Understanding Library Work and Workflow	√	√	√	4.50
	Library material acquisition	√		√	
	Library material processing	√		√	
	Library material use	√		√	
	Library material management	√		√	

Table 14. (continued)

Course Schedule	Course Content	Korea	International	Job	Field Evaluation
	Library cultural programs administration	√		√	
	Facilities of the library	√		√	
	Co-library cooperation	√		√	
	User response services	√			
4–14	Library Field Studies	√	√	√	4.55
	More than 150 hours	√	√		
15	Practice reporting and writing reports	√	√	√	4.45
	How to write and submit reports	√	√	√	
	Staff manual	√	√		
	Practice journal	√	√		
	Practice satisfaction	√	√		
	Practice results and discussion	√	√		
	Institutional evaluation (leader rating)	√	√		
	Agency assessment	√	√		
Average					4.48

more advanced practice programs. For example, case studies and theoretical and systematic examinations on internships based on links between school and work should be incorporated within the regular semester.

Discussion and future research

Discussion

Although the standardization of curriculum has been criticized, the argument that core courses are necessary for LIS students to attain the minimum qualifications necessary for success in the field can be found in curriculum research in many countries such as Korea, the United States, the United Kingdom, and Canada (Y. Noh, Ahn, and Choi 2012b). However, more detailed decisions such as which courses should be required as core courses and what contents should be taught in such courses are still controversial.

To untangle this problem, this study conducted research to develop course content for the core courses in detail as a follow-up to a previous project funded by the Korea Research Institute for Library and Information of the National Library of Korea. In addition to the literature review already provided, the discussion from this research based on an in-depth analysis of curriculum in South Korea, the United States, the United Kingdom, and Canada can be summarized as follows.

First, research on course content development has been conducted by many different scholars. In addition to the research arguing that core courses need to be assigned for the LIS curriculum, many universities actually assign core courses depending on students' chosen career paths. Moreover, there has been an argument that course content also needs to be standardized at some level, and this is based on the fact that all students graduating from LIS departments in four-year universities in Korea receive the second grade of certification as a librarian, despite the wide variation in program quality and contents among different

universities and professors. Standardization of course content is also necessary to reduce the difference in recruitment and promotion exams for teacher librarians and librarian officials between universities and to ensure fairness in competition. The educational content in a college education needs to be continually reworked as the knowledge and skills required in the field change.

Second, 90% of the LIS departments in Korea offer 90% of the courses surveyed, except for Library Field Studies, which is offered by only 52%. This low percentage is due to the fact that many departments require internships in the field for graduation. As for universities in other countries, all of them offer Information Services and Information Organization, 64% offer Introduction to Library and Information Science, and 46% offer Collection Development. Since the core courses studied in this research are offered by many departments, this research outcome will be useful for curriculum development in many departments.

Third, there is no great difference in course content between LIS departments in Korea and those in the other countries studied. The Korean and international syllabi for Introduction to Library and Information Science coincide, but LIS departments in other countries do not offer courses for the academic system of LIS. Information Organization does not show a notable difference either, except for the fact that KDC, Korean Cataloguing Rules, and KORMARC are included in Korea in addition to DDC, Anglo-American Cataloguing Rules, and USMARC. Information Services courses in other countries have future-oriented course contents which do not appear in the Korean curriculum, such as virtual reference interviews, knowledge and skills for virtual reference services, and the future of information services (Reference 2.0, new service models). Information Retrieval also showed high levels of similarity, but social searching appears only in the international syllabi. For Library and Information Centre Management, library marketing is not taught in Korea, while library management theory, analysis of the role of libraries, library management resources, library staff education, material research management, library evaluation, and the future of library management are taught only in Korea. These findings indicate that LIS departments in Korea emphasize research management in libraries, whereas those in other countries are interested in marketing library resources to those outside of the libraries. Library Field Studies courses have almost the same contents at home and abroad, but much more detailed orientations and evaluations are conducted in Korea. In conclusion, the developed core course content can contribute to improving the quality of education not only in Korea but also in other countries by mutual reference.

Finally, this study assigned weighted scores to each content concept through a survey of panels consisting of LIS faculty and librarians from different library types to evaluate whether the contents reflected the demand from the field. The average scores were, in order, Library Field Studies (4.48), Information Organization (4.39), Introduction to Library and Information Science (4.19), Library and Information Centre Management (4.17), Information Retrieval (4.11), and Information Services (4.10), and all the developed courses received above 4 points on a 5-point Likert scale. This indicates that the developed course contents reflect the demand from the field well.

As presented in the methodology section, six courses were selected and developed for producing competent librarians appropriate for the information age. Six courses are proposed because at least one current study argues for the standardization of LIS curricula, which means that for the improvement of the librarian specialization, common compulsory, core, and optional courses should be recommended to LIS departments nationwide so that librarians of guaranteed quality can be produced (Um 2009). In Korea's case, decisions on launching courses are completely influenced by faculty in the LIS department as there are no criteria for courses suggested by library associations or groups for each type of library. However, it is necessary for library associations or groups for each kind of library to suggest and recommend standardized curricula to be launched to foster future librarians qualified and equipped with necessary skills. A proposal for minimal standard courses for librarian qualification is also necessary for the specialization of each university.

Limitations and future research

The LIS environment varies throughout different regions, countries, and languages, and the Korean LIS curriculum must reflect its own reality and environment when adapting Western education theory and methods. Therefore, this study tried to integrate case studies from other countries with those from Korea. However, the selection process concentrated only on case studies from English-speaking developed countries.

1. Flexible management according to various educational objectives

This study recommends offering additional educational content as necessary using the standardized course content proposed by this research as a baseline to expand on. The analysis of the current curriculum situation in and outside of Korea shows that various activities are often conducted to improve students' learning experience that were not included as part of the proposed standard curriculum. Examples include (1) the lecturer giving a comprehensive explanation of the history of LIS departments and specialized areas as an orientation to Introduction to Library and Information Science; (2) students setting and discussing their visions for the future; (3) inviting a special lecturer; and (4) visiting libraries. Additional educational activities suitable for each course, added at the discretion of the lecturer and LIS department, will compensate for the shortcomings of standardization.

2. Reflection of changes in the information environment

The course content standard model proposed by this research has a limitation in reflecting the rapidly changing information environment because the model is based on analysis of curricula in and outside of Korea. That is, though the study also conducted job analysis to reflect the current demands from the field and analysed course contents to reflect future demand, such future-oriented models depend on our limited techniques for predicting the future. Therefore, modifications to the course content are recommended to reflect any unforeseen

developments, and the standard curriculum should be revised after a certain period in any case. All of the job analysis data used in this study were published in 2007/2008, except for a school library, which was analysed in 2011. Therefore, there are limitations to reflecting the LIS job market, which has changed dramatically in recent years. New research for more current job analysis is needed.

3. iSchool LIS courses
Since 2005 the iSchool concept has represented an important movement in many LIS departments in the United States and Canada. These new courses have most likely looked to regular education courses for benchmarking, although further study would be required to be sure. Therefore, future research of this kind should be attempted using iSchool courses as the target.

Implications
The implications of this study to the LIS program, core course design, and training of LIS graduates are as follows. First, the standard curriculum model suggested here represents a comprehensive set of achievement objectives for LIS students, based on job analysis to reflect the current needs in the field and analysis of course content in other countries to gauge possible future educational trends and course demands. Second, in this study, course content is developed for the first time based on both job analysis results for each library type as well as existing syllabi. Moreover, a reference for future course and syllabus development is provided by making detailed proposals on course content development. Third, the research consisted of four stages: surveying and analysing the syllabi of core courses, identifying important course content based on the job analysis developed according to different library types, developing a standard curriculum for the core courses of LIS, and suggesting further course content development in LIS. This research method and procedure for developing core courses can be referenced in other countries for their LIS core courses.

Conclusion
This research analysed the process and methods for standard curriculum development in existing literatures. Findings indicated that standard curriculum content is developed based on the following steps: analysis of main and auxiliary texts, analysis of syllabi, brainstorming, and expert consultation. This process was applied to develop and propose a standard curriculum for core courses in LIS, with results as follows. First, the standard curriculum contents for the Introduction to Library and Information Science courses are (1) information and information resources, and information circulation in the knowledge and information society; (2) concepts and fields within LIS, as well as the future of LIS; (3) skills, qualities, and attitudes of the information professional; (4) library and information centre management, functions, and services; and (5) development of digital libraries and digital library services.

Second, the suggested standard curriculum contents for Information Organization courses are (1) principles and methods for information organization and

representation; (2) classification and classification tables, as well as subject expression with controlled vocabulary; (3) modern classification schemes such as KDC, DDC, LCC, and UDC; (4) overview of cataloguing, cataloguing rules, and descriptive cataloguing; (5) MARC and Integrated MARC; (6) KCR (Korean Cataloguing Rules) and KORMARC; (7) AACR2 and MARC21; (8) RDA; (9) metadata; and (10) authority control and subject cataloguing.

Third, the suggested standard curriculum contents for Information Services courses are (1) the meaning and philosophy of information service; (2) the organization, evaluation, and management of information services; (3) searching processes for the reference interview; (4) online information services and digital reference services; (5) the role of reference librarians, as well as their qualities and qualifications; (6) the field and management of information services; (7) the meaning and management of user education; (8) human resource management and evaluation in information services; (9) categories of reference resources and their application in and outside of Korea; and (10) the future of information services.

Fourth, the suggested standard curriculum contents for Information Retrieval courses are (1) information representation and the concepts of searching, components, and retrieval language; (2) information retrieval techniques and query expressions, as well as information access methods; (3) information retrieval models and information retrieval systems, as well as special information retrieval; (4) information retrieval and user information needs; (5) information retrieval evaluation, strategies to improve searching ability, and artificial intelligence; (6) indexing and thesauri, as well as abstracts; and (7) clustering and search interfaces.

Fifth, the suggested standard curriculum contents for Library and Information Centre Management courses are (1) library management theory; (2) changes in the library management environment and library management resources; (3) library management resources and budget planning and management; (4) library organization management and planning; (5) principles of management and application, supervision, and evaluation; (6) meaning and methods of library evaluation; and (7) the future of library management.

Sixth, the suggested standard curriculum contents for Library Field Studies courses are (1) the Library Field Studies overview; (2) Library Field Studies preparation; (3) library material collection; (4) library material organization; (5) library material usage; (6) library material management; (7) library cultural programs management; (8) library operations; (9) library facilities; (10) user services; and (11) field reports and report writing.

Seventh, the six developed course syllabi were evaluated via expert survey. As a result, all courses received average scores above 4 on a 5-point Likert scale.

Acknowledgements

Note

1   Jiro Kawakita created the KJ technique for use by groups aiming to form a consensus on priorities from large amounts of qualitative data. It takes its name from his initials.

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