

Current status of courses related to information literacy in universities in Taiwan

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Abstract

This article examines the development of information literacy education in Taiwan. It describes the IL definition and its relationship with academic education and general education. At the same time, it also reviews relevant literature and research. Then it analyzes the IL courses offered by 164 universities in Taiwan to present the current status of IL education in Taiwan and get the results that information literacy courses are mainly organized by centers for general education and provided by university teachers or university librarians with certain positions, with the contents focused on the utilization of library resources. The author thinks that the pattern of information literacy education in general education is the most suitable one, and hopes universities in Taiwan will put greater emphasis on information literacy education and will learn from the experiences of the "ALA information literacy competency standards for higher education" to provide more complete teaching plans.

Keywords

Information literacy, Library, University, Taiwan

1 Introduction

Information literacy (IL) is a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information (Xie, & Wei, 2002). Wu (2001) did a search by "information literacy" in the Education Resources Information Center database (ERIC) and found that there were only dozens of related articles before 1990 but nearly 200 pieces during 1990-1995. Yu (2003a) also did the same search in ERIC and got more than 400 pieces from 1996 to 2003. The author searched ERIC when writing this article and found 328 pieces from 2003 to 2008. These show that the importance of information literacy is rising in the U.S. from the 1990s, and in the 21st century, the era of knowledge economy, it's still a hot topic.

As a skill to learn how to study, IL is one of the core curriculums of general education and plays an important role in integrating independent disciplines (Xie & Wei, 2002, p. 45). In recent years, Taiwan education authority has drawn up 8 core competences in academic general education in the "*Plan to improve core curriculums of general education in universities*", including ethical

and moral qualities, awareness of the law, communication skills, information capacity, problem-solving ability, creative thinking ability, Chinese language expression and foreign language ability, etc. Among these, "information capacity" means IL and the ability to use computers and network. Center for General Education in Taipei Medical University (TMU), where the author serves, complied with the trend and developed 8 new core competences which TMU students must have in 2008 after many discussions. These core competences include social care and altruistic spirit, quality of democracy and the rule of law, communication and teamwork, information management and application, critical thinking and problem-solving, creative thinking, art and aesthetics, and language and international view. Among them, "information management and application" almost equals information literacy. Under this item, the author offers two courses "Library Utilization" and "Health Science Information Resources", and other teachers provide a set of academic and practical courses about computer and network. As a main teacher in TMU to develop IL education for freshmen, the author generates an idea to investigate the developments of IL courses in other universities. In this article, the author first reviews the definition of information literacy, IL literature in America, and related research in Taiwan; and then introduces the relationship among IL, academic education and general education; finally, collects and analyzes courses related to information literacy offered by 164 universities in Taiwan to present the current status of IL education.

2 Literature review

2.1 Definition of information literacy

Foreign scholars began to study the essence of IL in the 1970s in the USA. At that time, the so-called IL was a response to rapid changes of information, and its complicated characteristics had a close relationship with information updating technologies. In the 1980s, information skills of IL became more and more important, and the information seeking processes, from searching and accessing to criticizing and evaluating, were acknowledged by libraries and the society. Especially after the publication of the "*Final report of the American Library Association presidential committee on information literacy*", the concepts that IL is one of the basic living skills people must acquire in information society gradually become a common consensus (Xie & Wei, 2002, p. 51, 54). American Library Association (ALA) (2000) published the "*Information literacy competency standards for higher education*", which defined IL as "a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" (ACRL, 2000). This document sets 5 standards and 22 performance indicators (Table 1), and thinks that an information literate individual is able to:

- ① Determine the extent of information needed;
- ② Access the needed information effectively and efficiently;
- ③ Evaluate information and its sources critically;

- ④ Incorporate selected information into one's knowledge base;
- ⑤ Use information effectively to accomplish a specific purpose;
- ⑥ Understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and legally.

TABLE 1. Information literacy competency standards and performance indicators for higher education (ACRL, 2000).

● **Standard 1**

The information literate student determines the nature and extent of the information needed.

Performance Indicators:

- 1. The information literate student defines and articulates the need for information.
- 2. The information literate student identifies a variety of types and formats of potential sources for information.
- 3. The information literate student considers the costs and benefits of acquiring the needed information.
- 4. The information literate student reevaluates the nature and extent of the information need.

● **Standard 2**

The information literate student accesses needed information effectively and efficiently.

Performance Indicators:

- 1. The information literate student selects the most appropriate investigative methods or information retrieval systems for accessing the needed information.
- 2. The information literate student constructs and implements effectively-designed search strategies.
- 3. The information literate student retrieves information online or in person using a variety of methods.
- 4. The information literate student refines the search strategy if necessary.
- 5. The information literate student extracts, records, and manages the information and its sources.

● **Standard 3**

The information literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system.

Performance Indicators:

- 1. The information literate student summarizes the main ideas to be extracted from the information gathered.
- 2. The information literate student articulates and applies initial criteria for evaluating both the information and its sources.
- 3. The information literate student synthesizes main ideas to construct new concepts.
- 4. The information literate student compares new knowledge with prior knowledge to determine the value added, contradictions, or other unique characteristics of the information.
- 5. The information literate student determines whether the new knowledge has an impact on the individual's value system and takes steps to reconcile the differences.
- 6. The information literate student validates understanding and interpretation of the information through discourse with other individuals, subject-area experts, and/or practitioners.
- 7. The information literate student determines whether the initial query should be revised.

● **Standard 4**

The information literate student, individually or as a member of a group, uses information effectively to accomplish a specific purpose.

Performance Indicators:

- 1. The information literate student applies new and prior information to the planning and creation of a particular product or performance.
- 2. The information literate student revises the development process for the product or performance.
- 3. The information literate student communicates the product or performance effectively to others.

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● Standard 5

The information literate student understands many of the economic, legal, and social issues surrounding the use of information and accesses and uses information ethically and legally.

Performance Indicators:

1. The information literate student understands many of the ethical, legal and socio-economic issues surrounding information and information technology.
 2. The information literate student follows laws, regulations, institutional policies, and etiquette related to the access and use of information resources.
 3. The information literate student acknowledges the use of information sources in communicating the product or performance.
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The first study on IL in Taiwan was conducted by Li De-Zhu in 1994 entitled the "*Research on meaning and connotation of library and information services: based on information literacy study.*" It summarized different interpretations and defined IL as "an information literate individual understands the value of information and can search, evaluate, organize and use the information effectively when needed" (Li, 1997). Then, Wang Zhen-Hu proposed that IL was the fundamental skill in utilizing information and explained IL can be developed by teaching the public to make good use of information and protecting information liberalization (Chen, 1996). Lin Mei-Ho (1996) pointed out that an information literate individual should have 5 fundamental abilities, such as acquiring new knowledge, developing questions, retrieving, seeking, selecting, evaluating, organizing, using and creating information by various kinds of media, criticizing the searching process, and evaluating searching results.

2.2 IL and higher education

The objective of higher education is to create and inherit knowledge. Because of the constant rising of information and knowledge, what undergraduates learned in the university is unable to meet their lifelong requirements, but the learning models provided by the university still have great influence on students' future. Therefore, encouraging undergraduates to take novel study methods and developing their lifelong learning abilities and habits, teaching them to judge and analyze and training their innovation capacity has become the focus of higher education (Wang, 2003).

"*ALA Information literacy competency standards for higher education*" also points out that developing lifelong learning is central to the mission of higher education institutions. By ensuring that the individuals have the intellectual abilities of reasoning and critical thinking, and by helping them construct a framework for learning how to learn, colleges and universities provide the foundation for sustainable growth throughout their careers, as well as in their roles as informed citizens and members of communities. Information literacy is a key component of, and contributor to, lifelong learning. Information literacy competency extends learning beyond formal classroom settings and provides practice with self-directed investigations as individuals move

into internships, first professional positions, and increasing responsibilities in all areas of their lives. Because information literacy augments students' competency with evaluating, managing, and using information, it is now considered by several regional and discipline-based accreditation associations as a key outcome for college students (ACRL, 2000). During the 1990s, based on the needs of sustainable development on IL education, Australian education departments completed a series of relevant official reports. In "*Developing lifelong learners through undergraduate education*", the authors also agree that IL is one of the four most important factors in course planning of higher education (Bruce, 1995).

Bruce (1995) presented a theoretical framework in IL education for higher education and discussed it from three aspects: an information literate person, IL education, and stakeholders in the university. This framework can be briefly described as follows:

(1) 7 characteristics of the information literate person

- Independent, and self-directed learning
- Information processes implementation
- Information technology application
- Information use evaluation
- The world of information acquisition
- Critical evaluation of information
- Personal information style

(2) Nature of information literacy education

Each teacher should assume the responsibility to offer IL education, which is also the mission all educators and information providers should share. We can incorporate IL education in the university in the following manner:

- Select one or more courses and integrate IL into their course planning.
- Select one or more disciplines and incorporate IL in their relevant courses.
- Introduce some IL topics in some selected courses.
- Deliver new knowledge, tools and system operation on IL to teachers in seminars.
- Provide students with more opportunities to learn outside the classroom from teachers and information service departments (libraries and computer centers)
- Provide IL continuing education for graduates and members of the wider university communities.

In addition, course planning must encourage students to make use of information flow and provide them with more opportunities to learn complex information skills. "Resource-oriented" or "problem-oriented" learning approach is more suitable than traditional lecture-based teaching method. If lecturing is the main teaching method, the teacher should make best use of operations or other means to encourage students to study independently to enhance their IL abilities.

(3) Roles of stakeholders in developing information literacy

The stakeholders related to IL education include: university leadership and its administrative

arms, course coordinators and lecturers, staff developers, student learning counselors and information services (libraries, computer centers, multimedia centers, etc.). Effective IL education depends on the cooperation among the stakeholders, information specialists and discipline experts, and they develop students' information literacy through innovatively designed curricula. Bruce believed that the library was the most suitable one to promote these stakeholders to work together for IL education. He advocated that libraries should participate in the planning, implementation and evaluation of courses and programs related to IL more closely.

The "ALA *information literacy competency standards for higher education*" also emphasizes that incorporating IL across curricula, in all programs and services, and throughout the administrative aspects of the university, requires collaborative efforts of teachers, librarians, and administrators. Through lectures and by leading discussions, teachers can establish a context for learning. They also inspire students to explore the unknowns, offer guidance on how to best fulfill information needs, and monitor students' progress. University library staffs can coordinate the evaluation and selection of information resources, organize and maintain library collections and information retrieval tools, and provide bibliographic instruction and database training sessions to students and faculty. Administrators can create opportunities for collaboration and staff development among faculty, librarians, and other professionals who initiate information literacy programs, lead planning and budgeting for those programs, and provide ongoing resources to sustain them (ACRL,2000).

2.3 *IL and general education*

Distinguishing itself from professional education, general education in universities is a common and overall education, which pays attention to students with capacity to integrate, analyze and acquire knowledge through various disciplines, and broadens their minds and visions on life, nature and society. General education isn't prepared for some special professional problems but for common questions people may meet in society. Besides the common experience emphasized above, the cultivation of lifelong learning skills and a wide range of knowledge, or valuation and re-viewing on other cultures are all of the aspects of modern general education (Xie & Wei, 2002, pp. 49-50). General education in universities is personality education to shape graduates' future, which makes "holistic education" the starting point to cultivate students' capabilities. Among these, personal quality and ethics make students more comprehensive; systematic thinking and creativity make them more excellent; introspective ability and communication skills make them more mature; language and information competence make them more pragmatic (Wang, 2003, p.270).

In the era of knowledge economy, knowledge-based society emphasizes the capacities to create and explore knowledge, and how to transform information into knowledge is an essential ability of individuals in the information society. Therefore, the developments of undergraduates' information

literacy become more important. Only by possessing judgments on information value can one become an independent learner; only by cultivating the habit of applying information can one become a lifelong learner; and only by having information organization abilities can one become a knowledge creator. Therefore, general education does not only give students instructions to general knowledge, but also teaches them how to learn and cultivate their independent research and critical thinking (Wang, 2006, p. 222).

Generally, we conduct IL education in universities by the following five models (Jacobson & Mark, 2000):

(1) Course-related Instruction

It's the most common model, and librarians are often invited to teach students how to use the library's online public catalogs and databases of electronic journals to complete their course assignment with hands-on experience.

(2) Web-based Instruction

It is a self-adjusting, interactive and computer-based teaching method. Sometimes it provides videos and online tutorials, but it mainly ensures students to do free online study at their own time.

(3) Models connected with General Education Programs

In the USA, library utilization education has become one of the most important elements in general education. However, the practices of each university are different: some integrate library utilization into the general courses for freshmen; some simply ask teachers to incorporate the spirit of information literacy in their junior general curriculums.

(4) General Education Credit Course

Some universities invite librarians to offer general education credit courses.

(5) Library Instruction in first-year experience or first-year seminar classes

Some universities integrate library instruction in their first-year experience or first-year seminar classes.

Academic libraries in Taiwan usually hold library tours for freshmen at the inception of the new academic year, and librarians are often invited to the classroom or in the library to teach students on how to use library resources. But IL is a series of learning processes to identify information needs, analyze the problems, select suitable resources, carry out information retrieval, relevance judgment, evaluation, and make good use of information or even become familiar with the relevant social, legal and ethical issues, which can not be replaced by one library tour or several resource-retrieving training sessions. The author therefore believes that the pattern of IL education in general education is the most suitable one for the first and second year undergraduates.

Scholars and experts have different views on whether the IL courses should be incorporated into general education. The proponents stress that library resource utilization is a necessary and fundamental skill for undergraduates while the opponents consider that such IL courses emphasizing experience, skills and applications, are unsuitable to be separated courses, and they should be combined with other professional courses (Chen, 1997, p.64). Some scholars consider the library utilization courses of current

ral education in universities in Taiwan have less contact with professional courses and teachers; the promotion of IL seems to pay more attention to the study of instrumental objects, which pursues r than "spirit" (Jing, 1999, p.64).

nt literature in America

1990s, academic libraries in America have played an important role in developing on the university campus. University of the Pacific library cooperated with the ion, offered library utilization education to freshmen in the general education and evaluated students' learning performances (Fenske & Clark, 1995). In Marcos, the library integrated IL education in the general education students (Somntag, Gabriela, & Donna, 1996). Illinois State University ducation courses and offered library utilization education to freshmen; 196) used group discussions to collect the views and recommendations the results showed that when planning IL education, the e contents of general education courses. Southern Oregon form, and one way is to set up an "Information Literacy gin and contents of this program and stated the role eman, the library offered IL seminar with 3 credits ary, & Kathryn, 1999). The librarians and teachers ed to conduct IL education for first-year students

California State University (CSU) to pay attention to undergraduates' CSU system to develop their rarians cooperated with the d education courses on CSU at CSU assessed students' IL

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the greater ability to obtain and use information in the context of the connection of

resources (search tools and techniques); (11) Assessment and utilization of internet resources; (12) Information quality evaluation; (13) Information organization; (14) Citation. According to the results of questionnaires distributed among students at the end of the class, she found the most impressive units were as follows: "search tools and techniques on Internet resource", "theses, dissertations and newspapers", and "research strategy"; the most useful units were "search tools and retrieval techniques", "theses, dissertations and newspapers" and "journals and conference papers"; and nearly 30% of students surveyed thought that "information flow" was no help for them.

Luo (2000) published her teaching achievements from the course "Library general education" given by Cheng Kung University. The course contained 6 units: information needs analysis, library services, searching of library collection, reference services and reference materials, database utilization and Internet & information services. The evaluated questionnaires showed that students thought such 3 units "searching of library collection", "Internet resources" and "reference materials" were more helpful to them while "databases utilization," which Luo expected to be more helpful, was only moderate. In addition, she also found that because of the language barrier, students had obvious obstacles on the use of non-Chinese databases.

Lin (2002) conducted a questionnaire survey among students in Fu Jen Catholic University who selected the general education course "Library and information utilization" or took part in other training workshops provided by the library. This survey tried to explore the relationships between library utilization education students participated in and their IL competences (which included 4 indicators: motivation to receive knowledge, skill acquired, information evaluation, and information integration and utilization). After statistical analysis, Lin found that library utilization education had significant impact on 3 of IL competences of participating students, such as "motivation to receive knowledge", "skill acquired" and "information integration and utilization"; and only little impact on "information evaluation".

Xie and Wei (2002) collected 28 IL course syllabi from universities in America and Taiwan of China and analyzed the course contents. Their conclusions were as follows: (1) IL courses took the "ALA IL definition" as IL education ideas to promote; (2) IL courses should be incorporated in the general education program; (3) IL learning models were diverse; (4) IL education in universities covered a wide range and multiple objectives; (5) Evaluation methods for IL courses had not been universally set up.

Yu (2003b) published the teaching achievements from the course "Library and Internet resources utilization" offered by Jin-Wen Institute of Technology. This course was divided into 6 units: introduction, knowing the library, information resources, Internet resources utilization, methods and strategies to search information resources and online databases. The results of the final questionnaires showed that nearly 60% of students decided to select this course by its name and the syllabus, which reflected that the utilization of library and Internet resources had been regarded as important practical skills. The favorite units students sorted were as follows: "methods and strategies to search information resources", "Internet resources utilization" and "information

resources". The most rewarding activities were "class lecture", "off-campus library visits" and "computer demonstrations". While nearly 60% of the students considered the most important obstacle affecting their learning effectiveness to be limited English competence, which kept them from reading English websites and databases smoothly. More than 90% of the students graded this course "very satisfied" or "fairly satisfied", and 90.3% of them indicated that they would recommend this course to younger students.

3 Research method and research findings

3.1 Research method

In order to understand the current status of IL courses offered by universities in Taiwan, the author adopts content-analysis methodology (one of the qualitative methods) to conduct the research. First of all, the research assistants searched IL courses by keywords and browsed course titles throughout class selection websites in all 164 universities in Taiwan in March 2008 and collected 52 related courses (see Appendix); then they copied and saved the course introductions and syllabi for further analysis. The research questions are ① What is the current status of IL courses offered by different universities? ② What are the education backgrounds and working experiences of the teachers of these IL courses? ③ What are the titles and contents of these IL courses?

The limitation of this research is that it only adopts content analysis, which may be unable to gain a better understanding of teachers' complete backgrounds and designing ideas when planning curriculums. Analysis of course contents will also be affected by the completeness of the information teachers fill in the course syllabi.

3.2 Research findings

(1) The current status of IL courses offered by different universities

In total, the author collected 52 courses offered by 38 universities. The universities in Taiwan belong to two education systems: "higher education" (academic and teaching universities) and "technological and professional education" (university of technology or institute of technology). According to the analysis, 25 (66%) universities are from higher education system, and 13 (34%) universities are from technological and professional education system. From the perspective of public or private school, 21 (55%) are private, and 17 (45%) are public.

(2) The education backgrounds and working experiences of teachers

Out of these 52 courses, some of them are offered by the same teacher, and some do not provide the teachers' information. So the author collected information on a total number of 40 teachers. As shown in Table 2, 62.5% of the IL teachers are faculty of the university, while the section heads of the university library are an important composition (37.5%) of the IL teachers, and 5 library directors and deputy /associate directors are involved in IL course teaching.

TABLE 2. Analysis of teachers' official position. (n=40)

Official position	Counts	Percentage (%)
Faculty (full/part-time in the university)	25	62.5
Faculty (part-time outside the university)	1	2.5
Director of library	3	7.5
Deputy / Associate director of library	2	5
Section head of library	15	37.5
Library staff	4	10
Section head of computer center	1	2.5

Note. Some teachers serve both in the library and as faculty, therefore one person could be counted more than once.

The author makes a further analysis of the departments which the full-time and part-time faculty belonged to and finds that more than half (56%) of them are from the center for general education, followed by information management (12%), library & information science (8%), and information science (8%) (Table 3). In other words, IL education in universities in Taiwan is mostly organized by centers for general education.

TABLE 3. Analysis of departments teachers belonged to. (n=25)

Department	Counts	Percentage (%)
Library and information science	2	8
General education	14	56
Information science	2	8
Information management	3	12
Spanish language	1	4
Early childhood education	1	4
Applied foreign languages	1	4
Accounting	1	4

(3) The titles and contents of IL courses

The title of a course usually reflects its contents as well as the teachers' knowledge of this field. Therefore, the author analyzes the keywords of these 52 IL course titles and finds that 44.3% of them include the keyword "library (as a space)", and the next are "library collection and information / materials (as a resource)" (30.8%) and "Internet / web" (15.4%), while only 7.7% of them used the terminology "information literacy" (Table 4). This shows that IL courses offered by universities in Taiwan are mainly concerned with teaching students how to use the library and the print or electronic resources provided by the library.

TABLE 4. Analysis of course titles. (n=52)

Keyword of course titles	Counts	Percentage (%)
Library (as a space)	23	44.3
Library collection and information/ materials (as a resource)	16	30.8
Internet / web	8	15.4
Information literacy	4	7.7
Digital	2	3.9
Knowledge management	1	2

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Keyword of course titles	Counts	Percentage (%)
Electronic information	1	2
Information retrieval	1	2
Information gathering	1	2
Media	1	2

Note. One course is not limited to one count.

In order to understand the contents of these IL courses, the author makes further examinations on the course introductions and syllabuses. In these 52 IL courses, only 36 course syllabuses can be accessed through course selection websites. The author adopts the 5 standards of "ALA Information Literacy Competency Standards for Higher Education" as the framework to examine these course syllabi one by one and to analyze the contents of each course if it meets the criteria (Table 5).

The results show that almost all (97.3%) of the course contents meet the requirements of standard two and standard three; 61.2% of the courses provide the relevant IL skills to help students meet the requirements of standard four, and it's a pity that less than 20% of the courses pay attention to topics related to standard five and standard one. In standard five, only 7 courses have relevant subjects; among these, No.9 refers to copyright law, No.12 and No.30 mention information ethics, No.24 notes scholarly communication and digital publishing, No.34 touches on issues related to electronic journals, and No. 42 and No.43 refer to the relationship between information literacy and lifelong learning.

TABLE 5. Analysis of course contents. (n=36)

Information Literacy Competency Standards for Higher Education		
Standards	Course number ^①	Percentage (%)
Standard 1: The information literate student determines the nature and extent of the information needed. ^②	1, 22, 25, 29, 45, 51	6 courses (16.7)
Standard 2: The information literate student accesses needed information effectively and efficiently.	1, 3, 4, 6, 8, 9, 10, 11, 12, 13, 18, 20, 21, 22, 23, 25, 26, 27, 28, 29, 30, 31, 33, 34, 35, 36, 38, 39, 40, 42, 43, 44, 45, 49, 51	35 courses (97.3)
Standard 3: The information literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system.	1, 3, 4, 6, 8, 9, 10, 11, 12, 13, 18, 20, 21, 22, 23, 25, 26, 27, 28, 29, 30, 31, 33, 34, 35, 36, 38, 39, 40, 42, 43, 44, 45, 49, 51	35 courses (97.3)
Standard 4: The information literate student, individually or as a member of a group, uses information effectively to accomplish a specific purpose. ^③	1, 6, 10, 11, 13, 21, 22, 23, 24, 25, 26, 27, 28, 30, 33, 35, 36, 38, 39, 40, 45, 51	22 courses (61.2)
Standard 5: The information literate student understands many of the economic, legal, and social issues surrounding the use of information and accesses and uses information ethically and legally.	9, 12, 24, 30, 34, 42, 43	7 courses (19.5)

① The specific course information that a course number represents can refer to Appendix.

② If the contents of a course refer to research framework, research method and research topic, they are classified as "Standard One".

③ If the course contents refer to writing reports, making presentations, information integration and citation formats, they are classified as "Standard Four".

4 Conclusion

This article describes the definition of IL and its relationship with academic education and general education. At the same time, it also reviews relevant literature and research about IL in the USA and Taiwan of China. The author then surveys all 164 universities in Taiwan and locates 52 IL courses to conduct further analyses. The research results are summarized as follows:

(1) In all 164 universities in Taiwan, only 38 (23.2%) of them offer courses related to IL. This shows that there is still sufficient space for the development of IL education in Taiwan.

(2) Among the universities offering IL courses, higher education system universities offer more than technological and vocational system does. And the private universities are more than the public ones.

(3) In Taiwan, IL courses are mainly organized by centers for general education and provided by university faculty or university library staff with management positions (e.g. section head and director, deputy / associate director).

(4) The contents of IL courses in universities in Taiwan mainly focus on the utilization of libraries and library resources; and they still need to strengthen the course design on determining the nature and scope of information needed and understanding other information related issues.

At last, the author would like to stress again that IL is a series of learning processes to identify information needs, analyze the problem to solve, select suitable resources, carry out information retrieval, relevance judgment, evaluation, and make good use of information or even be familiar with the relevant social, legal and ethical issues, which can not be replaced by a library tour or several resources-operation training sessions. Therefore, the author believes that the pattern of IL education in general education is the most suitable one for the first and second year undergraduates. The author hopes universities in Taiwan can put greater emphasis on information literacy education and can learn from the experiences of the "ALA Information Literacy Competency Standards for Higher Education" to provide more complete teaching plans.

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Appendix

Number	Course	University	Teacher	Department / Institution	Syllabus
1	Information and Internet Resources Utilization	Taiwan University	Xie Bao-nuan	Associate Professor Department of Library and Information Science	
2	"Library Collection and Information" Utilization	Chung-Hsing University	Su Shiao-feng	Associate Professor Graduate institute of library and information science	NA
3	Web Resources and Exploration ^①	Chiao-Tung University	Liang Ting	Associate professor Department of Computer Science	
4	Introduction to Library Science	Chiao-Tung University	Wang Mei-hong	Lecturer Center for General Education	
5	Library and Digital Archive	"Central University"	Lian Wen-xiong	Assistant professor Department of Information Management / Section head Information System Division of Library	
6	Library and Information Utilization	Chung-Cheng University	Lin Li-wen	Section head Acquisition & Cataloging Division of Library	
7	Information Literacy	Chang-Hua University of Education	Chen Wan-jia	Section head Information System Division of Computer Center	NA
8	"Library Collection and Information" Utilization (A, B)	Taipei University	Wang Yi-xin	Professor Department of Accounting / Director of the Library	
9	Library & Information Retrieval	Taipei University	Liao Yi-Min	Section head Circulation & Preservation Division of Library	
10	Library Utilization	Dong-Hwa University	Zhang Lian-man	Library staff Reference Service Division of Library	
11	Library Utilization	Dong-Hwa University	Wu Wan-ru	Library staff	
12	"Library Collection" and Internet Resources	Taipei University of Arts	Chen Guo-qiong	Lecturer Department of General Education	
13	Library Utilization	Taipei University of Arts	Cheng Yun-jia	Part-time Lecturer	

14	Introduction to Library and Information Science	Tai-Tung University	He Men-ghou	Lecturer Center for General Education	NA
15	"Library Materials" Management and Use	Tai-Tung University	Wang Guo-zhao	Section head Circulation & Preservation Division of Library	NA
16	"Library Resources" Utilization	Taiwan Huwei University	Wang Xiu-luan	Lecturer Department of Information Management / Section head Information Service Division of Library	NA
17	"Library Collection and Information" Utilization	Kaohsiung Marine University	Chen Shu-man	Lecturer Center of General Studies	NA
18	Library Resources Utilization	Taipei University of Education	Liang Li-yun	Associate Professor Department of Early Childhood Education	
19	Library Utilization	Taipei University of Education	Yin Li-fang	(was) Section head Public Service Division of Library	
20	"Library Collection and Information" Utilization	Fu-Jen Catholic University	Jerry Chen	Lecturer Department of Spanish Language	
21	Introduction to Electronic Resources	Chang-Gung University	Huang Ten-yi	Part-time Lecturer Center for General Education / Section head Public Service Division of Library	
22	"Library Collection and Information" Utilization	Chang-Gung University	Same as no. 21	Same as no. 21	
23	Library Resources Exploitation	Da-Yeh University	Liao Xian-juan	Lecturer Center for General Education / (was) Director of the Library	
24	Introduction to Library and Information Science	Da-Yeh University	Same as no. 23	Same as no. 23	
25	"Library Collection and Information" Utilization	Kaohsiung Medical University	Chen Guan-nian	Associate professor Center for General Education / Deputy director of the Library	

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Appendix. (Continued)

Number	Course	University	Teacher	Department / Institution	Syllabus
26	Information Retrieval and Utilization	Kaohsiung Medical University	Sun Hao-zhang	Section head Circulation & Preservation Division of Library	
27	"Library Collection and Information" Utilization	Kaohsiung Medical University	Same as no. 26	Same as no. 26	
28	Library and Information Utilization	University of South China	Xie Wan-wan	Library staff Public Service Division of Library	
29	Information and Internet Resources Utilization	University of South China	Zhang Jia-xiang	NA	
30	Library and Information Literacy	University of South China	Same as no. 28	Same as no. 28	
31	Information Gathering and Utilization	Ta-Tung University	Chang Nai-heng	Assistant professor Center for General Education	
32	Digital Library & Digital Publishing	Ta-Tung University	Same as no. 31	Same as no. 31	
33	Library and Information Utilization	Southern Taiwan University of Technology	Yang Zhi-jing	Director of the Library / Associate professor Center for General Education	
34	Library Utilization	Taipei Medical University	Chiu Tzu-heng	Associate professor Center for General Education / Associate Director of the Library	
35	Introduction to the Library Science	Chang Jung Christian University	Chen Huang Li-chun	Section head Acquisition & Cataloging Division of Library	
36	Information Literacy and Interdisciplinary Studies	Mid-Taiwan Medical University	Huang Wen-wen	Assistant professor Center for General Education	
37	Information Literacy and Application	Hsuan-Chuang University	Huang Chi-ming	Associate professor Department of Computer Science / Section head Information System Division of Library	
38	Library Resources Utilization & Internet	Chien-Kuo University of Technology	Lin Yu-ying	Section head Circulation Division of Library	

39	Library Resources and Internet	Chien-Kuo University of Technology	Hua Zhong-xing	Associate professor Center for General Education / Director of the Library	NA
40	Library and Internet Resources Utilization	Tainan University of Technology	Chen Pei-tzu	Section head Public Service Division of Library	NA
41	Introduction to Library Science	Diwan University	NA	NA	NA
42	"Library Collection and Information" Utilization (A)	Yu-Da College of Business	Hu Ying-lin	Lecturer Center for General Education / (was) Director of the Library	NA
43	"Library Collection and Information" Utilization (B)	Yu-Da College of Business	Same as no. 42	Same as no. 42	NA
44	Use of Library and Information	Technology and Science Institute of Northern Taiwan	NA	NA	NA
45	Information and Internet Resources Utilization	Nan-Ya Institute of Technology	Chang Chen-chi	Lecturer Department of Applied Foreign Languages	NA
46	"Library Collection and Information" and Media Education	Wu-Feng Institute of Technology	Li Bao-ling	(was) Library staff Public Service Division of Library	NA
47	"Library Collection and Information" and Retrieval	Chang-Gung Institute of Technology	NA	NA	NA
48	Utilization of Library Resource	Chang-Gung Institute of Technology	NA	NA	NA
49	Library Utilization	Shu-Zen College of Medicine and Management	Zhang Yao-hua	Lecturer Department of Information Management / Section head of the Library	NA
50	"Library Collection and Information" Utilization	Taipei Municipal University of Education	Lin Shu-ling	Section head Circulation Division of Library	NA

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Appendix. (Continued)

Number	Course	University	Teacher	Department / Institution	Syllabus
51	Knowledge Management of the Library	Kun Shan University of Technology	Zheng Jing-wen	Lecturer Center for General Education / Section head Circulation Division of Library	
52	"Library Collection and Information" Utilization	Kun Shan University of Technology	Same as no. 51	Same as no. 51	NA
Total	52 courses	38 universities (N=164; 23.2%)	40 teachers		39 ^{②③}

① The course (No. 3) is opened by "College of information", and the other are opened by "Center for general education".

② The courses (No. 5 and No. 32) introduce digital library, and they are unrelated to IL.

③ The course (No. 37) is really a computer literacy course.

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