

**A Comparative Study on Information Literacy
Education in University Libraries:
Focusing on Students' Perception**

September 2023

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要旨

大学図書館における情報リテラシー教育に関する比較研究 —学生の認識に焦点をあてて

近年、大学図書館は国際化、情報化、電子化といった状況によって、内外から改革が迫られている。これらの課題を解決して時代に応じた学術情報基盤を確立するためには、大学図書館の整備が必要である。具体的には、新たな情報資源の組織化や整備を推進したうえで、情報リテラシー教育（ILE）を組織化し、情報資源の有効活用を実現する必要がある。

日本をはじめ、アジア圏における大学図書館の情報リテラシー（IL）はアメリカ図書館協会（ALA）の方針の影響を受けている。しかし、従来のIL教育には主要な問題点が2つある。1つ目は、情報の電子化や情報環境の変化に応じてIL教育を発展させるべきであるにもかかわらず、実現できていないことである。特に、AI技術の活用は、ILの重要性を高める一方で、既存のIL枠組みを超えた認識およびスキルセットが必要であると指摘している(Cox & Tzoc, 2023)。これは日本国内に限らず、国際的に共通の課題である。2つ目は、実施主体である図書館員の考えに基づいて内容が決定されており、利用者の視点やニーズが欠如していることである。Yevelson-Shorsher & Bronstein (2018) は、主な図書館IL教育は図書館員によって考えられたものであるため、利用者の視点とギャップがあることを明らかにした。そして、このギャップが図書館の利用に影響を及ぼす一つの要因であると指摘している。こうした問題をふまえて、利用者の視点やニーズを考慮した新たなILEを構築することは、重要な意義があると言えよう。

『図書館情報学用語辞典』第4版（2013）によると、ILは「さまざまな種類の情報源の中から必要な情報にアクセスし、アクセスした情報を正しく評価し、活用する能力」と定義されている。これまで、大学図書館ILEに関する研究は、主に欧米先進国の図書館を対象として行われており、アジア圏の図書館についての研究はまだ少ない。しかし現在、中国、シンガポール、台湾を筆頭に、アジアの図書館は大きく発展しつつある。宇治郷（2008）は日本の図書館は、これから「図書館先進国」に「学ぶ」という観点だけでなく、同時にアジアの図書館と「共に協力」して「共に発展」していくという、いわば「協働」の姿勢を持つ必要があると指摘している。さらに、中国語圏（台湾、中国本土、香港など）の大学生の情報探索行動と図書館利用パターンについては、これまで明確かつ体系

的に調査されたことはほとんどない。これらの地域の大学図書館の利用状況や、図書館サービス提供者に対する学生の認識は、しばしば「謎」と表現される。そこで、本研究では、図書館サービスとして提供される情報リテラシー教育に対し、中国本土、台湾、日本の学生がどのように認識しているのかを示し、今後の ILE のあり方を明らかにすることを目的としている。

本研究は、以下のリサーチクエスションによって導かれた。

質問 1: 中国本土と台湾における ILE に対する学生の認識はどのようなものであるか？

質問 2: 中国本土と日本における ILE に対する学生の認識はどのようなものであるか？

質問 3: 中国本土における単位制独立型 IL コースに対する学生の認識はどのようなものであるか？

これら 3 つの研究課題に対して、五つの国立総合大学にて比較研究を行った。それぞれ復旦大学 (FDU) と台湾師範大学 (NTNU) との比較、北京大学 (PKU) と筑波大学 (UT) の比較、中国科学技術大学 (USTC) の単位制独立型 IL コースの受講生の比較になる。これら 5 つの大学はいずれも総合大学であり、一連の全学的な ILE を実施するなど、ILE に関する包括的な体制を整えている。このような充実した ILE 体制により、学生の ILE に対する認識レベルを調査することができ、今後の ILE のベスト・プラクティスを示唆し、参考になることが期待される。

本研究では、各大学における学生の ILE に対する認識を包括的に把握するために、複数事例比較研究における混合研究アプローチを用いる。具体的には、まず、各大学における ILE の現状を把握するために、ウェブサイト調査と図書館員へのインタビューを実施した。次に、大学図書館における ILE に対して、どのような意識を持っているかについて、それぞれの学生を対象とした質問紙調査を行った。アンケート調査による量的データとインタビューによる質的データの両方のデータを組合せた分析を行い、より深い理解をもたらす。大学図書館とその ILE プログラムが学生の学習ニーズや嗜好に与える影響に関する研究は、若者の情報行動や大学における ILE の実施に新たな知見を提供することができる。以下、各研究課題の結果について説明する。

Q1: 中国本土と台湾における ILE に対する学生の認識はどのようなものであるか？

復旦大学 (FDU) と台湾師範大学 (NTNU) 2 大学から 109 件の回答が集まった。その結果、NTNU の学生が FDU の学生より ILE を重要視していることを示している。FDU の学生は、電子資料を中心とする指導、授業課題の相談と図書館オリエンテーションを最も重要な ILE プログラムとして評価し、NTNU の学生は、電子資料を中心とする指導、研究相談、データベース指導の重要性をより高く評価している。また、学問分野や学習レベルが異なる学生は、図書館の資料やサービスに対するニーズや嗜好が異なることが明らかになった。一方、ILE プログラムに参加しない理由のトップ 3 は、「自分で情報を探す」、「詳しい内容をよく知らない」、「興味がない」であった。

FDU と NTNU の両図書館では、学生に ILE プログラムへの参加を促すためにインセンティブ戦略が試みられている。NTNU の学生は現金クーポンを、FDU の学生は単位を希望していた。FDU 図書館は、オンライン ILE プログラムを開始したが、学生の間での認知度が低いという課題がある。したがって、図書館はオンラインメディアを活用し、ILE プログラムを宣伝し、より目につきやすく、アクセスしやすく、魅力的なものにする必要がある。また、この結果から、優れたマーケティングと、学生のニーズに合わせたプログラムの重要性が強調された。

Q2: 中国本土と日本における IL 教育に対する学生の認識はどのようなものであるか？

北京大学 (PKU) と筑波大学 (UT) 2 つの大学の学生 426 名を対象に、大学図書館が提供する ILE プログラムに対する認識と重要性について調査を行った。その結果、PKU の学生は UT の学生に比べ、ILE プログラムをより重要視していることが示された。これは PKU の課題要件と学習方法が異なるためであると考えている。PKU では、批判的思考、創造性、協調性を重視した探究型学習を実施していて、それを支援するために、サブジェクト・ライブラリアン制度があり、これが PKU の学生の肯定的な意見に寄与している可能性も指摘している。また、図書館外での ILE と入学前の ILE 経験も学生の IL スキルと認識を形成する上で重要な役割を果たしている。

ILE のプログラムに参加しなかった理由として、「時間がなかった」「自分のニーズに合ったプログラムだと思わなかった」などが挙げられている。これらの調査結果は、大学図書館が学生のニーズに合わせたカスタマイズされた ILE プログラムを提供することの重要性を示唆している。

Q3. 中国本土における単位制独立型 IL コースに対する学生の認識はどのようなものであるか？

中国科学技術大学 (USTC) の単位制独立型 IL コースを受講した学生を対象に質問紙調査を行なった。対象となるコースは、講義のみのクラスが 350 名、ブレンデッドラーニングのクラスが 150 名、合計 500 名であった。500 名の学生のうち、405 名のアンケートが返却され、回収率は 81% であった。その結果、学生は IL コースの受講に対して高いモチベーションを持っており、中でも内発的動機付けが最も高かった。また、授業形態と性別は、IL コースに対するモチベーションと有意な正の相関があり、ブレンデッドラーニングの学生や女子学生の方が高い動機と内発的動機を持っていることがわかった。さらに、IL コースに対する学生の認識については、演習にとどまらず、学び方を指導し、生涯学習の一助となることに強く同意していた。一方で、図書館員を講師として好む学生は 18.76% に過ぎないことがわかった。学生は図書館員に比べ、教員と密接な関係を持ち、教員の方が自分たちのニーズを理解するのに適していると考えていた。

結果によると、学生の ILE に対する考え方に影響を与える要因はいくつかあり、(1) 学生の専攻分野、学生の学習レベル、学生の性別。(2) 図書館員のサービス精神と専門性に対する学生の満足度、図書館員の教育的役割に対する学生の認識。(3) 図書館に対する学生の肯定的な経験、ILE が学生の学習・研究との程度統合されているか、学習スタイル。(4) 学生のプロモーション戦略の好み (5) 利用可能な ILE プログラムの範囲、(6) 学生・図書館員・教員間の心理的距離、(7) 図書館外の ILE 経験と入学前の ILE 経験などが挙げられる。調査結果に基づき、大学図書館が充実した体系的な ILE プログラムを提供しているにもかかわらず、学生と図書館員の間にはギャップがあることが明らかになった。このギャップには、①ILE の重要性の認識のギャップ、②自身の IL 能力の理解のギャップ、③ILE プログラムにおける図書館員の主導的役割の認識のギャップ、④ILE の方法・アプローチの理解のギャップ、⑤ILE 活動の広告に関するギャップが含まれている。この結果から、図書館は利用者の IL 参加率に重点を置いていても、ILE のサービスを積極的に経験させることが重要であることがわかった。図書館員はこれらのギャップを認識し、効果的なコミュニケーション、関与、およびアウトリーチ活動を通じてギャップを埋めるために積極的に取り組むことが重要である。

本研究の結果を踏まえて、学生視点重視の情報リテラシー教育デザインモデル (SPDM) と学生視点指向ワーキングフロー (SPWF) を提案した。SPDM は、学生の IL に向けた様々な段階を表す 5 つの要素からなるモデルであり、最初の惹きつけから活性化、定着、収益、そして紹介までを表している。一方、SPWF は、SPDM を実践するもので、図書館員や教育者が効果的な ILE プログラムを設計し提供するために利用できる具体的なステップと戦略を概説している。作業の流れは 3 つの段階を含んでいる。計画、実施、そして評価と改善である。各段階は、ILE プログラムが学生中心で成果志向であり、SPDM の目標と目的に合致していることを確認するために設計されている。

本論文の結論として、今後の大学図書館における ILE の在り方は、学生参加型の ILE にすること、図書館員と学生の ILE の協働でデザインにすること、図書館員と学生とのエンゲージメントを構築することが重要である。本研究の対象は、中国本土、台湾、日本の一部の選ばれた大学の学生に限定されているが、儒教文化圏における図書館利用者及びその ILE に対する認識に関する、独自の評価を行うものである。本研究の成果は、中国、台湾、日本における学生の ILE に対する認識に関する知見を、図書館員がより深く理解するのに役立つと期待される。こうした深い理解を通じて、図書館員、図書館情報学研究者、政策立案者が、学生のニーズや期待に応える ILE プログラムを設計・実施する上での指針となることができる。

Abstract

A Comparative Study on Information Literacy Education in University Libraries: Focusing on Students' Perception

The principal function of academic libraries is to assist with instruction, knowledge acquisition, and scholarly investigation within the educational institution. There has been a significant shift in how university students acquire knowledge in recent decades. Inquiry-based learning has gained prominence and is now considered a crucial aspect of the learning process. Simultaneously, the proliferation of diverse communication technologies has led to the daily generation, distribution, interchange, and sharing of vast quantities of novel information. The current scenario is intricate due to the recent advancements in diverse information and communication technologies, such as open AI and online social networking applications (Cox and Tzoc, 2023). These developments, along with the evolving pedagogies and academic environment, have escalated user requirements and behaviors at an unprecedented pace.

Furthermore, a need exists for more explicit and systematic research on university students' information-seeking behavior and library usage patterns in Chinese-speaking regions such as Taiwan and mainland China. Their use of academic libraries in these Chinese-speaking regions and their perceptions of library service providers are often described as a “mystery.” Studies on the impact of academic libraries and their information literacy education (ILE) programs on students' learning needs and preferences will undoubtedly provide new insights into the behavior of young people toward modern technologies and their implementation in universities worldwide. Investigating the extent to which these university students value the importance of ILE will likely significantly benefit the library and information science (LIS) community.

This study aims to determine the relevance of ILE programs in academic libraries to the overall learning process of students. This thesis investigates university students' perceptions of the scope, content, and quality (effectiveness) of ILE programs to improve library services. The results of this study will help identify various barriers that currently prevent ILE programs from being fully integrated into students' overall learning and the university's core curriculum.

Using a mixed-methods research approach, this study aims to determine the perceptions of Mainland Chinese, Taiwanese, and Japanese students toward ILE as a library service and to clarify how ILE should meet students' needs and expectations.

The following research questions guided the study:

Question 1: What are students' perceptions of ILE in mainland China and Taiwan?

Question 2: What are students' perceptions of ILE in mainland China and Japan?

Question 3: How do students perceive credit-based IL courses in mainland China?

The results are described in the following section.

Question 1: What are students' perceptions of ILE in mainland China and Taiwan?

The survey results show that there were 109 responses collected from two universities. 65% of the respondents were female, and 35% were male. Many respondents at Taiwan Normal University (NTNU) were graduate students (28%); all were LIS majors, master's students, and females. Students at Fudan University (FDU) rated library instruction (cater for E-resource), course assignment consultation, and library orientation as the most important ILE programs. In contrast, students at NTNU rated library instruction (catering for E-resource), research consultation, and database instruction as more important. The average total score for each institution indicates that NTNU students considered ILE more important than FDU students. The top three reasons for not participating in ILE programs at both universities were “finding information on their own,” “not well informed about the details,” and “not interested. The study results showed that students from different academic disciplines and levels of study had different needs and preferences for library resources and services. Students from both universities considered workshops on e-books and e-learning to be the most important of the ILE programs offered by the library.

The FDU and NTNU libraries have tried incentive strategies to encourage students to participate in their ILE programs. NTNU students prefer cash vouchers, while FDU students prefer academic credits. The FDU library has set up online ILE programs. Still, they are not well known among students, so libraries should use online media to promote the ILE programs to make them more visible, accessible, and appealing. The findings also underscored the importance of good marketing and tailoring programs to students' needs. However, students reported that the programs could have been more exciting and engaging, so libraries should make the programs more interactive and engaging. Libraries should also guide academically credible sources and how to use online content for study, as students place a high value on such information.

Question 2: What are students' perceptions of ILE in Mainland China and Japan?

A total of 426 students from two universities, namely Peking University (PKU) and the

University of Tsukuba (UT), were surveyed on their perception and importance of the ILE programs offered by their university libraries. The survey showed that PKU students perceived the ILE programs as more important than UT students. The t-test results showed that PKU students rated “library instruction (focusing on e-resources),” “library orientation,” and “database instruction” as more important than UT students who rated “research consultation,” “library orientation,” and “virtual reference services” as more important. The survey also revealed that students did not participate in ILE programs due to lack of time, personal interests, and the programs needing to be more relevant to their needs.

In the discussion, the author compares the survey results from students at PKU and UT regarding their views on the overall ILE programs. The results show that PKU students expressed higher ratings towards the ILE programs, which the author attributes to the different assignment requirements at PKU that lead to different learning practices. PKU implements inquiry-based learning, which emphasizes critical thinking, creativity, and collaboration skills, whereas UT appears to place less emphasis on these skills. The subject librarian system at PKU could be one of the contributing factors to the positive feedback expressed by its students. Additionally, cultural elements such as conformity and collectivism inherent in Japanese society could potentially influence the learning practices of students at UT. Furthermore, ILE outside the library and pre-enrollment ILE experiences also play an important role in shaping students' IL skills and perceptions.

Question 3: How do students perceive credit-based IL courses in Mainland China?

Chapter 5 explored students' perceptions of the credit-based IL course at the University of Science and Technology of China (USTC). About 500 students took an IL course, with 350 students in the lecture-only class and 150 students in the blended-learning class. Of the 500 students, 405 questionnaires were returned, with a response rate of 81%. Of the participants, 261 were male, and 144 were female. The survey results indicate that students were highly motivated to take the IL courses, with the highest intrinsic motivation. Learning style and gender were found to have a significant positive correlation with motivation for IL courses, with blended learning students and female students having higher motivation. Regarding students' perceptions of IL courses, they strongly agreed that the course should not be limited to practice but should guide them in learning and help with lifelong learning. However, they disagreed with the statement that students can use web resources alone to complete a project. Both learning style and gender were found to have a significant positive correlation with students' perceptions of the IL course.

The study found that students are highly motivated to participate in IL courses. According to the research result, several factors influence students' perspectives on ILE, probably (1) students' majors, study level, and gender; (2) Students' satisfaction with the level of service and professionalism of librarians; students' recognition of the teaching role of librarians; (3) Students' positive experiences with the library; the extent to which ILE is integrated into students' learning and research; learning styles; (4) students' preference for promotion strategy; (5) range of ILE programs available; (6) triple psychological distance between students, librarians, and faculty; and (7) ILE experiences before and outside the library. Based on the survey results, we have identified gaps between students and librarians in ILE, even though university libraries provide extensive and systematic ILE programs. These gaps include gaps in perceiving the importance of ILE, gaps in understanding their own IL skills, gaps in perceiving the leading role of librarians in ILE activities, gaps in understanding methods and approaches to ILE, and gaps in promoting ILE activities. These results indicate that even if a library focuses on acquiring patrons, providing a positive experience with ILE services is crucial. Therefore, librarians need to be aware of these gaps and actively work to fill them through effective communication, engagement, and outreach efforts. This can include providing targeted ILE programming, using multiple approaches to engage and motivate learners, providing opportunities for feedback and evaluation, and collaborating with other stakeholders to promote the value and importance of ILE.

The researcher designed the Student Perspective-Oriented Design Model (SPDM) and Student Perspective-Oriented Working Flow (SPWF) for ILE based on this multi-case cross-national cross-cultural survey. The SPDM is a five-element model representing the various stages of educating students in IL, from acquisition to activation, retention, revenue, and referral. The SPWF puts SPDM into practice, outlining specific steps and strategies that librarians and educators can use to design and deliver effective ILE programs. The workflow consists of three phases: planning, process, and product. Each stage is designed to ensure that the ILE program is student-centered, outcome-oriented, and consistent with the goals of the SPDM.

This dissertation concludes that the future of ILE in university libraries should focus on three key aspects: 1) adopting a student-participatory approach, 2) designing ILE through librarian-student collaboration, and 3) establishing librarian-student engagement. Although the scope of this study is limited to students at a few selected universities in mainland China, Taiwan, and Japan, the results of this study are valuable for future curriculum design of ILE programs, especially in implementing ILE programs at different

levels of analysis. In addition, the results of this study could help practicing librarians to better understand students as library end users and students' perceptions of ILE. With this better understanding, LIS professionals can review and improve their current services and offer more effective ILE programs to their university communities as a whole.

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Chapter 1 Introduction

1.1 Background and Context

Learning through inquiry and independent learning is what a university education about. It is recommended that students enrolled in higher education institutions are instructed and motivated to inquire “Why?” more frequently. This entails refraining from accepting facile responses and information at face value, instead engaging in autonomous inquiry to delve more profoundly into the subject matter. Attaining self-sufficiency in learning is contingent upon students assuming complete accountability, authority, and culpability for their educational pursuits. At the tertiary level, proficiently utilizing the library is imperative to attain self-sufficiency in one's academic pursuits. The proliferation of technological innovations and communication channels has resulted in the generation of significant quantities of data at frequent intervals. The current scenario is characterized by a situation wherein students are confronted with a copious amount of information that can be conveniently obtained from the Internet (Fleming-May & Yuro, 2009). As a university student, locating, using, managing, sharing, and synthesizing information effectively is a complex task in today's information-saturated digital environment (Jankowska et al., 2006). For this reason, in today's electronic age, students must exhibit a wide range of functional and critical thinking skills related to information, media, and communications technology.

As stated by Harrington (2009), “Information literacy is an integral component of the quest for knowledge. It includes developing a critical disposition and practical use of information technology and resources, whether in a print or electronic format... Thus, it has always been a critical component of life as an academic researcher” (179). According to Rogers (1994), information literacy (IL) refers to a compound of library skills, study skills, cognitive skills, and additional skills necessary for independent learning. Information Literacy Education (ILE) is a crucial component of the university experience, as it seeks to provide students with the essential competencies required to effectively navigate the intricate information landscape and participate in academic, professional, and personal pursuits. The scope of ILE in academic settings typically encompasses a diverse array of subjects. These may include comprehension of research methodologies, discernment of suitable information resources, formulation of effective search tactics, evaluation of the credibility and dependability of information, and adherence to ethical principles when utilizing and citing information. Acquiring IL skills through education is a crucial component of post-secondary education. The institution is dedicated to equipping students with the requisite competencies and proficiency to adeptly obtain, assess, and apply information in academic, occupational, and individual domains.

Within academic institutions, education about IL encompasses two distinct components. Initially, the educational program concerning information and communication technology (ICT) is commonly known as ICT education, which primarily concentrates on computer systems. Subsequently, the education and training of university libraries for users are commonly referred to as ILE. Although these components have unique backgrounds and perspectives, organizations often deliver them independently. However, in contemporary university settings, both aspects can be developed under the common goal of 'information literacy' (see Figure 1-1). In comparison, ICT education delivered by faculty focuses on the technical skills and practical aspects of using information and communication

technologies. In contrast, the ILE provided by libraries emphasizes the cognitive and ethical aspects of information use. Both forms of education are imperative in equipping students with the necessary skills to thrive in the digital era, and ideally, they should be mutually reinforcing. By incorporating ICT education and ILE into university curricula, academic institutions can guarantee that students acquire a holistic comprehension of the digital terrain and the competencies essential to excel in a progressively information-oriented society. The present research will concentrate exclusively on ILE offered in academic libraries.

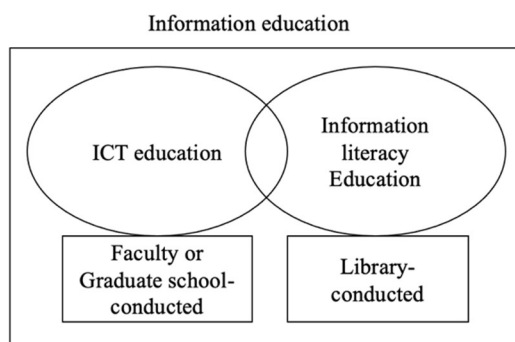


Figure 1-1 The scope of information literacy education in this study

The widely accepted definition of IL skills, as described by the American Library Association (1989), is the ability to recognize when information is needed and to locate, evaluate, and effectively use the required information. This definition highlights the pivotal role of academic libraries in facilitating students' overall learning process. Libraries need to know how to craft comprehensive campus strategies for helping students learn IL— “formal, concrete, sequenced programs” (Donnelly, 2000, p. 60) in which “subject-specific efforts build upon a foundation of research skills mastered as part of general education or core curriculum offerings” (Breivik, 1999, p. 43). In other words, librarians can ensure students become information literate by cultivating IL skills through the implementation of ILE.

According to Harvard University Librarian Dr. Sarah Thomas:

“Librarians are not handmaidens of the researchers, but [their role is] a covert action to gain advanced knowledge of data that’s going to be created. Along the way, librarians are building relationships with people who have begun to think librarians are irrelevant because librarians were invisible to them. (UCTV1, 2015)”

This suggests that the value and contributions of academic librarians to the university community go far beyond ordering and organizing books and information. In other words, librarians are also expected to be strong supporters and reliable partners in students’ learning and other research endeavors. ILE builds students’ confidence and skills in the research process. Thus, it is evident that ILE is also an influential part of library assessments.

ILE programs in libraries usually encompass several aspects of library services, such as library tours, the use of OPACs, and library instructions. Regardless of specialization, providing ILE services to students, such as answering reference inquiries, teaching users how to use the Online Public Access Catalog (OPAC), and locating their desired information, are integral to the work of reference and public services librarians. Given

the complexity, scope, and sheer volume of information available inside and outside the physical library building, many student users depend on the services and assistance of librarians, particularly ILE, to become independent library users and learners. In addition, with research skills gained from an inquiry-based learning environment, students are better able to use library materials and databases in their research and assignments, as well as other academic endeavors.

Furthermore, students have been shown to have a positive correlation between overall learning engagement with library resources, library staff interaction, and library usage. An international survey revealed the positive perceptions of academic libraries being essential to the success of the research process (Schwartz & Albers-Smith, 2015). A three-year program, *Assessment in Action: Academic Libraries and Student Success*, involving over 200 North American academic librarians aimed at expanding the assessment of students' practices and participation, was carried out by the Association of College and Research Libraries (ACRL) in 2016. The results from this program demonstrated that ILE instructional services improve student retention, research consultation services boost student learning, ILE adds value to student academic experience, and the use of library space relates positively to student learning success (ACRL, 2016). These findings provide concrete evidence of the importance of libraries and the contribution of librarians to the university community, especially ILE services. Despite its importance, some researchers worry that students fail to take full advantage of services such as reference consultations or ILE programs "because they do not wish to appear ignorant; by not asking, they miss out on opportunities to enrich their learning" (Tracy & Searing, 2014, p. 367).

Meanwhile, the Internet age has changed the ways academic libraries operate. The Internet is no longer a novelty to libraries, and the growth of home broadband access is tremendous. Nitecki (1996) noted, "A measure of library quality based solely on collections has become obsolete" (p. 181). As a result, the traditional measure of library quality has shifted from collection size to "availability and accessibility of adequate learning resources, such as the library and information technology support service" (Middle States Commission on Higher Education, 2006, p. 43). This shift in assessment has transformed academic libraries from a library-centric view that focuses on processes, functions, and services to a customer-centric perspective. Furthermore, "academic libraries have always ignored the Internet's convenience and instead emphasized providing high-quality information and instructing students on how to use the library" (Posey, 2009, p. 12). Academic librarians have to acknowledge that the credibility of library evaluations relies on library patrons' involvement in appraising the library amenities they receive.

The service of ILE offered by academic libraries in Asia is influenced by the policy of the American Library Association (ALA). The influence of this phenomenon is evident in various guidelines, such as the *Guidelines for Bibliographic Instruction in Academic Libraries* (ACRL, 1977), *Model Statement of Objectives for Academic Bibliographic Instruction* (ACRL, 1987), *Information Literacy Competency Standards for Higher Education* (ACRL, 2000, revised in 2016), and *Guidelines for Instruction Programs in Academic Libraries* (ACRL, 2003). Nevertheless, the ILE presents two primary issues. Firstly, services and the roles of the library itself are changing with increased digitization and computerization. Therefore, ILE on using e-journals and databases is just as important as the other services. In contrast, its current state has yet to mature completely.

This viewpoint is shared internationally and in other Asian nations. Mohammadi et al. (2008) examined students' familiarity with reference resources as well as the necessity of providing ILE based on students' viewpoints. Findings showed that students found ILE to be necessary and beneficial, and students would like to see experts and professional librarians in the reference department. Secondly, the contents of ILE are decided by librarians, but they need an understanding of users' perspectives and needs. According to Lubans (1974):

“Most library instruction is based on what we librarians think library users need to know. Thus, it can be seen that differences in goals and objectives between librarians and users may well lead to an emphasis on certain aspects of a subject that one of the groups regards as unimportant. This, in turn, can cause motivation problems and result in a course that is not particularly successful. Therefore, there is a gap between librarians and library users. This, in turn, can influence library use.” (p.211).

The difference between what users expect about the quality of the service and what librarians judge it to be when users use the service represents a gap. In the end, the gap between librarians and library users would be a potential consequence of unsuccessful ILE programs. Thus, there is an increase in recognition of the importance of clarifying users' perceptions and attitudes toward ILE services in the context of higher education. Therefore, building more effective ILE in the academic library will be significantly based on these indications.

Measuring students' perceptions of the university library and its ILE programs is considered an effective way to develop new approaches. Doing so can allow librarians to continue improving upon existing ILE programs. According to Ogunmodede & Emeahara (2010), the essence of ILE is to equip library users with enough knowledge and skills to use information resources effectively, efficiently, and independently. They also observed that, in the current digital environment, resources in the library are so complex that an average library user can only effectively use them with the assistance or guidance of the librarians. Therefore, ILE is expected to positively affect students' learning outcomes, research practices, and self-motivation for independent learning. In a broad sense, ILE is developed to inform and influence users' opinions and attitudes about library usage issues and, more importantly, to inspire their quest for knowledge, which is essential for advancing individuals and societies (Tiefel, 1995).

1.2 Problem Statement

Recent paradigm shifts in education, combined with rapid technological advancements, have transformed the way students learn. Through inquiry-based learning, problem-based learning, and cooperative learning, teaching paradigms have moved from teacher-centric to student-centric, with a focus on self-motivation, self-management, and self-awareness (Liu et al., 2016). Furthermore, technological advancements such as m-learning (mobile learning) and e-learning (electronic learning) have altered the way students' study (Ko et al., 2015). These changes have resulted in evolving expectations and demands on the services provided by the university library (ACRL, 2016; Virkus & Metsar, 2004). In the end, many academic libraries face a significant problem organizing ILE more effectively to cater to the students' diverse learning needs and expectations. According to Zeithaml et al. (1990), “The only criteria that count in evaluating service quality are defined by customers” (p. 16).

In fact, “with the advent of online indices and full-text databases, as well as access to nearly every library and Internet site in the world, students and faculty are more often plagued with too much access, rather than not enough” (Stahley & Platt, 2002, p. 359). Posey (2009) further elaborates, “With this information overload, users need the skills to recognize the difference between good and bad information, but many users are lacking information literacy skills necessary to distinguish a biased Web page and refereed journal” (p. 39). In particular, the use of AI technology, while increasing the importance of IL, points to the need for awareness and skill sets beyond the existing IL framework (Cox & Tzoc, 2023). For this reason, traditional ILE programs could be seen as vastly inadequate.

As such, to what extent students perceive the library as an important learning center still needs to be clarified, especially in the East Asia context. Furthermore, information about students in this region as library users and their level of participation in IL and ILE programs is relatively scarce. Due to this lack of information, faculty and practicing ILE librarians who work with students cannot accurately anticipate students’ library usage patterns, information needs, or levels of IL proficiency. This lack of information makes it challenging to provide better support and instruction (Yevelson-Shorsher & Bronstein, 2018). Likewise, developing a better understanding of current Asian students’ attitudes to and levels of participation in ILE programs would enable professionals, researchers, and professors to anticipate. Moreover, there have been very few systematic studies about the practice of inquiry-based learning and its relation to ILE in the context of higher education in Asia.

This study set out to investigate the perceptions of a group of Asian students from five universities toward a variety of ILE programs and IL courses provided by their university library. By multi-case comparative study to highlight the unique learning practices, information needs, and opinions of these students from different universities.

1.3 Purpose of Study

This study aims to finding the relevance of ILE programs in academic libraries to the students' overall learning process. This thesis reports on investigating the university students' perceptions of the scope, contents, and quality (effectiveness) of the ILE programs to improve library services. The findings from this study will be useful for identifying various barriers currently preventing ILE programs from fully integrating into students' overall learning, as well as to the university's core curriculum as a whole.

Using a mixed research approach, the purpose of this study is to determine the perceptions of Mainland Chinese, Taiwanese, and Japanese students toward ILE provided as a library service to clarify how ILE should meet the needs and expectations of students.

The following research questions guided the study:

Question 1: What are students' perceptions of ILE in Mainland China and Taiwan?

Question 2: What are students' perceptions of ILE in Mainland China and Japan?

Question 3: How do students perceive credit-based IL courses in mainland China?

A better understanding of students’ perception of ILE could help LIS professionals develop better ILE by delivering more appropriate IL instructions to cater to students' information and learning needs.

1.4 Research Approach

Through a multi-case comparative approach, the main goal of this study was to understand the students' perceptions toward ILE programs in the five universities, namely Fudan University (FDU), Peking University (PKU), the University of Science and Technology of China (USTC), located in China, National Taiwan Normal University (NTNU), located in Taiwan, and the University of Tsukuba (UT), located in Japan. One connection point among these universities is the similarities between their students' cultural backgrounds in terms of learning styles in Confucian Heritage Culture background. The selection of the five universities was based on pragmatic considerations, as they were chosen due to the researchers' professional affiliations with these academic institutions. Researchers frequently opt for universities based on professional affiliations and opportunities for collaboration. Effective research collaboration should be founded on the university's capacity to offer specialized knowledge and resources, in addition to being in line with research goals and objectives. Furthermore, although practical considerations hold significance, it is imperative to give precedence to academic integrity and scientific rigor in collaborative research. It is imperative for researchers to adhere to rigorous scientific principles and substantiate their discoveries through evidence-based investigation. All the universities above are comprehensive institutions that offer a complete Integrated ILE system, along with a range of university-wide ILE opportunities. By implementing adequate ILE systems, it is possible to assess students' cognitive level towards ILE and suggest future development and best practice references for ILE.

1.4.1 Comparative Librarianship Study

The complex interactions of global trends and local responses in the education system cannot easily be understood without the use of comparative studies (Torres et al., 2022). Comparative librarianship is a branch of LIS that focuses on the comparison and evaluation of libraries and library systems across different countries, regions, or cultural contexts. The concepts of comparative librarianship first appeared under the respective titles in the 1950s (Lor, 2017). The primary objective of comparative library science research is to ascertain optimal methodologies, obstacles, and prospects in the field of library science while also promoting the exchange of information and knowledge among libraries globally.

The discipline of comparative library science incorporates various approaches, such as regional analyses, cross-cultural or transnational investigations, and case studies, as Harvey (1977) and Lor (2017) noted. In line with the positivist approach of social science and educational research during the period, Harvey (1977) proposed a general comparative research methodology consisting of 12 stages, emphasizing the collection of empirical data to identify universal scientific laws. Harvey (1977) also outlined various research techniques applicable to comparative librarianship, such as statistical comparisons, problem analyses, trend identification, factorial and analytical approaches, analysis against norms, developmental criteria identification, and historical analyses. Liu (2008) advocates for a collaborative methodology for conducting cross-country comparisons, which entails the involvement of specialists from both nations. Danton (1977) also highlights the interdisciplinary character of comparative library science, which is unsurprising given the transnational, cross-cultural, or cross-social ambit of such inquiry.

The discipline of comparative library science is indicative of wider patterns observed in the literature of Library and Information Science. In recent years, concerns pertaining to the digital divide, availability of digital resources, and information literacy have gained significant attention within the academic domain. The topic of developing regions, particularly the Far East, has garnered significant interest, as evidenced by the work of Liu and Cheng (2008). The prevalence of comparative analyses examining library practices in the United States and China may be attributed to the substantial population of Chinese graduate students who are pursuing doctoral dissertations in the United States, as noted by Lor (2017).

The outcomes of comparative research in library science can furnish library professionals and policymakers with significant insights and serve as a point of reference for future library development and enhancement. The conduct of comparative research in library science is of utmost importance in advancing the development of libraries and library systems on a global scale. Nonetheless, a dearth of cross-regional comparative research exists concerning global library consortia within the East Asian region. The objective of this investigation is to scrutinize information gathered from five distinct geographical areas, with the purpose of exploring the perspectives of students regarding ILE.

The outcomes of cross-national and cross-cultural comparative research on ILE offer a valuable understanding on the impact of cultural and national settings on the instruction and acquisition of IL competencies. Additionally, these findings serve as a point of reference for the creation of more efficient and culturally sensitive ILE initiatives.

1.4.2 Mixed Research Approach in Comparative Study

A mixed methods research approach was used in this study. According to Tashakkori and Creswell (2007), mixed methods research refers to a type of research approach where researchers gather and analyze both qualitative and quantitative data within a single study, amalgamate research findings, and employ both methods to arrive at conclusions. The present investigation employed a mixed-methods approach to gather and scrutinize data from various cases, subsequently juxtaposing and distinguishing the outcomes. According to Creswell and Plano Clark (2017), mixed methods research can provide a deeper and more complete understanding of a research problem using quantitative and qualitative data. A mixed research approach can be particularly useful in a multi-case comparative study to compare and contrast multiple cases systematically and rigorously.

Haase (1995) argues that research should not be limited to conventional approaches to data collection but should be informed by an underlying framework of inquiry that guides the research process. Quantitative methods use numerical data and statistical analysis to explain or predict a phenomenon, while qualitative methods collect non-numerical data such as interviews and observations to understand context. Mixed methods research designs combine both methods to collect complete data, examine relationships between variables, and explore the perspectives of those involved.

A mixed research approach in a multi-case comparative study combines quantitative methods to collect data on key variables across cases and qualitative methods to explore the unique context of each case. This allows for a more comprehensive understanding of the similarities and differences between cases. As Plano Clark et al. (2018) noted, case study and mixed methods research are not separate entities; rather, the boundary between them is permeable and fluid, allowing each to either support or lead a research endeavor.

In this way, mixed methods offer researchers the opportunity to overcome the 'false dichotomy' and provide a comprehensive understanding of the research question. Vivek and Nanthagopan (2021) conducted a systematic review and found that incorporating quantitative and qualitative data in a mixed or multi-method study can dramatically increase the accuracy and quality of any research analysis and conclusions.

By incorporating both qualitative and quantitative methods, a mixed-methods approach can provide a more comprehensive understanding of students' perceptions of ILE in each university. This approach can provide rich and detailed information about students' experiences and opinions while also allowing the collection of statistical data for a more generalized understanding.

1.5 Research Setting

To fully understand students' perceptions of ILE at each university, a mixed methods approach was used. Initially, a survey was administered on the library website, and librarians were interviewed to acquire a comprehensive comprehension of ILE. The methodologies were selected due to their ability to yield significant insights into the resources and services proffered by the library, as well as the perspectives of librarians regarding ILE.

To gain insight into the perspectives of students regarding ILE, we utilized a questionnaire survey as our primary means of data collection. Matthews (2014) posited that libraries are increasingly resorting to customer surveys as a means of gauging the degree to which they are satisfying customer expectations, owing to the swift technological advancements and the emergence of the Internet. The rationale behind selecting this approach stems from its ability to efficiently gather information from a significant number of students, thereby yielding a sample representative of the entire population. The objective of the questionnaire survey is to investigate the perspectives of students regarding the ILE project, while simultaneously identifying crucial elements that facilitate the enhancement of the design and execution of the ILE project. In the final analysis, a hybrid methodology can furnish significant discernment into ILE and its potential for ameliorating student learning outcomes and achievements.

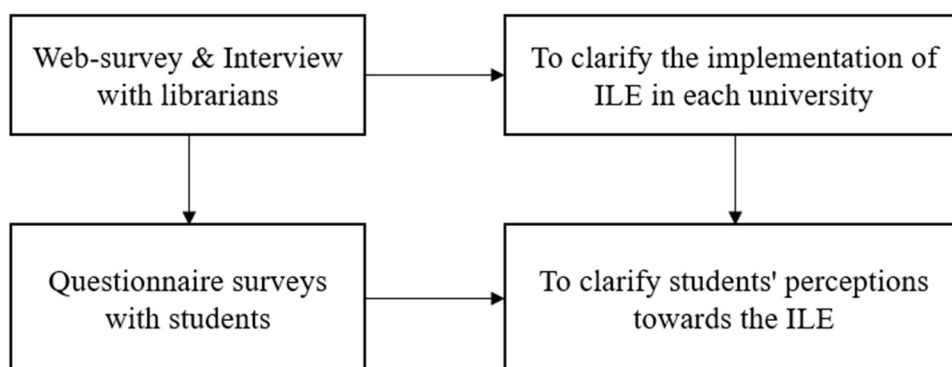


Figure 1-2 Mixed research approach in this study

The questionnaire method is commonly used in social surveys because of its standardization and low cost. The current research employed unstructured questionnaires that consisted of open-ended and non-fixed answer questions to elicit a more

comprehensive and holistic response from the study participants. Yu (2003) and Xie and Sun (2015) observed that certain initial surveys employed questionnaires lacking in structure. Unstructured questionnaires are frequently employed in extensive research surveys and facilitate the development of closed questionnaires. The rationale for employing this specific questionnaire is to attain a comprehensive comprehension of the cognitive capacities of the participant. The survey instrument was devised in partnership with librarians from five academic establishments, whose insights were instrumental in elucidating the findings of the investigation. The data that was gathered underwent analysis through the utilization of the 21st version of SPSS, a software application designed particularly for statistical analysis within the realm of social sciences. Furthermore, the study employed Analysis of Variance (ANOVA) tests to ascertain the presence of statistically significant disparities among non-continuous cohorts of students.

The concepts of validity, reliability, and credibility are fundamental in research as they guarantee the quality and precision of the outcomes. Effectiveness pertains to the extent to which an inquiry precisely assesses the intended framework towards which it is aimed. In contrast, reliability pertains to the extent to which the questionnaire yields dependable outcomes. In qualitative research, trustworthiness encompasses validity and reliability and can be achieved by using multiple research methods, collecting rich data, and implementing a rigorous analysis process. Triangulation can also enhance the trustworthiness of qualitative research. Taken together, these concepts are essential to producing accurate research findings.

1.6 Definitions of Key Terminology Us

1.6.1 Information Literacy

The origin of the term “information literacy” (IL) can be traced back to a report submitted to the National Library and Information Science Commission in 1974. The publication authored by Paul Zurkowski (1974) emphasized the increasing significance of information within society and the imperative for individuals to proficiently utilize a diverse array of information resources to address practical issues. According to the Association of College and Research Libraries (ACRL) in 2000, IL refers to the aptitude to locate, assess, and utilize information proficiently and ethically. Information literacy encompasses the aptitude to proficiently navigate diverse tools and sources to conduct research, the capacity to judiciously assess the retrieved information, and the skill to apply the information to accomplish a particular objective or resolve a predicament. To attain a comprehensive comprehension of IL, it is imperative to acknowledge the subsequent fundamental principles, as delineated by the Association of University and Research Libraries (ACRL) in 2015.

- Information has value, and different types of information have different values.
- Not all information is equal.
- Information creation is a process.
- The importance of seeking information strategies.
- The role of information in decision making.
- Information has a social context.

In Japan, the “Information Literacy Standards for Higher Education 2015 Edition” has been developed by the Special Committee on Educational Support of the National University Library Association. This document outlines the IL skills required in higher education learning contexts, which include the ability to identify challenges, seek and obtain relevant information for problem solving, analyze and evaluate the acquired information, organize, and manage it, engage in critical inquiry, restructure one's knowledge base, and communicate the results effectively. These competencies are systematically grouped into six distinct information use processes.

IL is significant for a variety of reasons, including the following (Agnes & Popescu, 2010; Aharony, & Gazit, 2019; Clark, & Johnstone, 2018; Jang, et al., 2020). It facilitates individuals to become more informed and educated citizens. Individuals are able to make informed decisions about issues affecting their lives, their communities, and society as a whole when they can effectively and ethically pursue, evaluate, and use information. IL assists individuals in achieving personal and professional success. Individuals seeking, evaluating, and utilizing information are more successful in their studies and careers because they can acquire and implement the necessary knowledge and skills effectively and ethically. IL assists people in navigating the digital age. Due to the availability of immense amounts of information on the internet and other digital resources, it is crucial that individuals possess the skills and knowledge to locate, evaluate, and use information effectively and ethically. It encourages critical reasoning. Information technology encourages critical thinking by teaching individuals to evaluate the credibility, reliability, and usefulness of the information they discover. The development of a culture of perpetual learning is supported by IL (Kanazawa, 2016). Understanding the significance of IL and the skills associated with it can motivate individuals to continue their education and skill development throughout their lives. It promotes democratic process participation. Individuals are better able to make informed decisions, express their opinions, and partake in the political process because of IL.

In Japan, the Japan Library Association (JLA) has developed a “Library User Education Guide” (JLA User Education Committee, 1998) to promote ILE for all categories of library users. In these guidelines, library user education (LUE) is defined as a subdomain of ILE, which aims to empower users of all libraries to effectively use information resources, including the library itself (Kanazawa, 2016). Consequently, LUE and ILE can be considered synonymous and interchangeable terms in the context of this study. In this study, the term “information literacy education” is used as an umbrella term that, in principle, encompasses the traditional notion of LUE.

Information education, ICT education, and ILE are interrelated and complementary concepts that share the common goal of equipping students with the necessary IL skills and knowledge to navigate effectively in the digital age. The foundational element of the two other concepts is information education, which imparts a comprehensive comprehension of the significance of information in contemporary society and the complexities involved in its efficient management (refer to Figure 1-1). The acquisition of knowledge in information and communication technology entails a foundational understanding of computing and communication systems, with the ultimate goal of endowing individuals with the technical expertise required to effectively operate and manage these technologies. Students acquire the capacity to employ diverse software, hardware, and online resources for the purpose of obtaining, manipulating, and

distributing information. ILE is a distinctive area of academic inquiry that centers on cultivating the abilities required to proficiently obtain, assess, and utilize information, with a particular emphasis on enhancing critical thinking and problem-solving proficiencies. The acquisition of technical skills through ICT education is crucial in enabling students to effectively apply IL skills. In general, these concepts exhibit a synergistic relationship whereby each one complements and augments the others, ultimately resulting in a comprehensive educational framework that endows students with the requisite competencies and expertise to thrive in the digital era.

The principal objective of the ILE program is to facilitate the progress of pedagogy and scholarship among the academic community by fostering the acquisition of fundamental IL and research proficiencies through the utilization of diverse instructional approaches and technological tools. It is imperative to furnish students with ILE and endow them with advanced IL competencies to facilitate their ability to adjust to the constantly evolving technological advancements and educational milieu.

1.6.2 Perception

Perception is the cognitive process by which individuals arrange, construe, and comprehend sensory data, extracting significance from their surroundings. Gibson's (1979) theory of perceptual ecology posits that the human perceptual system adeptly modulates the information present within the surrounding environment. This enables individuals to perceive the affordances of the environment directly. Gibson's perspective posits that perception is a dynamic phenomenon that entails the amalgamation of sensory stimuli with pre-existing knowledge and expectations to produce coherent interpretations of the surrounding milieu. The perceptual process is a multifaceted phenomenon that involves the initial physical sensation of a stimulus, followed by its cognitive interpretation by the brain. The interpretation of a particular occurrence is subject to diverse variables, including prior encounters, individual anticipations, affective state, cultural heritage, and cognitive mechanisms. The process of perception is generally regarded as constructive, as individuals make a conscious effort to comprehend and construe the sensory input that is presented to them. Individuals develop their own comprehension of the surrounding environment by processing the data they acquire. Consequently, individuals may hold divergent perceptions of identical phenomena.

The role of perception is crucial in the processes of learning, interaction, and comprehension of the environment. It is imperative for individuals to acknowledge the subjective nature of perception and remain receptive to diverse perspectives to attain a comprehensive understanding of the world.

1.6.3 Engagement

Engagement typically pertains to an individual's degree of involvement, participation, and interest in a specific activity or set of activities. According to Fredricks et al. (2004), engagement can be defined as a complex construct that encompasses various dimensions, such as behavioral, emotional, and cognitive components. Schaufeli et al. (2002) offered an alternative viewpoint, defining engagement through a psychological lens as a constructive and satisfying work-related mindset that embodies vitality, dedication, and absorption. Within the library setting, engagement is the course of action through which librarians and students enhance their connection by means of continuous involvement, reciprocal comprehension, and exchange of information. The concept encompasses

behavioral, emotional, and cognitive dimensions, which respectively entail utilizing library resources and participating in library activities, experiencing a sense of affiliation with the library community and contentment with library services, and striving to comprehend and acquire knowledge of library resources. The present investigation defines “engagement” as the mechanism through which librarians and students enhance their relationship by fostering a more profound comprehension of each other.

1.7 Significance of Study

The significance of this research lies in its distinctive assessment of patrons from Confucian traditional culture (CHC) backgrounds who utilize library services and their perspectives on ILE. There are relatively few studies on users from this cultural background, and this information would be useful for information professionals working with CHC users, as well as provide a more international perspective on ILE. Furthermore, investigating the extent to which university students in mainland China, Taiwan, and Japan value ILE is likely to be of great benefit to the LIS community.

Furthermore, the findings of this investigation serve to delineate the distinct educational requirements of students in these five classifications, alongside additional impediments that impede the assimilation of ILE into learners' comprehensive education and the institution's fundamental syllabus. Conducting a study on the perceptions of students regarding these services can potentially aid in comprehending their research requirements, their anticipations of the ILE program, and the function of the ILE program in fulfilling their needs. Finally, the findings of this study could facilitate academic librarians in building relationships with students. Such findings are useful in developing new approaches and can help to strengthen arguments for changes and improvements in services within academic libraries.

Furthermore, the results of this study will help library managers to understand users' own perceptions of their needs in ILE—thereby reducing the gaps between users' perceptions and expectations of the desired quality of library services from a cross-national and cross-cultural perspective. Undoubtedly, a better understanding of students' perceptions of ILE can lead to a better understanding of how students use library resources and their information needs. With this better understanding, LIS professionals can then improve their current services and provide more beneficial services and programs to their university communities.

As for the Japanese, this study can benefit Japanese LIS and higher education in several ways. Initially, the study offers perspectives on the perceptions of Japanese and Chinese students regarding the commonalities and distinctions within ILE. This data has the potential to enhance the comprehension of Japanese universities regarding the distinct requirements and inclinations of Chinese students enrolled in Japanese academic institutions. Consequently, this may facilitate the adaptation of their global education initiatives and amenities. This study aims to analyze the information search behavior and library usage patterns of students to identify the similarities and differences between Japan and China with respect to library services and ILE projects. This assessment can ascertain the areas in which Japan's global education initiatives and services may be enhanced or extended. The present study has the potential to provide significant insights into the current body of knowledge regarding library services and library learning in the context of higher education. The text offers a fresh outlook on the development and

execution of ILE initiatives, emphasizing the importance of catering to the varying requirements of students hailing from diverse cultural and academic backgrounds. In summary, this research has the capacity to enhance the implementation of efficient ILE methodologies and library amenities in Japan and other nations by broadening our comprehension of the viewpoints and encounters of students from diverse cultural and academic contexts.

1.8 Chapter Overview

The present dissertation comprises a total of seven chapters. The introductory chapter provides the contextual framework for the present investigation, the objectives of the study, the research inquiries, and a synopsis of the research approach. The study's methodology is extensively explicated, providing a comprehensive account of how data was gathered to address the research inquiries outlined in the introductory chapter. Chapter 2 presents a thorough examination of the literature pertaining to this nascent field, underscoring the marked surge in academic publications over the last 10 years and the wide-ranging research domains it encompasses. The literature review encompassed several significant domains, specifically a thorough examination of the development and advancement of ILE in China, Japan, and Taiwan, a comprehensive assessment of the diverse literature pertaining to cognition, motivation, and self-efficacy of IL, and a detailed exploration of the literature concerning library user studies. The presence of lacunae in the current body of literature implies that the survey in question has the potential to address the dearth of knowledge in at least one of these domains. Chapter 3, for research question 1, presents a comparative study of attitudes and perceptions towards the series of IL programs implemented by their respective university libraries between Fudan University and National Taiwan Normal University. In Chapter 4, for research question 2, a comparative study to highlight the similarities and differences in students' perceptions of what and how ILE services should be provided and how well these services met students' expectations at Tsukuba University and Peking University is provided. Chapter 5, for research question 3, students' perceptions, motivation, and self-efficacy in a credit-based IL course at the University of Science and Technology of China (USTC). Chapter 6 presents a discussion of the findings and considers the implications of the research. Chapter 7, the final chapter of this thesis, concludes and considers the significance and limitations of the research, identifies areas for further investigation, and presents a final reflection.

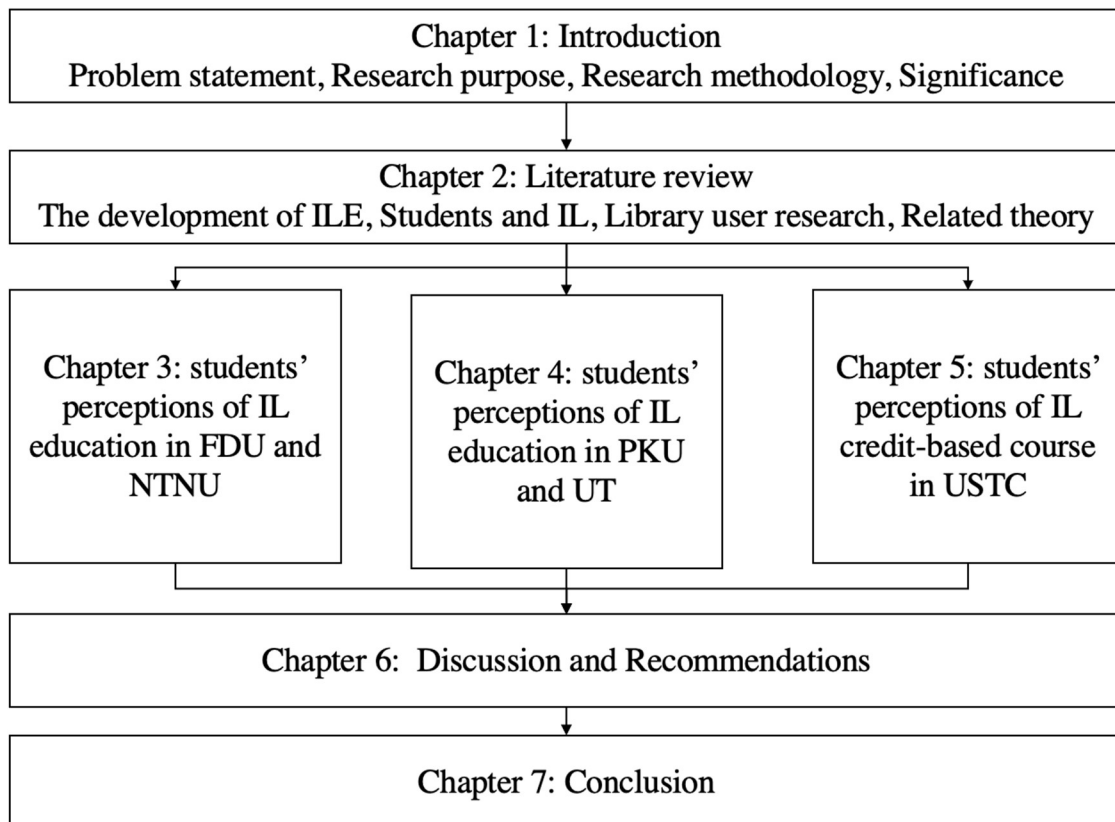


Figure 1-3 Thesis Structure

Chapter 2 Literature Review

2.1 Introduction

This section reviews the literature on IL. Since this topic is rarely studied in East Asia, the review begins with an overview of the definitions of IL. The present literature review endeavors to furnish a comprehensive synopsis of prior research conducted by scholars across various regions of Asia, with a particular focus on mainland China, Taiwan, and Japan. The aim of this study is to enhance comprehension of the present advancements of ILE within various educational and socio-cultural settings. This will elucidate the decision-making process of the researcher and director of the study. This is followed by a review of the literature on students and IL in the context of academic libraries. As a study of library users, the relevant literature was also reviewed. Finally, the related theory of this study is described.

2.1.1 Concepts of Information Literacy and Information Literacy Education

IL plays an important role and is an essential competence in students' lifelong learning. The concept and practice of IL have been widely discussed in the LIS literature in recent years. According to Johnston & Webber (2004), IL is “the adoption of appropriate information behavior to obtain information, through whatever channel or medium, that is well suited to information needs, together with a critical awareness of the importance of wise and ethical use of information in society” (p.3). There is now a plethora of standards, guidelines, and frameworks to support ILE, such as the ARCL framework in the United States, and CILIP standards in the United Kingdom and ANZIIL (Australian and New Zealand Institute for Information Literacy). ACRL (2000) defines IL as a set of skills that requires individuals to recognize when information is needed and to have the ability to locate, evaluate and use the information effectively. The IFLA Guidelines on Information Literacy for Lifelong Learning (Lau et al., 2006) define IL as the knowledge and skills to accurately identify the information needed to perform a task or solve a problem; to search for information efficiently; to organize, interpret, and analyze the information obtained; to evaluate the accuracy and reliability of information (including ethically citing the source); to communicate the results of information analysis and interpretation to others; and to use information to achieve action goals and outcomes. In other words, IL involves the acquisition of skills and knowledge to perform these essential tasks effectively. According to the Framework for Information Literacy for Higher Education (ACRL, 2015), “IL is the set of integrated skills that includes the reflective discovery of information, the understanding of how information is produced and evaluated, and the use of information to create new knowledge and to participate ethically in learning communities”. Information literate students must first meet the ARCL requirements for IL; they must be able to identify information needs; determine sources of information; locate or search for information; analyze and evaluate the quality of information; organize, store or archive information; and use information ethically, efficiently, and effectively.

Although definitions of IL can vary widely and continue to evolve according to different contexts, Bent and Stubbings (2011) suggests that IL encompasses ILE and training, and those areas of personal, transferable or 'key' skills related to the use and manipulation of information in the context of learning, teaching and research issues in higher education. The primary objective of ILE is to facilitate the acquisition and enhancement of individuals' abilities and aptitudes to proficiently recognize, discover, assess, and employ

information. The principal aim of ILE is to provide learners with the essential competencies to engage in critical thinking and proficiently resolve problems. This will facilitate their ability to effectively employ information in the pursuit of their goals, whether in the context of academic pursuits, professional pursuits, or personal matters. IL is a skill that can be transferred and applied to various academic disciplines, levels of study, and learning environments. This ability allows learners to effectively comprehend and analyze content, as well as engage in self-directed inquiry. Because of its embedded values and importance, “librarians have a greater responsibility to identify core ideas within their own knowledge domain that can extend learning for students, to create a new cohesive curriculum for IL, and to collaborate more extensively with faculty” (ACRL, 2015, p.7). However, IL projects involve much more than simply teaching patrons how to use the library, as it should be linked to the strategic use of information; it is also a way to develop a broader understanding of information in the world. Cunningham (2019) found that stakeholders in an international school community did not have a single conception of IL, but rather shared a set of conceptions of IL to varying degrees across three continuums, namely the individual-collective, affective-cognitive, and competency-personal mastery continuums. This provided an opportunity to develop a model of the common ground of conceptual understanding of IL, a new “borderless” model of IL that offers a blended strategic approach to advancing ILE based on stakeholder perceptions and conceptualizations.

2.1.2 Information Literacy Education Beyond the Library Setting

This study examines ILE in higher education libraries; however, it is crucial to recognize that IL-related education extends beyond the library setting and is essential in various fields and disciplines.

According to the “Academic Infrastructure Survey” published by the Japanese Ministry of Education, Culture, Sports, Science and Technology (2020), the number of private universities implementing some form of IL-related education increased from 720 to 763 institutions over a 10-year period from 2010 to 2020. This trend indicates the growing establishment of IL-related education in higher education. However, the breakdown of implementing institutions in 2020 shows that faculties and graduate schools accounted for the largest proportion of 515 institutions (67.5% of the total), while libraries accounted for 138 institutions (18.1% of the total). This situation shows that IL-related education has already gone beyond the scope of being a purely educational activity carried out by university libraries.

Undergraduate and graduate schools typically incorporate IL education into their discipline-specific curricula, often referred to as ICT education. For example, first-year students are typically taught foundational courses such as Information Fundamentals and ICT Literacy (Practice) to develop discipline-specific IL skills such as locating, evaluating, and using relevant information resources in their respective fields of study. Faculty members often tailor their IL instruction to the specific needs and expectations of their students, with an emphasis on the practical application of IL skills in research, problem solving, and critical thinking within the discipline. In addition, departments and graduate schools may integrate IL education with other related educational components, such as research methodology courses or academic writing workshops, to provide a more comprehensive learning experience for students. It is worth noting, however, that the formal IL curriculum is often implemented as an extension of computer science, as

evidenced by faculty appointments in these areas. Ichikawa et al. (2014) found that the current state of ICT education in Japanese universities focuses primarily on the operation of office software.

University libraries typically provide ILE through various programs and initiatives, such as workshops, seminars, online tutorials, and one-on-one consultations. This type of ILE tends to be more general and cross-disciplinary, focusing on the development of basic IL skills, such as finding and evaluating information sources, understanding the research process, and using information ethically and responsibly. Library-led ILE often emphasizes the development of critical thinking and problem-solving skills that can be applied in a variety of academic and professional contexts. In addition, university libraries often work with faculty members to design and implement ILE initiatives that align with course objectives and support student learning. By collaborating with these stakeholders, libraries can provide targeted ILE and support to students at different stages of their academic and professional journeys (Napier et al., 2008).

In universities, ICT education provided by faculty and graduate schools and ILE provided by libraries often have different backgrounds and perspectives and are carried out independently by different organizations. Nevertheless, in contemporary universities both approaches are sometimes developed under the common goal of “information literacy education.” Each plays a critical role in promoting IL among university students. Faculty- and graduate-school-delivered ICT education tends to focus on discipline-specific applications of IL skills within a particular discipline, while library-delivered ILE tends to be more generic, aiming to cultivate basic IL skills that are applicable across disciplines.

The concept of “information literacy education in universities” integrates two distinct perspectives, each with its own historical context and discourse, making it difficult to devise a comprehensive educational content and implementation system that effectively addresses both aspects (Ono, 2017). These two perspectives, often originating from distinct academic and organizational contexts, have evolved over time to reflect distinct teaching priorities and approaches. Educators and administrators face a significant challenge in reconciling these divergent perspectives and developing a unified framework for ILE that addresses the requirements of diverse university stakeholders.

2.1.3 From Library User Education to Information Literacy Education

LUE and ILE are two closely related concepts in LIS. The relationship between ILE and LUE has been discussed in the literature for many years. LUE refers to the instruction and guidance provided by librarians and other information professionals to help users navigate library resources and services more effectively (Grassian & Kaplowitz, 2009). LUE, also known as bibliographic instruction, library instruction, or library orientation, is a process that aims to make library users aware of the value of information in their daily lives and to develop their interest in seeking information whenever they need it. It involves instructional programs that teach users how to locate information quickly and effectively, covering topics such as the library's organizational system, research methods, and specific resources and tools. However, ILE goes beyond the confines of the library to encompass the ever-evolving landscape of information, including digital and media literacy skills (Lloyd, 2010).

The relationship between ILE and LUE can be explored by examining how these two concepts intersect and complement each other in promoting effective information access,

evaluation, and use among library users. Both ILE and LUE aim to develop the skills and knowledge necessary for individuals to successfully navigate the information landscape, with ILE focusing on a broader context while LUE is more specific to the library environment. Nozue (2010) points out that there has been a recent shift in the concept of LUE. Specifically, traditional LUE was based on the internal circumstances of the library and aimed to teach users effective and efficient ways to use the library. However, in response to the demands of the communities to which libraries belong, the concept of LUE has shifted toward “information literacy education.” This shift emphasizes the need to rethink LUE from the perspective of the learner. The goals of LUE have expanded beyond the mere teaching of tools to include the teaching of concepts and the promotion of IL and lifelong learning. It is a critical component of ILE and is essential for individuals to become well-informed and responsible users of information resources (Kanazawa, 2016). LUE typically covers topics such as search strategies, database use, citation management, and library navigation. It aims to enable library users to efficiently locate, access, and use the resources and services available in the library environment. Although LUE and ILE differ in scope, they are inherently intertwined in their goals of developing competent and empowered information users. According to Grassian & Kaplowitz (2009), LUE is a fundamental component of ILE because it provides a foundation for the development of IL skills. LUE activities often serve as a steppingstone to broader ILE as they provide users with the skills and knowledge necessary to engage with information resources beyond the library environment. Both ILE and LUE seek to equip individuals with the skills and knowledge necessary to access, evaluate, and use information effectively. ILE provides a more comprehensive approach, while LUE focuses on the specific skills needed to navigate library resources and services (Mackey & Jacobson, 2011).

Several studies have explored the relationship between LUE and ILE, demonstrating their interdependence in fostering IL. For example, Julien and Barker (2009) found that incorporating IL education into LUE programs led to improved information-seeking behaviors and critical thinking skills among university students. Similarly, Chen (2011) identified the essential characteristics of IL and described the role it should play in university LUE. Due to the development of the information society and the educational revolution, the academic library has undergone a transformation into a learning center to support learning and research in the university. In this transformation process, Rockman (2004) sees IL as a truly new instructional pedagogy and a change agent for learning. IL has become an increasingly important part of university LUE. It should not be limited to library resources but must also focus on various general and scientific information. As part of ILE, LUE shares the same goal of enabling learners to become information literate for lifelong learning.

In summary, the relationship between ILE and LUE is characterized by their complementary goals and shared pedagogical approaches. By integrating both ILE and LUE into library instruction, librarians and educators can help individuals develop the skills necessary to navigate the information landscape effectively, both within and beyond the library environment.

2.1.4 The Role of Information Literacy in the Post-Pandemic Period

The COVID-19 pandemic has forced higher education to make a complete and involuntary shift to online learning, resulting in multiple challenges (Martzoukou, 2021).

These challenges are ongoing and complex, including implementing distance tools and practices in online teaching and learning to ensure accessibility and equity for all students, addressing issues related to online pedagogy, and preparing students with the necessary IL competencies required for the new online learning environment. As academic libraries move forward, they have a renewed mission to help learners in the online space become information literate and digitally competent. Tejedor et al. (2020) present a comparative study of higher education institutions in three countries (Spain, Italy, and Ecuador), analyzing how they have faced the global lockdown situation, focusing on the development of digital literacy. The results underscore the significance of enhancing various fundamental facets of tertiary education, such as the proficiency of educators in digital technologies, the accessibility of malleable educational materials, the efficacy of communication channels between academic institutions and students, and pedagogical approaches that are suitable for the present circumstances. The findings suggest a potential need to reconsider the methodology of higher education instruction and give precedence to enhancing fundamental competencies such as effective communication, pedagogy, and technological proficiency.

Some studies have found that the COVID-19 pandemic has highlighted the critical role of IL in navigating the vast amounts of information available online and has underscored the importance and challenge of providing students and faculty with the skills necessary to evaluate and make sense of this information in an increasingly complex and uncertain world (Guo & Huang, 2021; Pinto et al., 2022). Pinto et al. (2022) analyzed social science students' perceptions of IL and the use of mobile technologies (MTs) before and during the COVID-19 pandemic. The results show that students recognized the importance of IL and MT competencies or skills, especially the ability to search for information. However, they also recognized the limited support and contribution of their universities and libraries in developing their IL skills. Students frequently use ICTs for academic tasks but have identified the need to improve their teachers' competence in using mobile devices for academic purposes. The pandemic has highlighted the limitations of some teachers' attitudes and technical skills, leading students to suggest improvements in platforms, teaching methods, teacher motivation, and teacher-librarian interactions. Overall, students believe that ILE should be given more emphasis in the curriculum and that teachers and librarians should work together more effectively to support students' IL needs during and after the pandemic. Guo and Huang (2021) highlight the challenges and opportunities for academic libraries in providing ILE during the pandemic. They discuss the importance of developing innovative teaching models, promoting online courses with multiplatform connectivity, and combating misinformation to meet users' information needs. In addition, they emphasize the importance of developing teachers' IL to meet the new needs of the innovative educational model in the future.

As the global community transitions into the post-pandemic era, the significance of IL will persist as a crucial factor. The COVID-19 pandemic has expedited the assimilation of digital technologies and underscored the significance of proficiently locating, assessing, and utilizing digital information. Consequently, it is imperative for individuals to persist in cultivating and augmenting their IL competencies to prosper in the contemporary paradigm.

2.1.5 Inquiry-Based Learning and Information Literacy

The concept of inquiry-based learning, associated with the ideas of critical thinking, self-

directed student learning, and problem-solving, first emerged in the Western school and university context. Although relatively recent, selective universities in Asia have slowly adopted this type of inquiry-based learning model. Altbach (1998) notes that despite being established based on Western models and striving to incorporate inquiry-based curricula, numerous Asian universities remain deeply entrenched in their local cultures, leading to distinct teaching and learning approaches diverging significantly from Western institutions. The dominant perspective suggests that students originating from Confucian societies in Asia, specifically in China and Japan, manifest a unique learning style that contrasts with their counterparts from Western cultures. The phenomenon can be traced back to the significance accorded to steadfast allegiance, deference, and compliance toward figures of authority, such as instructors, within the framework of Confucian customs and values. Consequently, many students from this cultural background tend to refrain from asking questions, exhibit shyness, lack self-confidence, and fear making mistakes. According to Chan (1999) and Eng (2000), it is widely recognized that students of Asian descent tend to refrain from engaging in conflict or expressing disagreement within the academic setting.

Scholars and educators have pointed out that the participatory approach of inquiry-based learning, which requires students to develop critical skills through active participation in the classroom, could easily be discouraged because of the hierarchical relationship between teacher and student (Chan, 1999; Eng, 2000). For example, the active and critical inquiry approach to learning usually requires a shift in focus from the knowledgeable teacher to the students (i.e., students directing their own learning mode and progress). In other words, students and teachers would have to deconstruct their traditional roles in the classroom by giving students both the authority and the freedom to engage in critical discourse (Harland, 2002)—which means that teachers would have to give up some control and accept a certain amount of confusion. All these are clear implications that the active, inquiry-based learning approach is incompatible with many of the Asian educational values and cultural traditions—especially when student success is often measured by test scores or students' ability to provide standardized, rote model answers. Conversely, the inquiry-based paradigm, also known as the non-Confucian method, necessitates that learners generate their own inquiries and acquire the skills to locate the solutions instead of merely echoing data. Within the framework of active inquiry-based learning, librarians possess a distinctive and significant function in facilitating the acquisition of IL competencies among students, which are essential for navigating the inquiry process. Additional investigation of CHC patrons may yield enhanced comprehension of their research requirements and library program expectations, as well as insight into the capacity of these educational settings to shape such perspectives.

ILE is a crucial component of academic library services, as it facilitates the development of students' and faculty members' abilities to utilize library resources effectively and efficiently. This, in turn, enables them to become more knowledgeable and proficient library users. Academic libraries may offer ILE through diverse means, including library orientations, database instruction that involves practical application, library tours, subject-specific library courses, and more.

The current study was initiated with the belief that ILE should be made an integral part of every student's learning, especially at the university level; that is, one has to be a skillful and effective user of the library to become a truly independent learner. In other words,

inquiry-based learning and active or competent library use go hand in hand. Scholars believe that inquiry-based learning is a powerful learner-centered pedagogy widely used at all levels of education. The ability to synthesize information and create new knowledge are competencies at the heart of inquiry-based learning, where students are ideally given the space to develop a genuinely new understanding through the process of research (McKinney, 2018). Alongside the ongoing shift from traditional modes of learning and teaching to more student-centered approaches, IL is moving up some institutional agendas as a focus for strategic and pedagogical development (McKinney & Levy, 2006). Inquiry-based learning and the library go hand-in-hand in the development of IL programs. Wenger (2014) calls it a natural partnership that “promotes lifelong learning by moving students away from memorizing facts” and helping them learn the research process (p. 147). Previous studies of medical libraries have concluded that more inquiry-based learning environments have led to higher rates of library use. Rankin (1992) found that students who participated in inquiry-based learning programs had higher rates of library use and even used the knowledge gained in ILE programs. Marshall et al. (1993) found similar results.

Users in the inquiry-based learning environments in this study would be more likely to learn from friends and use trial and error in their searches. Chen and Huang (2012) argue that an inquiry-based curriculum facilitates student collaborative learning during the research process. The existing literature on this subject has been confined to medical libraries; however, there seems to be a correlation between inquiry-based learning and heightened utilization of library resources. Librarians can leverage this opportunity by providing embedded IL instruction that surpasses rudimentary introductions to library resources, thereby facilitating the continuous education of their clientele. Additional investigation is required to examine and validate these associations.

ILE has been a prominent subject of investigation in academic literature for a considerable period. According to the pertinent literature, four primary methodologies exist for implementing ILE in higher education. These include the extracurricular approach, which involves a course that is outside the academic curriculum; the inter-curricular approach, which entails a session that is added to an academic course; the intra-curricular approach, which is integrated into a course; and the standalone approach, which is an independent course within educational curricula, also known as a credit-based IL course (Wang, 2011). Evidently, there is a growing necessity and potential to ascertain how IL can encompass all constituents, encompassing evaluation. Despite the progress made in this domain, a significant number of tasks necessitate attention, particularly regarding pedagogical approaches and the incorporation of learners' perspectives in developing educational frameworks. A thorough examination of the pertinent literature related to this specific investigation has been presented.

IL refers to the capacity to effectively locate, evaluate, and utilize information. A library, whether physical or virtual, is a primary resource for information, and library staff are often trained to help patrons develop their IL skills. IL is integrated into library services and programs in many libraries and may include classes, workshops, and one-on-one research assistance. In addition, many libraries have IL resources, such as tutorials and guides, that patrons can access independently. Therefore, libraries and IL are closely related, and both are considered essential for individuals to engage in lifelong learning and fully participate in their communities' social, economic, and political life.

2.1.6 Information Literacy Education and Confucian Heritage Culture Background

Despite the widespread adoption of ILE in Western educational contexts, its application in CHC settings has yet to be thoroughly investigated. The cultural and educational values of East Asian societies, including China, Korea, Japan, and Vietnam, have been significantly influenced by Confucianism, which is based on the teachings of Confucius (Ho, 2020). Commonly, Asian students are depicted as reticent and disinclined to engage in classroom dialogues or raise inquiries, exhibiting compliance and deference. They are perceived as superficial learners who often engage in rote learning, reciting the ideas of esteemed scholars and prioritizing knowledge acquisition over understanding. This passive approach to learning is commonly attributed to the core values and ethics of CHC (Subramaniam, 2008).

These different values can lead to contrasting educational philosophies. While ILE promotes critical thinking, individuality, and autonomy, CHC emphasizes respect for authority, adherence to tradition, and collective decision making. As a result, CHC may cultivate a more passive learning style than ILE. Pedagogically, ILE encourages active learning, collaboration, and the use of technology, whereas CHC often supports more traditional, teacher-centered approaches. As a result, CHC educators may rely heavily on lecturing, rote learning, and memorization, which can hinder students' development of information literacy skills. Regarding assessment and evaluation, ILE emphasizes multiple methods that focus on the learning process and skill development, while CHC emphasizes the importance of high-stakes testing and competition. This may lead CHC to prioritize test scores over fostering information literacy skills. Finally, in terms of adaptation and change, the rapid pace of technological advancement and the growing importance of information literacy in modern societies require constant updating and transformation of educational methods. ILE is inherently responsive to these changes, whereas CHC, with its strong emphasis on tradition and continuity, may need help to adapt.

According to Seo and Koro-Ljungberg (2005), it is imperative for higher education to comprehend the significance of cultural identity and heritage in a particular cultural context, as this is fundamental to achieving one of its primary objectives, which is to offer quality education to all. In conclusion, the relationship between ILE and CHC is multifaceted and complex. Even though these two systems embody distinct educational values and practices, they have the potential to complement one another if integrated effectively. By recognizing and addressing the challenges CHC may pose to ILE, educators can create learning environments that capitalize on the strengths of both approaches and nurture well-rounded, adaptable students who can navigate our information-rich world without difficulty.

2.1.7 Learning Style in Confucian Heritage Culture Background

There has been extensive discussion in the literature about the stereotypes and characteristics of the CHC background. Asian countries, particularly China and Japan, are known for their Confucian learning style and strict, exam-oriented education system that highly values rote learning (Hong, 2009; Subramaniam, 2008; Tavakol & Dennick, 2010). This socio-cultural background emphasizes social harmony through unequal relationships between people such as father-son or student-teacher. In the context of student-teacher relationships, the teacher's role is to be active in teaching while students are passive

learners (Phuong-Mai et al., 2005). As a result of such a system, many students from this cultural background are seen as passive and more suited to a teacher-centered environment as opposed to a more user-directed one (Ramsay, 2005). While this educational system is mostly seen in primary and secondary contexts, scholars and educators also believe that this passive learning style continues throughout the university education of most Japanese and Chinese students (Chan, 1999; Kennedy, 2002; Melton, 1990; Sit, 2013; Tinkham, 1989).

Simultaneously, several academics have contested these presumptions regarding students of Asian descent. Ryan and Louie (2007) argue that it is inadequate to perceive Western and Asian educational ideologies as uniform and immutable, as this perspective fails to acknowledge the heterogeneity within each cultural context. In addition, “critical thinking” and “lifelong learning” are frequently romanticized in Western education. However, these terms are not exclusively characteristic of Western learning and lack clear definitions. Similar concepts, such as “deep thinking” in Confucianism, can be identified (pp. 412-413). Tran (2013) also expresses suspicion of this myth. While CHC students in this study expressed notions of passivity in the classroom and sometimes did not ask questions for fear of not understanding, respondents felt that their learning styles were not inherent to their cultures. Instead, as the author concluded, “[CHC learners] tend to be passive when teachers provide everything for them to learn and when tests are designed to verify the knowledge given by teachers. This passivity is shaped more by the demands of the course than by cultural factors” (p. 60). Thus, such behaviors commonly associated with CHC learners may result from the context of the individual courses themselves rather than the solely cultural background.

2.1.8 The Development of Information Literacy Education in Mainland China

Compared to its Western counterparts, or even Taiwan and Hong Kong, ILE in Mainland China was developed relatively late because the Cultural Revolution brought the entire educational system in China to a virtual standstill for over a decade. Despite these unfortunate events in Chinese history, library services and end-user education progressed rapidly, especially in bibliographic instruction. Bibliographic instruction courses were widespread in China in the early 1980s (Sun & Rader, 1999, p. 69). Chu (2004) has categorized the evolution of ILE initiatives in China into three distinct phases: the initial phase spanning from 1933 to 1980, the developmental stage from 1980 to 1995, and the current creation phase from 1995 onward. Each of these phases has a unique development pattern and set of achievements. The beginning phase is when the Chinese library community began to realize the importance of ILE through reading in public libraries. They realized that the future of library development lay in the development of digital libraries, and they began to pay close attention to the research and development of library services in the community.

In the 1970s, a small number of colleges and universities set up some professional bibliography training courses according to the library reference experience of the Soviet Union. However, these courses were scattered and needed a more systematic structure. The year 1977 marked a significant turning point in the history of Chinese higher education, as Deng Xiaoping made a momentous decision to reintroduce the National College Entrance Examination (Gao Kao), thereby exerting a profound influence on the system. Chinese higher education has undergone a series of reforms since the 1980s, resulting in gradual improvements. In 1981, the Ministry of Education of the People's

Republic of China (PRC) issued the “Management of Libraries for Higher Education Regulations.” This regulation required universities to set up literature search courses as part of the information education courses of the university library. In addition, in 1984, the Ministry of Education of the PRC issued the “Some Comments on the Library Retrieval Instruction Courses in Academic Library” to require some details about literature retrieval and utilization courses, including the content, purpose, teaching method, teaching material, curriculum, and so on. In 1985, the Ministry of Education of the PRC pointed out that literature retrieval instruction should be held as a continuous education for different levels of competence. The National Library and Information Work Committee has done a great deal of work in the organizational planning, teacher training, textbook compilation, experience exchange, and scientific research of this project. By June 1990, about 70% of colleges and universities had established literature search courses or lectures. In 1992, the Ministry of Education of the PRC published some files on more detailed recommendations for library reference teaching. With the development of computers and the internet, researchers began to combine LUE with IL from 1995. In 1996, the Information Literacy Education Academic Research Community was established. In 2002, the National Library and Information Work Committee held the National Information Literacy Education Research Conference. The conference discussed IL at the college level and combined with the university community and the society level. This shows that the literature retrieval course is no longer a traditional mode and category. Still, it stands at a higher level to adapt to the new information environment of the overall IL education and improvement (Chu, 2004). In recent times, the Chinese government has prioritized the construction of a robust information-based nation and the cultivation of a society that is proficient in information literacy. The National Information Literacy Promotion Plan (2016–2020) was initiated to foster the advancement of IL among the populace and enhance their proficiency in accessing, utilizing, and disseminating information. The proposed strategy emphasizes the advancement of digital literacy and the incorporation of IL across all domains of education, as well as within diverse spheres of society, including economic and social progress, scientific and technological innovation, and cultural and artistic production.

Wang, et al. (2004) analyzed 90 university library websites in China and found that 22 libraries had no ILE programs. This may be because most students in mainland China view the library as a physical place for reading and studying only (Wang et al., 2004). On the contrary, their study should have provided comparisons between universities inside and outside of China to verify the characteristics of ILE in China. In addition, Nzivo and Chen (2013) pointed out that further studies are needed on the perceptions of academic library services and information resources from the perspective of lecturers and Chinese students to understand user services in academic libraries better. According to a study conducted by Xie and Sun (2015), reference services in academic libraries in China still need to be more utilized. If the students had received adequate training on using the library, they would have fully understood the critical role of reference services and its service providers (librarians). Furthermore, if the library had effectively promoted and implemented the services, the usage rate of reference services would have been higher, and the assistance to students would have been considered more valuable.

2.1.9 The Development of Information Literacy Education in Japan

In 1923, the new building of the library of Tokyo Imperial University (now the University

of Tokyo) was constructed. At the same time, the “Tokyo Imperial University Library User Guidance” was published. Then, in 1953, the Reference Department for User Guidance was established. The first library orientation was held at Kyoto University in 1941. The method of library use is changing with the proliferation of networks and the transition to the digital era. In 1989, the JLA User Education Committee was established. In 1998, “Information Power: Building Partnerships for Learning” was conducted by ALA. Under this influence, the “Library User Education Guidelines” were published by the JLA User Education Committee. From here, LUE has been under construction with IL as the key concept (Nozue, 2003). In 2001, the collection of library user education guidelines was published in one volume, which became an important guideline in the practice of ILE.

In 1996, the Japanese Council for Science and Technology issued a recommendation entitled “Improving and Strengthening Electronic Library Functions in University Libraries,” which explicitly stated that “user education for students, as part of information literacy education, should be carried out university-wide under the cooperation of university libraries, and the development of an education system is necessary. This positioned LUE as a component of ILE. In the 2010 summary of discussions on “Development of University Libraries - The Desired Image of University Libraries in Transforming Universities,” it is mentioned that “university libraries are expected to be more actively involved in improving users' information literacy skills” and that “information literacy education is expected to be led by university libraries.” University libraries were expected to be the main body responsible for implementing ILE.

Research on academic ILE in Japan began in 1960. The production of orientation videos, the use of television, library instruction by PC, video materials for library instruction, LUE guidelines, and many practical cases were reported. In the 1980s, libraries began to recognize library instruction as a regular service. Hirota and Ueda (1996) conducted a questionnaire survey in 774 Japanese university libraries and showed the following points: 1) the use of electronic resources has increased rapidly in Japanese university libraries; and 2) there has been no established method of instruction for electronic resources, and current resources are inadequate. It is believed that this is caused by the uncertainty of the future electronic environment in libraries. Hashi (2000) reported that 100% of national and public universities and 93.7% of private universities conducted library orientations for freshmen. In contrast, the percentage of universities that conducted subject-oriented ILE is 39.4% of national universities, 14.2% of public universities, and 13.1% of private universities, which was much lower in comparison. In addition, according to Kanazawa (2016), the main issues in Japanese academic libraries need to have a variety of educational content and conduct more advanced ILE far beyond library orientation. In addition, it is important for academic libraries to use computer-assisted instruction for ILE so that each library user can learn different content at his or her own pace.

The majority of research on ILE has focused predominantly on American and European contexts, resulting in a paucity of studies examining Asian academic libraries. The current study aims to address this research gap. It is noteworthy that academic libraries in China, Singapore, and Taiwan have made significant progress, leading to an increased need for collaboration among these institutions. Ujigou (2008) emphasized that Japanese libraries should not only draw inspiration from libraries in developed countries but also actively

engage with other Asian libraries to promote mutual development and cooperation in the future.

2.1.10 The Development of Information Literacy Education in Taiwan

The progress of ILE in Taiwan is later than in Japan, but earlier than in China. In the 1980s, the University of Taiwan established the relevant courses of library use education. Wu (1983) made a survey of 27 colleges, of which there are 11 independent courses and two relevant courses. Fan (1991) conducted a survey of 47 colleges, including 26 independent courses and nine other related courses. The comparison of the two survey results showed that there has been progress in the development of ILE in Taiwan. However, due to the understanding of relevant aspects of a lack of coordination at that time, no coordination with schools, ILE remained at a more elementary level. On September 12, 1991, to strive for the teaching status of ILE, the Academic Library Committee of Taiwan held a symposium on ILE courses at Taiwan Jiaotong University Library. In addition to exchanging teaching and working experiences, the seminar also discussed the significance and practice of ILE as a general course. Ding (1995) mentioned that nearly 60 related courses have been opened in Taiwanese colleges and universities. Among the respondents (including educators and students), most of them felt that new information media, especially the use of internet resources, was the most urgent need. Since 2001, the number of Internet users in Taiwan has grown rapidly, and under such circumstances, IL was included in LUE. According to Yu (2003), the libraries of colleges and technical institutions in Taiwan have been undergoing a major reform since the mid-1990s. There are two driving forces behind this library reform: a policy change by the Ministry of Education (MOE) and the availability of advanced communication infrastructure, especially the Internet. The most popular ILE activity remains a facility orientation, with content evolving from physical paper “card catalogs and reference books” in 1983, to digitized media “CD-ROM” in 1991, and further to an “Internet Web-based computer-assisted system” in 1995. Liu (1991) surveyed 47 university and college libraries in Taiwan and proposed three suggestions to improve future ILE: Libraries, academic and non-academic, should all share the responsibility of promoting ILE. Libraries should establish a nationwide ILE information exchange and development to collect information, provide teaching materials, and offer continuing education for librarians. Based on these insights, ILE became more user-oriented, resourceful, and versatile from 1983 to 1995. Similarly, Yu (2003) also studied how Taiwanese college and technical institution libraries familiarize users with library facilities and information resources and found that there is a pool of active librarians with practical experience in planning and implementing ILE programs. With the development of the internet, Zhu (2009) emphasizes the importance of planning and tailoring ILE to different user groups and their specific needs. By closely linking ILE with practice, users can apply their knowledge and skills in real-life situations, thus promoting the transfer of learning from the classroom to the field. In addition, by combining group and individual learning, ILE can provide a personalized and flexible approach that meets the diverse needs of users.

2.1.11 Credit-Based Information Literacy Education in Chinese Academic Libraries

It has been widely reported in the literature that ILE aims to train independent lifelong learners to discover, effectively evaluate, and appropriately use the information they need to solve the problems they encounter (e.g., Cohen et al., 2016; Detlor et al., 2012; Fraillon et al., 2014; Jabeen et al., 2016; Lau et al., 2006). Stand-alone, credit-based ILE has been

positioned as “liberal arts education” in Chinese higher education, emphasizing the educational function of the library. The literature and information retrieval course was formally included in the curricula of Chinese colleges and universities with the publication of the original document of the Ministry of Education of the PRC in 1984, namely, “Opinions on Offering Document Search and Utilization Courses in Higher Education Institutions.” This document pointed out that the courses have important implications for improving students' knowledge structures, enhancing their self-learning and research skills, and developing their creative abilities. Undoubtedly, these kinds of policy documents have greatly promoted the development of ILE. More importantly, the document established the library as the central position of ILE. The Ministry of Education published two additional policy documents in 1985 and 1992, titled “Opinions on Strengthening and Expanding Pedagogy in the Literature Curriculum” and “Basic Premises of the Literature Retrieval Curriculum.” According to these documents, the objective of the IL curriculum should be expressed in four ways: 1) to improve students' knowledge of documentary information; 2) to equip students with the ability to search for literature; 3) to equip students with the ability to analyze, process, review, and implement literature; and 4) to foster students' self-study and independent research skills.

During the mid-1990s, the focus of literature search lectures underwent a shift toward electronic databases. This was in response to the notable increase in electronic documents and the rapid progress of the Internet during that period. The term “information retrieval” has gradually replaced “literature retrieval” to reflect changes in pedagogical content and to align with the rapid development of the Internet era. The first National Symposium on Information Literacy Education was held in Heilongjiang University on January 6, 2002. The conference changed the name of “Academic Seminar on Literature Retrieval” to “Academic Seminar on Information Literacy Education.” This development constituted a significant progress for ILE within library settings. After its initial usage, the term “information literacy education” has been increasingly prevalent in numerous written accounts. During that period, most higher education institutions utilized the terms “Information Retrieval and Utilization” or “Information Retrieval” in reference to their academic offerings.

In addition, the latest regulations for college and university libraries (Ministry of Education of the PRC, 2015) suggested that “libraries should pay attention to the development of ILE, adopt advanced educational technology, strengthen the construction of the IL curriculum system, and improve and innovate the form and content of freshman training and special lectures.” Li (2018) has categorized the evolution of credit-based ILE in China into four distinct phases, namely: 1) the proliferation of literature courses, 2) the restructuring of literature courses, 3) the amalgamation of literature courses and ILE, and 4) the comprehensive overhaul of literature courses. Considering the advancements in the information environment and the ongoing reform of higher education, certain scholars have observed that the instruction of IL suffers from outdated content, a dearth of standardized courses and evaluation mechanisms, a lack of innovation in teaching, and suboptimal learning outcomes. This observation has been made by researchers such as Huang et al. (2016) and Zhou et al. (2016). Currently, the main form of ILE for students is a literature and information retrieval course, which is mainly an elective course. According to Huang et al. (2016), many IL courses have brief class times and lack a formal and systematic evaluation system. Furthermore, a significant portion of the

curriculum is delivered by adjunct librarians who are required to balance their teaching responsibilities with their professional obligations, potentially affecting the quality of the educational encounter. The duration of the course may lead to diminished drive and exertion, culminating in uninteresting and unproductive coursework. In addition, some librarians lack adequate training in IL, making it challenging to assure the quality of instruction in this course.

Furthermore, Zhou et al. (2016) pointed out that the existing IL structure only focuses on database retrieval skills and is not integrated into the research process for graduate students. The instructional content, which is not combined with students' actual information needs, makes students unmotivated to learn, and the learning outcomes are unsatisfactory. Although many students have taken the IL course, they still cannot use databases effectively. Research indicates that there is a need to re-evaluate the design of credit-based information literacy courses to effectively respond to the changing landscape and address emerging opportunities and challenges (Huang and Pu, 2017; Zhou et al., 2016). There is an increasing acknowledgement that greater emphasis should be placed on this domain.

2.2 Students and Information Literacy

2.2.1 Undergraduate vs. Graduate Students and Their Different Levels of Need for ILE

Because graduate programs involve a deeper and more intensive level of study, some researchers and librarians have reason to believe that graduate students have a greater need for ILE and IL instruction (especially one-on-one research consultations) compared to their undergraduate counterparts (Crosetto et al., 2007; Liu et al. 2016). Despite the value and importance of ILE, even when graduate students are aware that they need research assistance, they are hesitant to approach librarians directly for help (Harrington, 2009; Sadler & Given 2007), perhaps for fear of appearing ignorant. Saunders et al. (2015) also reported that LIS students at the graduate level are still more likely to consult with their peers and instructors than with librarians. As a result, subject or ILE librarians should take a more proactive role in the library's promotion and outreach efforts (Allard et al. 2020; Liu et al. 2016, 2019). In addition, other studies suggest that some graduate students either lack or overestimate their IL skills. For example, Catalano's (2010) study found that graduate students were generally able to evaluate information, but at the same time lacked advanced search skills. Such findings demonstrate the value of IL instruction and the important pedagogical role that ILE librarians play in supporting student learning and research (Boucher et al., 2009; Michalak & Rysavy 2016; Michalak et al., 2017). According to Hebert (2018), "It is not uncommon to encounter new LIS graduate students who cannot look up a book in the OPAC, cannot distinguish between a journal article citation and a monograph citation, and are unfamiliar with peer review" (p.33).

Similarly, other studies suggest that incoming students lack basic IL skills (Lamb, 2017; Pinto et al., 2013). For this reason, Tracy and Searing (2014) emphasized that students "need to learn search strategies and resources just as much as other graduate students" (p. 377). Furthermore, Bruce et al. (2006) pointed out that IL educators should implicitly or explicitly consider the different perspectives of various stakeholders, including administrators, teaching colleagues, and students, in the processes of ILE. Few would argue against the leading role of academic libraries in ILE, which allows academic libraries to actively contribute to the development of critical thinking skills. According to

Chen and Lin (2011), librarians should play a leading role in the design and operation of IL programs in collaboration with other stakeholders for the benefit of all. Such collaborative programs should be embedded in the curriculum with proper evaluation and assessment, and ideally, librarians become educators while the library becomes a learning center that combines learning, research, and technology.

With this in mind, it is important to assess the needs and perceptions of users in order to further improve existing services. Several studies have examined library users' information behavior to evaluate ILE programs. A recent study of undergraduate music students by Clark and Johnstone (2018) found that although many of the students indicated that they prioritized library resources in their research, they did not perform adequately on research task assessments. Additionally, students preferred online resources and friends over professors and librarians. The authors suggested that music majors need more IL instruction because one semester of instruction is not enough to write music research papers. Other studies have focused specifically on the information behavior of LIS students. Saunders et al. (2015) surveyed LIS students in 18 countries and found that LIS students were confident in their overall search skills, but struggled to begin research assignments, including defining and narrowing topics. Students relied heavily on search engines and expressed some concern about their ability to evaluate Web sources, identify plagiarism, and properly cite sources. O'Farrell and Bates's (2009) study of the information-seeking behavior of LIS students in group work settings in Ireland found that respondents preferred to use electronic resources such as Google and websites and found them more effective than print resources. Electronic resources were considered more convenient because of their ease of access.

Obviously, the existing literature mainly focuses on the level of IL skills of students studying in different universities in Europe and North America. Given the rapidly expanding LIS industries in Asia, this study is considered timely as it could fill the gap in the literature regarding the influence of IL on the education of the next generation of professionals in the East Asian context.

2.2.2 Graduate Students and Information Literacy

As emerging research professionals, graduate students rely heavily on information resources to expand their knowledge and enhance their academic research through critical thinking. Superior IL skills are essential to their success. However, the easy availability of online resources can lead to overconfidence in students' ability to retrieve information and a lack of appreciation for the importance of IL. Several studies have highlighted that graduate students often lack sufficient knowledge of search engines and that their information behavior and search results fall short of expectations (Dorvlo, 2016; Huang & Pu, 2017; Liyana & Noorhidawati, 2014; Michalak & Rysavy, 2016). Huang and Pu (2017) found that most students could only use simple search engines without knowledge of advanced searches, Boolean searches, and more. Their study also revealed that many students do not know how to extract search terms, do not qualify the type of information they need, and do not know how to use online resources. Dorvlo's (2016) study found that most graduate students are not highly information literate. However, while most students learn to identify concepts, most are not proficient in search strategies, tools, and information evaluation. Michalak and Rysavy's (2016) study also revealed that there is a large discrepancy between students' perceptions of their IL skills and their actual abilities, and that students overestimate their abilities. Liyana and Noorhidawati's (2014) research

showed that only 32% of undergraduate students find it difficult to find relevant information on their search topic, and 73% of postgraduate students find it difficult to deal with a large amount of available information. In particular, students struggle with information management and analysis.

In addition, a wealth of literature has examined the information behavior of graduate students (Harkins et al., 2011; Hooks et al., 2007; Ince et al., 2019; Rempel, 2010). Rempel's (2010) assessment showed that graduate students are not prepared to conduct complex research and are not well equipped to evaluate the sources they find. She suggested that the discipline-specific nature of graduate study requires graduate students to transition from generalists to specialists, which means they need to become more familiar with journals in their field of study. In addition, Hooks et al. (2007) and Harkins et al. (2011) found that graduate students' search and critical evaluation skills increased with practice and were not based on an academic year or research assignments. While IL and information problem solving (IPS) skills have always been an important learning need for junior scholars, advances in technological toolsets and the increasing complexity of knowledge production have increased this need. In addition, Ince et al. (2019) suggested that graduate students need support more than ever to develop critical skills in using technology to support their academic workflows, including IL, particularly in the context of academic knowledge production and the intersection of IL and IPS skills. Parramore (2019) demonstrated that IL courses for graduate students provided them with research skills and an understanding of the research process. While the literature on academic identification is promising, not much research has focused on first-year graduate students. Graduate students are a unique academic population with specific needs, and more questions need to be asked.

ILE is a “teach one to fish” approach that should accompany the student's personal qualities and abilities throughout the educational process. Still, it remains insufficiently acknowledged in academic circles. Zhou et al. (2016) have noted that Chinese higher education institutions solely focus on addressing ILE at the undergraduate level. In addition, many universities do not have a comprehensive understanding of the definition of IL and ignore students' information awareness, so many universities only have public elective courses on literature retrieval for students. Moreover, they believed that literature retrieval courses could replace ILE.

However, Huang and Pu (2017) reported that students do not pay much attention to ILE. As a result, many students are unaware of IL, ignore improving their information skills, and are not interested in various IL activities organized by librarians. Students are also less motivated to participate. As a result, many students have weak information skills and are unable to make full use of primary library resources. Ying (2019) suggested that the cultivation of IL is based on a large azimuth angle, especially those with significant data background, which is not only a small part of private efforts to promote relevant institutions, but also essential, such as from the family and social information environment aspect.

Graduate students face a highly evolving and rapidly changing environment in higher education. As a result, the curriculum of a particular graduate program may not always meet their diverse educational and professional information needs (Fong et al., 2016). Although studies on undergraduate students are the focus of the literature on IL

perceptions and awareness levels, recent publications focusing on graduate students are missing from the literature (Aharony & Gazit, 2019). There is a need for a better understanding of graduate students' self-efficacy in IL courses. Conway (2011) conducted a comparative analysis of undergraduate and graduate students and deduced that the IL skills of graduate students may exhibit a marginal superiority over those of undergraduate students. Whilst graduate students exhibited superior performance in comparison to undergraduate students, the difference in their performance was a mere 8%. The results suggest that graduate students may need IL instruction as much as undergraduates. Many studies in the last decade have shown the importance of incorporating student experience in course design, but these studies tend to be in language learning or other academic domains (Awidi et al., 2019; Bovill, 2020). What remains to be clarified is the learning experience of graduate students in IL courses.

2.2.3 Perceptions of Information Literacy

The intricate and multifaceted cognitive and learning mechanisms of students can exert a noteworthy influence on their scholastic and vocational success, particularly in relation to their interpretation of IL. This study aims to investigate the impact of students' perceptions, beliefs, and attitudes on their academic performance, engagement, and motivation in an educational setting.

Numerous studies have investigated the correlation between students' perceptions of IL. IL is a crucial factor that contributes to the academic and professional achievements of students. The way students perceive IL can significantly impact their interaction with information resources and their proficiency in locating, assessing, and utilizing information in an effective manner. As per the findings of Catts and Lau (2008), the motivation of students to acquire and apply IL skills can be influenced by their perception of the relevance of these skills to their academic and career objectives. Previous research has investigated the impact of students' pre-existing knowledge, beliefs, and attitudes towards IL on their utilization and acquisition of information resources. The topic under consideration has been investigated in research conducted by Eisenberg and Lowe (2006) as well as Julien et al. (2010).

In recent years, there has been an increase in the quantity of research studies conducted within academic libraries. The objective of these investigations is to examine the conduct of students within scholarly libraries, their usage and needs of library equipment, technology, and area, in addition to their availability to educational resources and data in various configurations in the contemporary digital epoch. The sources include Andrews et al. (2016), Cunningham and Tabur (2012), Matthews et al. (2011), Soderdahl (2011), Sullivan (2010), and Turner et al. (2013). Kim (2017) conducted a study that revealed that students predominantly perceive the university library as a location for educational and informational objectives. Specifically, students tend to view the university library as a physical space for solitary reading, individual study, information seeking through the use of computers, the internet, and OPAC, as well as group and individual study, reference and information services, work-related meetings, and social networking. The significance that students attach to ILE, particularly IL education, is contingent on the efficacy of the teaching approach employed as perceived by the learners, as well as other structural and pedagogical considerations. According to the study conducted by Kim and Shumaker (2015) at the Catholic University of America to understand students', librarians', and instructors' perceptions of IL instructions in relation to students' IL proficiency, notable

differences were found related to the role of the respondents and their involvement in the course. As reported by Kim and Shumaker (2015), students who were involved in a course with consistent inclusion of substantive IL-related assignments tended to give higher ratings to the overall effectiveness, importance, and impact of IL instructions, as well as to their own IL skills—that is, higher than those involved in a course with inconsistent engagement with IL skills. Furthermore, students' assignment grades were found to be correlated with their self-rating of IL skills in both courses. In addition, student respondents surprisingly gave higher ratings to their own IL skills but lower ratings for the importance and impact of IL instruction compared to their librarian or instructor counterparts. Tracy and Searing (2014), in a study of LIS students at the University of Illinois Urbana-Champaign, found that most respondents were frequent library users and rated librarians and library services highly. In addition, many LIS students expressed disappointment that some of their assignments did not require library use. However, these studies have focused on case studies in Western countries. Despite the rich literature on students' perceptions of library use in general, there are relatively few studies focusing on Asian students' perceptions of academic libraries and ILE.

2.3 Library User Research

Many studies have attempted to determine the needs, requirements, and satisfaction of library users with various parameters in the academic library field since the late 1990s (Beetham & White, 2014; Bem-Bura, 2015; Cook et al., 2003; Edgar, 2006; Herson et al. 1999). Shrestha (2008) pointed out that improper guidance and lack of specialists, inadequate collections, as well as insufficiently networked computers were the main drawbacks for students exploring library resources. Nejati et al. (2008) showed that although the library has implemented several programs to improve its services, because the most important aspects of service quality have not been identified in their customers' ideas, the efforts to provide customer satisfaction have failed to a great extent. Restoum and Wade (2013) indicated that students were satisfied with the quality of library services in terms of accessibility of collections and information resources in the Arab International University. On the other hand, the most common difficulties faced by students in relation to the library were lack of time and the ability to visit the library anytime and anywhere. Obasuyi and Idiodi (2015) showed that students perceived the library to be of great value to their education and that it affected their academic pursuits and studies, academic performance, productivity, and career. Bem-Bura (2015) conducted a survey to determine students' perception of the library orientation program in Benue State University, Makurdi. The findings of the research indicate that due to the significant advantages of the orientation program, it is imperative for both the university library and its student patrons to acknowledge and prioritize the program's value. The study revealed that students derived substantial benefits from the program, underscoring its significance. The research findings indicate that the orientation program was perceived by students in both favorable and unfavorable ways. On the contrary, a subset of students perceived the program as an unproductive use of their time, thereby exhibiting a negative perspective. Based on this negative perception of students, the study suggested that time is a crucial tool to consider in everything we do, and therefore, more time should be given to library orientation program so that more awareness will be created by the library when the program is organized, grouped in different phases, and so on. Although the number of practice and case study on ILE is increasing in recent years, the research on students' needs and

satisfaction in terms of ILE is not so many.

Stamatoplos and Mackoy (1998), in a study of university students in the United States, found a relationship between IL and library user satisfaction. Students with more advanced library skills were more satisfied with the library and its services. Lombardo and Miree (2003), in a study of business students at Oakland University, found that many student respondents had a more positive perception of the library and the usefulness of its resources after receiving instruction in the library. Hsu et al. (2014) conducted a questionnaire survey at a university in the Midwest region of the United States. They concluded that libraries could allocate their limited resources to be more relevant to current student needs, especially in the areas of staff professionalization, customer service, modern equipment, and facilities, while strategically using their on-campus and online holdings. Consequently, the enhancement of service quality towards students will lead to a probable increase in the utilization of library services by students. In a study conducted by Mukuvi (2014), the GAP model was employed to evaluate the extent to which users perceived service quality in an academic library. The findings of the study revealed that there is a need for libraries to enhance the staff-user relationship in their service delivery. Specifically, there exists a requirement for comprehensive personnel instruction in the areas of public relations and customer service. A discrepancy exists between the service quality expectations of users and the actual service experience encountered by librarians.

There are relatively few studies on ILE in East Asian countries. Sun (2002) outlined the importance of IL in Chinese higher education using Tsinghua University as an example. The study also explained that librarians need to work closely with course instructors to meet students' needs. Fang (2005) pointed out that with the rapid development of academic libraries in China, instead of spending too much manpower and resources on developing collections and other hardware, librarians should put more emphasis on improving the efficiency of facilities or equipment utilization, as well as the overall quality of information services. Unfortunately, none of the studies examined how students perceive these services. This dissertation will attempt to address this omission.

2.4 Cross-National and Cross-Cultural Comparative Study in Information Literacy Education

Cross-national and cross-cultural comparative research in ILE involves comparing the teaching and learning of IL skills in different countries and cultures. The complex interaction of global and local factors in education requires comparative research to understand the strengths and weaknesses of different systems. Wu (2012) noted that cross-national and cross-cultural research would help educators, such as librarians, understand the complexity of expected skills in a context-specific manner and provide an opportunity to help academic librarians reposition themselves as researcher-educators who are integral to student success.

A cross-cultural study was conducted by Wu (2012) to investigate how IL is perceived in the workplace. The study involved more than 120 participants from forty companies in Taiwan and Silicon Valley in Northern California. Wiorogórska (2014) discussed IL from the perspective of a comparative study of information users in two universities in France and Poland. Two main factors were identified: (1) lack of specialized library instruction for doctoral students (in the Polish context), and (2) lack of promotion or dissemination of such instruction among doctoral students and faculty who could encourage students to participate (in the French context). Jang et al. (2020) conducted a comparative study in

Korea and Finland to investigate the impact of digital literacy and IL on the intention to use digital technologies for learning impact. The results showed that Korean and Finnish adolescents differed significantly in multiple pathways relationships. For example, while digital literacy did not have a direct effect on the intention to use technology for learning for Finns, this pathway was significant for Koreans. Pinto et al. (2021) analyzed the beliefs of psychology students in Spain and Portugal regarding the importance of IL competencies, self-efficacy, and preferred sources of learning. The results showed that students in both countries preferred a mix of classroom and independent learning. In addition, students were not aware of the value of the library.

2.5 Related Theory

2.5.1 Constructivist Theory

The theory of constructivism, as posited by Vygotsky (1978) and Piaget (1985), places emphasis on the active construction of knowledge by learners. This process involves reflection, interpretation, and meaning construction. In accordance with the theoretical framework, learners are not considered as passive recipients of knowledge. Instead, they actively participate in their surroundings to develop novel perceptions and comprehending of the world.

Vygotsky's (1978) theoretical framework emphasizes the importance of social interaction in the learning process. The author suggests that the acquisition of knowledge is facilitated by collaborative endeavors with peers and the incorporation of social and cultural conventions. According to Piaget's (1985) theoretical framework, the acquisition of knowledge is facilitated by a dual mechanism consisting of assimilation and adaptation. The process involves the integration of novel data into pre-established cognitive frameworks, along with the modification of these frameworks to encompass the newly acquired information.

The constructivist theoretical framework has been applied in diverse domains, such as pedagogy, psychology, and instructional design. Mayer (2004) underscored the significance of furnishing learners with various representations of information and scaffolding their learning through examples and practice when applying constructivist theory to the design of multimedia learning environments. The significance of teachers in constructivist learning environments is a crucial subject of investigation. Fosnot and Perry (2005) posited that in constructivist classrooms, teachers must exhibit adaptability and sensitivity toward the unique requirements of each learner. Additionally, they should be capable of fostering a classroom ethos that esteems inquiry and exploration.

The impact of constructivist theory on the field of IL can be traced to the shift from bibliographic instruction to ILE. The constructivist theory emerged as a guiding principle for teaching and learning with this shift. It also inspired the development of instructional models that emphasize constructive processes, such as resource-based learning, inquiry-based learning, problem-based learning (Diekema et al., 2011), and game-based learning (Jerrett et al., 2017). Tuominen et al. (2005) noted that the Kuhlthau model of information-seeking processes, which is heavily influenced by constructivist theory, has been widely used in the design of IL programs. In addition, Allen (2008) examined the benefits of using a constructivist approach to online IL instruction and its potential to improve critical thinking skills.

Constructivist theory emphasizes the importance of active participation, reflection, and collaboration in the process of knowledge construction and provides a contextually rich and nuanced perspective on learning. By applying constructivism in this study, the aim was to explore students' perceptions of the ILE offered by university libraries. It aims to explore whether these students from different universities have unique learning practices, information needs, and opinions. Results of this study may provide valuable insights for researchers interested in promoting effective ILE learning. It may also help to develop ILE programs that meet the diverse needs of students.

2.5.2 Social Cognitive Theory

Bandura (1986, 2001) proposed that the Social Cognitive Theory (SCT) is a psychological and behavioral theory that emphasizes the importance of cognitive processes, observational learning, and modeling in influencing human behavior. Bandura (1986) formulated the SCT as a theoretical framework aimed at elucidating the cognitive processes that individuals employ to obtain and utilize information to govern their conduct. The underlying notion posits that the conduct, distinct attributes, and surroundings of a person are mutually reliant and exert a reciprocal impact on one another.

SCT has been applied across diverse fields such as education, health promotion, and organizational behavior. This methodology is employed to construct interventions that endeavor to modify conduct by enhancing cognition and expertise, promoting affirmative conduct, and cultivating self-efficacy and self-regulation. The discipline of IL was significantly influenced by the emergence of SCT during the latter half of the 20th century. Prior to that, the predominant approach to information literacy was constructivism. Nonetheless, certain scholars acknowledge its constraints. According to Marcum (2002), this approach neglects the social aspect of the learning process and makes erroneous presumptions regarding information and IL. The statement presupposes the notion that information is impartial and unbiased, and that information literacy empowers individuals to assess the credibility and value of information solely on the basis of its factual characteristics. Additionally, it posits that individuals can make autonomous judgments without succumbing to external influences. Critics have proposed the inclusion of SCT (Tuominen et al., 2005) as a means of rectifying these assumptions. This viewpoint highlights the significance of comprehending the efficient acquisition and utilization of information within sociocultural settings, and formulating ILE projects in accordance with such understanding. The assertion emphasizes the significance of the ILE to consider the distinct demands of diverse fields or vocations, integrate with subject-specific instruction, and integrate cooperative learning.

SCT offers a comprehensive theoretical framework for comprehending human behavior and has demonstrated efficacy in facilitating behavior modification across diverse settings. Middleton et al. (2019) analyzed the application and applicability of SCT in information science research. Results showed that previous applications of SCT in information science research were related to a study of employee-directed workplace learning and innovative work behaviors, which aimed to provide new insights into the relationship between (1) workplace IL, (2) knowledge management, and (3) information behaviors and innovation processes. The anticipated outcome of this study is to enhance the comprehension of SCT as a beneficial instrument for constructing theories in various domains that are focused on the acquisition of knowledge.

According to the tenets of SCT, human conduct is not exclusively determined by external stimuli such as rewards or penalties but is also impacted by internal cognitive processes such as perception, attention, and memory. SCT posits that self-efficacy pertains to an individual's conviction in their capacity to competently execute a specific behavior (Bandura, 2001). There are several ways to influence these beliefs, including prior knowledge, vicarious learning, and social persuasion. Therefore, SCT can be applied in this study to understand the relevance of students' perceptions of the scope, content, and quality (effectiveness) of ILE programs in academic libraries to their overall learning process.

2.5.3 Self-Determination Theory

Self-determination theory (SDT) posits that the human psyche has intrinsic psychological needs for autonomy, competence, and relatedness. The theoretical framework places emphasis on intrinsic motivation, which pertains to the inherent inclination to participate in an activity for personal gratification, rather than being swayed by extrinsic incentives or coercion. Deci et al. (2001) have established that there exists a positive correlation between the fulfillment of psychological needs and a range of outcomes, including but not limited to heightened persistence, creativity, and pleasure derived from activities.

SDT is a theoretical construct utilized in the realm of education that elucidates the notions of student engagement, scholastic accomplishment, and holistic welfare (Ryan & Deci, 2017). Reeve et al. (2004) posited that empirical evidence supports the notion that affording students opportunities to exercise autonomy, experience empowerment, and cultivate positive relationships with others significantly enhances their learning motivation and academic achievement. Research applying SDT to ILE has examined various aspects of the learning process, including instructional design, student motivation, and engagement. Latham and Gross (2013) used SDT to examine the instructional preferences of first-year undergraduate students in information literacy education and to analyze the effects of autonomy, competence, and relatedness on student engagement and learning outcomes. Similarly, Chiu et al. (2022) investigated the effects of technology learning support for SDT needs satisfaction on digital literacy during the online learning shift brought about by COVID-19. They found that autonomy and competence played a more critical role than relatedness in developing digital literacy, with needs satisfaction partially mediating the relationship between perceived support and digital literacy. These studies highlight the relevance of SDT in information literacy education and emphasize the importance of addressing students' intrinsic motivation, autonomy, competence, and relatedness to optimize learning experiences and outcomes.

SDT provides a valuable framework for understanding human motivation and behavior and has been applied in various fields to promote optimal functioning and well-being. Through SDT, this study compares students' levels of motivation and thus explores students' perceived levels of importance of ILE.

Using constructivist theory, SCT, and SDT, this study aims to identify students' perceptions of the importance of ILE in different universities. The objective of this study is to investigate the variations in students' perceptions of ILE across different university settings by utilizing three theoretical frameworks. It endeavors to ascertain potential factors that may influence perceptions, particularly regarding the beliefs, attitudes, and motivations of students.

In accordance with the constructivist perspective, individuals are considered to be active agents who engage in the process of constructing their own knowledge and comprehension through personal experiences, social interaction, and introspection. SCT places emphasis on the impact of social factors, particularly the influence of educators, on the development of students' attitudes and beliefs towards the learning process. Meanwhile, SDT places intrinsic motivation and autonomy at the forefront of its principles to facilitate optimal learning outcomes and enhance engagement. Through the integration of these three theoretical frameworks, a more comprehensive comprehension of students' perspectives on ILE can be obtained, thereby enabling the identification of potential avenues for enhancing the efficacy and pertinence of ILE initiatives across diverse university settings. The study's results can potentially furnish valuable insights for the creation of empirically grounded ILE strategies aimed at bolstering students' academic achievement and progress.

2.5.4 AARRR framework

The AARRR framework, which involves of Acquisition, Activation, Retention, Referral, and Revenue, was initially formulated by Dave McClure in 2007 to cater to start-ups. This framework has garnered significant interest in diverse domains, including education (McClure, 2007). The aforementioned quintet of metrics delineates distinct phases of customer conduct, commencing with their enrollment in a product (Acquisition) and culminating in their contribution to the organization's earnings (Revenue). Prominent corporations such as Hotmail, Google, Facebook, Twitter, and Airbnb have implemented the AARRR framework to enhance their business strategies. The model has demonstrated adaptability and efficacy across industries, illustrating its potential for universal application in diverse contexts (Lin & Gao, 2021; Zhang, 2021). Zhang (2021) applied the AARRR model to analyze the user growth strategies of Pinduoduo (a third-party social e-commerce platform), offering suggestions for improvement and serving as a benchmark for other e-commerce platforms and Internet companies. Priyadarshini et al. (2017) used the AARRR framework to measure learner engagement and retention in e-learning. The study found that a moderately challenging environment can create greater engagement among millennials. The findings suggest that the AARRR model is appropriate for measuring learner engagement in E-Learning and can help organizations find a scalable, repeatable, and sustainable business model through learner engagement.

The first stage, acquisition, focuses on attracting and engaging users or, in an educational context, students. The significance of active student participation in online learning environments and the impact of student interactions on learning outcomes have been underscored in research conducted by Hrastinski (2008) and Bakharia and Dawson (2011).

The second component, activation, pertains to the user's initial encounter with a product or service. In education, activation involves engaging students and fostering their motivation to learn. Keller's (1987) ARCS model highlights the importance of motivation in learning. Research, such as the one conducted by Chang and Chen (2015), shows that integrating the ARCS model into instructional design can significantly increase student motivation and performance.

Retention, the third element, refers to maintaining user engagement and encouraging users to return to a product or service. In education, retention is critical for continued learning and long-term student success. Tinto's (1975) theoretical model of student

retention identifies factors that influence a student's decision to persist or withdraw from higher education and emphasizes the role of academic and social integration and institutional commitment in promoting student retention.

Referral, the fourth component, involves users recommending a product or service to others. In education, positive referrals can enhance an institution's reputation and attract new students. Research on student satisfaction (e.g., Elliott & Shin, 2002) and word-of-mouth marketing (e.g., Sweeney et al., 2014) demonstrates the importance of referrals in the educational context. By focusing on factors that contribute to student satisfaction, institutions can encourage positive referrals and cultivate a cycle of growth.

Finally, the revenue stage revolves around generating revenue from customers. In an educational context, this can be interpreted as the value or benefits that students derive from these courses, such as earning credits, winning contests, or receiving other incentives. By optimizing the first four stages of the AARRR framework, educational institutions can increase revenue generation by attracting and retaining satisfied students.

By examining each of these metrics within the AARRR framework, organizations can identify areas for improvement and develop strategies to optimize their performance at each stage of the customer lifecycle. Similarly, applying the AARRR framework to education-related research can facilitate the identification of best practices that lead to more effective learning experiences for students. For example, by examining the acquisition stage, researchers can uncover strategies for engaging diverse learners and creating inclusive learning environments. Activation studies can inform the development of motivational techniques and instructional methods that promote engagement and deep learning. Retention research can identify the factors that contribute to student persistence, enabling institutions to develop targeted interventions to support at-risk students.

2.6 Conclusion

Many studies have been conducted to explore the perceptions and attitudes of general university students toward ILE education worldwide. However, studies examining Asian students' perceptions of ILE are scarce, particularly in Chinese-speaking regions. The results of this study could therefore not only cast light on new research avenues in this field, but also provide insight into the learning practices and information behaviors of East Asian students in relation to ILE. This study sought to contribute to the body of knowledge by filling a research gap. Furthermore, the information-seeking behaviors and library usage patterns of university students in Chinese-speaking regions (e.g., Mainland China, Taiwan) and Japan have not been explicitly or systematically investigated. As a result, their use of academic libraries in these regions and students' perceptions of library service providers are often described as a “mystery.” Studies on the impact of academic libraries and their ILE programs on students' learning needs and preferences will undoubtedly provide new insights into the behavior of young people toward modern technologies and their implementation in universities worldwide.

Chapter 3 Students' Perceptions of IL Education: A Comparative Study of Two Universities in Mainland China and Taiwan

3.1 Introduction

This chapter reports on an investigation into the perceptions of university students regarding the scope, content, and quality (effectiveness) of the ILE programs at Fudan University (FDU) and Taiwan Normal University (NTNU) to enhance library services to these two groups. The study's primary research concerns were as follows:

Sub-RQ 3-1: What are the similarities and differences in the attitudes and perceptions of students at the two universities (FDU and NTNU) toward the series of ILE programs conducted by their respective university libraries?

Sub-RQ 3-2: To what extent do these students value the ILE programs carried out by these two university libraries?

Sub-RQ 3-3: To what extent do students at these two universities (FDU and NTNU) incorporate the services and resources provided by their university libraries into their overall research and formal learning?

These questions were used to develop the hypotheses of the study. The hypotheses were as follows.

Sub-HP 3-1: There are differences in attitudes and perceptions of the importance of students' ILE programs between the two universities due to multiple factors.

Sub-HP 3-2: Students consider ILE as important and essential for their daily learning and research, but the level is different.

Sub-HP 3-3: There are service gaps between the students and the librarians in the ILE programs.

A better understanding of this could undoubtedly help LIS professionals develop better reference and ILE services by providing more appropriate IL instruction to meet students' information and learning needs.

3.2 Overview of Study Subjects

3.2.1 Information Literacy Education at Fudan University

FDU was established in 1905 as the Fudan Public School. As one of the first participants in the Project 211 and Project 985,¹ Fudan has developed into a comprehensive research university, with departments of philosophy, economics, law, education, literature, history, science, engineering, medicine, and management. Fudan University Library (FDUL), originally known as Wuwu Reading Room, was founded in 1922. It currently consists of five libraries, namely, Arts & Humanities Library, Science Library, Medical Science Library, Zhangjiang Library and the Lee Shau Kee Library, with a building area of 55,933

¹ Project 211 is the Chinese government's new endeavor aimed at strengthening about 100 institutions of higher education and key disciplinary areas as a national priority for the 21st century, Project 985 is a constructive project for founding world-class universities in the 21st century.

square meters.² At the end of 2015, the total collections of the library amounted to five million volumes (books and bound volumes of periodicals), including 400,000 thread-bound ancient Chinese books (including 60,000 volumes of rare ancient books), and 100,000 volumes of books of the Republic of China period. Other collections include 2,631,000 e-books, 67,000 kinds of full-text e-journals in Chinese and foreign languages, and 297 databases covering various fields.

FDUL's website has seven main menus (“Home,” “Resources,” “Services,” “Guides,” “At FDU Libraries,” “User Information,” and “Friends & Donations”), and “Resources,” “Services,” and “Guides” are the menus related to ILE. FDUL offers a series of regular training sessions, reference classes, and library orientations beginning at the beginning of each semester to improve students' information literacy skills throughout the semester. In addition, the purpose of each session for undergraduate and graduate students is described in detail to make students aware of the need for ILE. For the library orientation, the slides used for the training can be found on the library's English website, which is targeted to incoming graduate students, undergraduate students, and incoming medical students. New students are encouraged to view these materials and learn how to use the library. Training sessions cover subject resources, retrieval, and acquisition skills for various types of documents. Training information is posted in advance on the FDUL homepage. Students can also find this information on the bulletin board system in the library lobby, as well as in the “M-library” discussion area of FDU's online bulletin board system. The library also offers special training sessions to meet the needs of different users. Students can check the schedule of special training sessions on the library website each semester. The contents can be divided into two main parts. The first part consists of five courses and is intended for freshmen. The second part has six courses, and they mainly contain research guides and academic writing support. The contents of the special training courses include “Introduction to Library Resources and Services”, “How to Use the Library Catalog (OPAC)”, “A Guide to Using New Oriental Multimedia Databases and SciFinder” by database trainer, “How to Use MetaLib/SFX for Academic Information Resource,” “How to Use Web of Science to Improve Your Research,” “How to Use Note Express,” “Finding and Using E-Books in Chinese and Other Foreign Languages,” “Searching and Using the Dissertation & Thesis Database,” and “Doing Literature Research for Preparing a Thesis Proposal,” which is for arts and humanities and science subject librarians. There are also sessions on how to format theses and dissertations in Microsoft Word, how to create an impressive PowerPoint presentation for a thesis defense, how to access and use ancient documents, how to find and obtain statistical data, and how to search and retrieve data from patent databases. They also have courses for undergraduates called “A Special Session for Undergraduates: Getting Started with Chinese Information Retrieval-Tips for Using CNKI And Wan Fang Database.” Some of the materials used in the courses are available online. Students can also schedule a training session by submitting a Training Booking Form.

To become the center of teaching and research support is the goal of FDU Library Services. In addition, to develop a close relationship between the library and academic departments, to help faculty and students fully utilize the library's resources and services, and to help the library understand their needs, FDUL has established the subject librarian

² Fudan University Library: http://www.library.fudan.edu.cn/main_en/list/720-1-20.htm.

system by selecting and appointing subject librarians for some departments, who are responsible for collecting information from relevant departments to improve the library's service on specific subjects. At present, there are 12 subject librarians for humanities, natural sciences, mathematics, and medicine. Services to the respective departments include communication services; providing instruction and training in the use of library resources; providing reference services; collecting, evaluating, and selecting subject-related web resources; understanding the information needs of faculty and students; and soliciting opinions about the library's resources and services, especially opinions about subscriptions to subject-related journals, books, and electronic resources.

On the other hand, the library's Chinese and English websites are different. First, the English detailed page has not been updated for a long time. As shown in Figure 3-2, FDU's English orientation information webpage was last updated on July 18, 2012. In contrast, the Chinese page was last updated on September 6, 2016. In addition, there are more library orientation materials on the Chinese website. Each department and college can find the library orientation slides for themselves. Looking at the other pages, the update date of the reference course was July 18, 2012, for the English page and May 31, 2016, for the Chinese page. The training information was updated on March 4, 2014, for the English page and August 29 for the Chinese page. Second, the contents of ILE are different. For the ILE programs, there are four items (daily training, freshman library orientation for each department, online training, and customized training) on the Chinese page, but only three items (training, retrieval course, and orientation of FDUL) on the English page. More research is needed to find out the reason why the information on the Chinese page and the English page are different.



Figure 3-1 The Webpage of Orientation Information of Fudan University Library (in English)³

³ Retrievable at: http://www.library.fudan.edu.cn/main_en/info/1303.htm (Accessed on 05th June, 2016)



Figure 3-2 The Webpage of Orientation Information of Fudan University Library (in Chinese)⁴

3.2.2 Information Literacy Education at National Taiwan Normal University

NTNU is a vibrant learning community that has long been recognized as one of Taiwan's elite institutions of higher education. Founded in 1946, NTNU was originally a teacher training institute, as the name "Normal" suggests, which later evolved into a comprehensive university. Founded on the credo that education is the root of our nation, NTNU has been committed to the pursuit of academic excellence, characterized by the many influential educators and researchers it has nurtured over the years.⁵ Bearing the hallmarks of tradition and innovation, NTNU has expanded to three campuses and offers a wide range of courses and degrees under its nine colleges, including the arts and humanities, education, sociology, business management, sports, to the sciences. The university library consists of a main library and two branch libraries located on Gung-Guan and Lin-Kou campus, respectively.

Compared to the FDU Libraries website, the NTNU website has many menus. There are seven main menus: "Find Us," "Other NTNU Websites," "Search Tools, Resources," "Using the Library," "Online Services," and "What's New." Resources, Using the Library and Online Services are related to the ILE. Institutional Repository' has resources divided for each institutional. Using the search tools you can find the materials from the catalog, google scholar and the library website. In the menu of services, there is a menu called "Library Instruction Service" for customized ILE courses. Students and faculty are welcome to sign up for ILE classes (minimum of five people), including general library orientation, library services, and use of reference materials, dissertations, journals, and electronic resources. In addition, there are 16 subject librarians serving students and faculty from 10 different departments. The subject librarians serve academic departments and programs, which is very similar to the North American style. For the departments they serve, they are responsible for collecting library materials, providing instruction in the use of library materials, and serving as liaisons between the NTNU Library and the

⁴ Retrieval at: <http://www.library.fudan.edu.cn/main/info/4908.htm> (Accessed on 05th June, 2016)

⁵ National Taiwan Normal University: <http://en.ntnu.edu.tw/> (Accessed on 05th June, 2016)

departments. In addition, the library offers reference services, which is a comprehensive facility for the NTNU community, providing research consultations, professional help, advice, and information on any topic. As part of the strategic plan, the subject librarians are trying to cooperate with the teaching assistant to provide more subject-oriented help.

NTNU has three libraries: a main library and two branch libraries. In addition, users can find the social networking service—Facebook accounts of the main library and each branch library. The Facebook page content demonstrates that they advertise the library not just as a location to study or borrow books, but also as a place that is always willing to assist them with their studies and research.

The degree of satisfaction is high, and the library is consistently commended by students. At NTNU, ILE programs for first-year students are mostly concentrated in September. There are two alliances in NTNU, one is the 12 union schools in Taiwan, and the other is the National Taiwan University and the National Taiwan University of Science and Technology. They also share library resources. For example, one of the most popular activities is the dissertation writing workshop held on October 24, 2014. There were 100 participants, and 20 students came from the union schools. In the morning, database instruction and thesis writing seminars are held, and in the afternoon, practical work is done.

On the NTNU Library's home page, there are online panoramic tours and floor configuration guides for users to review (see Figure 3-3). In addition, there are descriptions for each area. This resource can facilitate students in obtaining a comprehensive understanding of the library, even in the absence of having participated in the library tour. Furthermore, according to librarians, an effective approach to assist students in maximizing the utilization of library resources is to ensure that all digital resources are efficiently organized and readily accessible online. As a result, librarians dedicate a significant amount of time to the management of said resources. For example, the language learning databases and the subject-oriented database for each major (see Figure 3-4).



Figure 3-3 The Online Library Tour Page of NTNU Library⁶

⁶ Retrievable at: <https://walkinto.in/tour/ZyGl-jpsFl-yeGxbsToYg>.

圖書館資源 more		
館藏資源查詢	資源整合查詢 <i>New</i>	開放式課程
期刊資源	博碩士論文	考古題
電子書	臺師大學術期刊	語言學習資源
電子資料庫	機構典藏	書目管理軟體
學科主題資源		
教育學院	運動與休閒學院	科技與工程學院
文學院	音樂學院	國際與社會科學學院
理學院	管理學院	僑生先修部
藝術學院		

Figure 3-4 The Contents of Language Learning Databases and The Subject-Oriented Database⁷

FDU and NTNU both emphasize the importance of ILE and offer various resources, services, and training programs to enhance students' information literacy skills. Both universities offer training sessions, reference courses, library orientations, and customized courses to meet the needs of different users. They have also established a subject librarian system to improve library services for relevant subjects and to understand the information needs of faculty and students.

However, there are some differences in the implementation and presentation of these services. The FDU library website has not been updated as frequently as the NTNU Library's website, especially the English version. The contents of the ILE programs on the English and Chinese pages of FDU's website are different, while NTNU seems to have more consistent information across languages. NTNU's library website has a wider range of menus, including social networking services such as Facebook accounts for the main library and each branch library, which help promote the library as a place that is always ready to serve and help students with their studies and research. In addition, NTNU offers online panoramic tours and floor configuration guides on its library homepage, allowing users to get a complete understanding of the library's layout and facilities without taking a library tour. This feature is not available on FDU's library website. In conclusion, both universities recognize the importance of information literacy instruction, but there are some differences in the presentation and implementation of these services.

3.3 Survey Protocol

3.3.1 Research Population and Data Collection

The present study was conducted with the involvement of two academic institutions, namely FDU and NTNU. Based on an examination of data obtained from university websites, it can be deduced that FDU had approximately 28,900 students during the 2015–

⁷ Retrievable at: <http://www.lib.ntnu.edu.tw/index.jsp>.

2016 academic year. Conversely, the aggregate student population at NTNU amounted to roughly 10,893, comprising 6,651 undergraduates and 4,242 graduates. These two universities were chosen for the pragmatic reason that the researcher had affiliations and connections with the institutions. This allowed for a convenience sample, as I was able to obtain the necessary permissions for data collection. Furthermore, it was agreed upon by the ILE librarians at both FDU and NTNU to furnish the requisite data for the scrutiny and elucidation of the amassed survey findings, with the aim of attaining a more impartial, triangulated perspective of the analysis, thereby potentially enhancing the study's validity and reliability.

I opted for a questionnaire survey as the preferred method of data collection to maximize the number of participants. The original questionnaire was in Chinese and was developed by the researchers together with the ILE librarians at both FDU and NTNU as a team effort. As previously discussed, the terms LUE and ILE can be used synonymously and interchangeably within the context of this study. To clarify, ILE in this context refers to organized, library-based activities related to IL.

The original questionnaire utilized the term 'Library User Education.' However, for the sake of coherence, this may be replaced with 'Information Literacy Education.' It is important to acknowledge that this switch in terminology may create a slight gap in understanding, as respondents used the term 'Library User Education' in their responses. Despite this, the gap in comprehension can be mitigated to some extent. This is because the questionnaire's terminology aligns with the library's educational activities, and specific options were provided to reflect the daily ILE activities conducted by the library.

A questionnaire comprising 12 questions was developed for self-administration. The objective was to investigate students' perspectives on the ILE programs offered by two universities, and to identify key factors that could enhance the design and implementation of such programs. The questionnaires were generated through an electronic survey platform and were disseminated to participants in the middle of September 2015, with a duration of seven days at each academic institution. During the data collection period, the researcher personally approached all students who passed through the university library and requested their voluntary participation in completing online questionnaires. A summary of the list of questions can be found in the appendix. For details on the total number of questionnaire responses collected at each university, see Table 3-1). Two ILE librarians from FDU and NTNU assisted in the review of the survey questionnaire and provided basic insights into the interpretation of the survey results collected.

Table 3-1 Profile of Surveyed Respondents: FDU vs. NTNU

	FDU	NTNU	Total
Male	20	18	38
Female	32	39	71
Undergraduate	50	41	91
Postgraduate	2	16	18
Respondents'			

majors			
Business and economic	10	3	13
Information technology	1	0	1
Education	5	7	12
Engineering	9	1	10
Medicine	5	5	10
Social sciences	4	0	4
Science	8	12	20
Arts	5	4	9
Language	5	12	17
Library and info Science	0	13	13
Total	52	57	109

3.3.2 Technical Limitations

There exist numerous methodologies for examining individuals' perceptions and attitudes towards the services proffered by libraries. Nevertheless, the sample size of the surveyed population is relatively limited. On average, each university gathered approximately 50 responses. One of the limitations of this study is that the selection of the two participating universities (FDU and NTNU) was based on pragmatic reasons, as the researchers had professional connections with these institutions. Simultaneously, the researchers administered the questionnaires in-person to the student population, thereby obtaining data solely from individuals who had utilized the library services. Consequently, the survey results may not reflect the opinions of students who did not avail themselves of the opportunity to visit the physical library during the data collection period. Furthermore, the constrained format of closed-ended questions may potentially compel participants to offer excessively uncomplicated responses to intricate inquiries, such as those pertaining to the comprehensive procedure of innovative ideation, knowledge acquisition, and research requisites. According to Powell (1995), tracing the learning and research process can be challenging due to its composition of abstract concepts, ideas, and their interconnections. The present study's employment of a questionnaire format may not facilitate a comprehensive comprehension of the subject matter, as compared to other methods such as observation and interview techniques. The questionnaire's definition of library user education may result in some ambiguity regarding the terms of information literacy education in this study. This is an inherent limitation of the survey that cannot be avoided. Notwithstanding these constraints, the findings of this investigation are undeniably intriguing for professionals in the field of LIS, particularly those who offer ILE services.

3.4 Survey Results

3.4.1 Respondent Profiles

The information needs and perceptions of student respondents towards the university library may be significantly impacted by user demographics such as their average age and educational background. Table 3-1 displays the combined 109 responses obtained from the two universities. Out of the total of 109 responses, the majority of 71 (65%) were identified as female, whereas the remaining 38 (35%) were identified as male, as presented in Table 3-, which displays a comprehensive inventory of the academic majors of the participants. It is noteworthy that among the respondents at NTNU, a considerable proportion (16/28%) comprised of postgraduate students, whereas 13 (22.8%) were majoring in LIS. It is worth mentioning that all 13 individuals who were studying LIS at NTNU were registered in the postgraduate program, specifically at the master's level. Furthermore, it is noteworthy to state that the entire sample comprised solely of female participants. Conversely, the proportion of PhD candidates among the entire respondent cohort at FDU was merely 3.8%. Despite the absence of LIS majors among the 57 respondents from FDU, it is noteworthy that 15.8% of them, comprising nine male students, had majored in engineering as indicated in Table 3-1.

3.4.2 Range of Information Literacy Education Programs and Their Perceived Importance

The assessment of library services can be determined by the degree to which the needs and expectations of student users are met. The research utilized a questionnaire survey to examine the previously mentioned subject matter and simultaneously identify the crucial factors that could improve the development of ILE programs. The provision of ILE services is deemed a pivotal facet within the purview of academic libraries. The aim of this program is to aid students and faculty members in improving their proficiency in utilizing library resources, thereby facilitating the optimal utilization of the library. Academic institutions may offer ILE to their patrons through a variety of means, such as library orientations, practical database instruction, library tours, subject-specific library courses, and other methods. The survey's first inquiry prompted respondents to assess the perceived importance of the range of ILE programs by utilizing a five-point Likert scale, except for the "not applicable" option. The statistical parameters of mean values and standard deviations were provided for every aspect. The survey results indicate that out of all nine ILE programs, FDU students considered (1) "library instruction" to be the most important, followed by (2) "course assignment consultation" and (3) "library orientation". However, NTNU students considered (1) "library instruction," (2) "research consultation," and (3) "database instruction" to be more important in comparison (see Table 3-2). The average total score for each institution (NTNU's 4.13 and FDU's 3.98) indicates that NTNU students perceived ILE to be more important than their FDU counterparts.

The two-sample t-test was used for the comparison of the means of two independent groups. This statistical test is suitable when variances are not assumed to be equal, which is known as the Welch's t-test. The p-value is a measure of the probability that an observed difference could have occurred just by random chance. In this analysis, the cutoff for significance is $p < 0.05$. This means that if the p-value is less than 0.05, the null hypothesis of equal means is rejected and the difference between the means is considered statistically significant. Library instruction focusing on E-books & E-learning has been rated higher at FDU than NTNU. This difference is statistically significant ($p < .05$). Course assignment

consultation received nearly identical ratings at both institutions, indicating no significant difference between the two universities ($p > .05$). The usefulness of library orientation was perceived similarly by students at both universities ($p > .05$). For research consultation, related to thesis/dissertation/final year project, NTNU was favored over FDU. This finding is statistically significant ($p < .05$). Students at NTNU rated the database instruction service higher than those at FDU, with the difference being significant ($p < .05$). NTNU students expressed higher satisfaction with the general library tour than those at FDU, with a statistically significant difference ($p < .05$). Subject-specific library courses were slightly more appreciated at NTNU, as shown by the significant difference in ratings ($p < .05$). NTNU received a higher rating for information literacy instruction than FDU, with the difference being statistically significant ($p < .05$). Finally, virtual reference services were rated higher at NTNU than at FDU, showing a significant difference ($p < .05$). In summary, while the library instruction for E-books & E-learning is appreciated more at FDU, NTNU outperforms FDU in most of the other library services, as suggested by the higher average rating across all services.

Table 3-2 Range of ILE programs and their perceived importance amongst respondents: FDU vs. NTNU

	FDU	NTNU	p-value
Library instruction (catered for e-books & e-learning)	4.48 (SD=0.671)	4.30 (SD=0.784)	$p < .05$
Course assignment consultation	4.10 (SD=0.975)	4.09 (SD=0.815)	$p > .05$
Library orientation	4.06 (SD=1.037)	4.04 (SD=0.914)	$p > .05$
Research (thesis/dissertation/final year project) consultation	3.98 (SD=0.828)	4.27 (SD=0.798)	$p < .05$
Database instruction (e.g., database retrieval through face-to-face with a hands-on practice)	3.94 (SD=1.018)	4.25 (SD=0.784)	$p < .05$
General library tour	3.73 (SD=1.031)	4.16 (SD=0.781)	$p < .05$
Subject-specific library courses (e.g., writing skills)	3.96 (SD=0.928)	4.07 (SD=0.912)	$p < .05$
Information literacy instruction	3.88 (SD=0.784)	4.02 (SD=0.924)	$p < .05$
Virtual reference services (Ask a librarian)	3.75 (SD=1.186)	4.04 (SD=0.894)	$p < .05$
Total average	3.98	4.13	

(5-point Likert scale)

3.4.3 Reasons Why Students Did Not Participate in Information Literacy Programs

Question 3 asked student participants why they did not participate in the ILE programs offered by their respective university libraries. The survey results indicate that there were very small differences between NTUT and FDU in this area. For FDU students, the top three reasons for not participating in ILE were: (1) “I can find information on my own,” (2) “I am not well informed about the details of ILE programs other than library orientation,” and (3) “I am not interested.” In contrast, students at NTNU gave the

following reasons for not attending library programs: (1) “I am not well informed,” (2) “They always conflict with my class time,” and (3) “I do not know when these ILE programs are held” (see Table 3-3).

Students were asked about various possible reasons, and the statistical significance of differences in their responses was assessed using p-values. The notion of students being not well informed by the details of ILE programs shows no significant difference between FDU and NTNU ($p > .05$). Students' interest in ILE programs but lack of knowledge about when these are conducted is similarly perceived at both universities ($p > .05$). FDU students believe they can find information by themselves significantly more than NTNU students do ($p < .05$). The issue of ILE programs clashing with students' class schedules is significantly more concerning to NTNU students than to FDU students ($p < .05$). The perception of ILE programs as boring shows no significant difference between the two universities ($p > .05$). There's also no significant difference for the vague “I don't know why” response ($p > .05$). The belief that ILE programs are not useful also shows no significant difference between FDU and NTNU students ($p > .05$).

Table 3-3 Reasons Why Students Don't Take Part in ILE Programs: FDU vs. NTNU

	FDU	NTNU	p-value
I am not well informed by the details of the ILE programs that are provided by the University Library (except library orientation)	3.34 (SD=1.236)	3.38 (SD=1.064)	$p > .05$
I am interested in, but I do not know when these ILE programs are conducted	3.23 (SD=1.074)	3.19 (SD=1.085)	$p > .05$
I can find information by myself	3.42 (SD=1.081)	2.92 (SD=1.028)	$p < .05$
I want to go; they always clash with my class schedule	2.95 (SD=1.276)	3.21 (SD=1.031)	$p < .05$
The topics/format of the ILE programs look boring	2.77 (SD=1.180)	2.77 (SD=1.171)	$p > .05$
I don't know why	2.74 (SD=1.032)	2.54 (SD=1.091)	$p > .05$
I don't think they are useful for me at all	2.43 (SD=1.238)	2.27 (SD=1.144)	$p > .05$
Total average	2.98	2.89	

(5-point Likert scale)

3.4.4 Different Marketing Strategies for Promoting ILE Programs

Questionnaire item number 4 asked respondents to rate the effectiveness of various outreach and marketing strategies for promoting the ILE programs initiated by FDU and NTNU. The survey results indicate that FDU students considered the following to be the most effective ways to encourage them to participate in the ILE programs: (1) “Send mass

emails to all students,” (2) “Ask professors to encourage students to participate,” and (3) “Put up posters around campus. On the other hand, (1) “Make announcements on the homepage of the university library,” (2) “Ask professors to encourage students to attend”, and (3) “Put up posters throughout the campus” were considered most effective by the NTNU student respondents (see Table 3-4). Interestingly, students at both FDU and NTNU indicated that involving their professors to “encourage” them to participate in ILE programs could be one of the most effective ways to promote/market their ILE services (see Table 3-4).

The idea of giving cash coupons to students who attend library workshops is significantly more favored at NTNU than at FDU ($p < .05$). This indicates that students from both universities have similar opinions about the effectiveness of these outreach methods. The opportunity for students to earn academic credits by attending workshops is significantly more popular at NTNU ($p < .05$). The method of having professors invite librarians to teach workshops in the classroom is also significantly more favored at NTNU ($p < .05$). Sending batch emails or awarding gifts to the highest scoring students doesn't have a significantly different approval rate between the two universities ($p > .05$). Making it mandatory for students to attend workshops is significantly more approved at NTNU ($p < .05$). This suggests that students' opinions about the effectiveness of these marketing strategies differ between the two institutions.

Table 3-4 Ways for Promoting ILE Services and Their Perceived Effectiveness: FDU vs. NTNU

	FDU	NTNU	p-value
Put up posters throughout the entire campus	3.75 (SD=1.146)	4.23 (SD=0.708)	$p < .05$
Ask professors to encourage the students to attend	3.88 (SD=1.089)	4.00 (SD=1.035)	$p < .05$
Make announcements on university library homepage	3.71 (SD=1.064)	3.93 (SD=0.979)	$p > .05$
Send batch emails to all students	3.90 (SD=1.005)	3.91 (SD=1.040)	$p > .05$
Send the SMS messages (via mobile phone)	3.73 (SD=1.115)	3.84 (SD=1.066)	$p > .05$
Send messages via online social networking platforms/Apps	3.59 (SD=1.268)	3.70 (SD=1.133)	$p > .05$
Total average	3.76	3.93	

(5-point Likert scale)

3.4.5 Incentives for Attracting Students to Attend ILE Programs and Their Perceived Effectiveness

Questionnaire item number 5 asked students to indicate which incentives would be considered more effective in attracting them to participate in ILE programs. The survey results show that students at NTNU preferred to be rewarded with cash vouchers after attending the library workshops. On the contrary, students at FDU preferred to receive (academic) credits instead (see Table 3-5). According to the NTNU librarian, the NTNU library already has a tradition of rewarding students with small incentives (small souvenirs) for attending their library workshops.

The results show no significant differences between the two universities for awarding gifts to the highest scoring students ($p>0.05$). This suggests that students from both universities have similar opinions about the effectiveness of this incentives in attracting them to participate in ILE programs.

However, the idea of giving cash coupons to students who attend library workshops is significantly more favored at NTNU than at FDU ($p<0.05$). The opportunity for students to earn academic credits by attending workshops is significantly more popular at NTNU ($p<0.05$). The method of having professors invite librarians to teach workshops in the classroom is also significantly more favored at NTNU ($p<0.05$). Making it mandatory for students to attend workshops is significantly more approved at NTNU ($p<0.05$). In particular, FDU students do not agree with this incentive.

Table 3-5 Incentives for attracting students to attend ILE programs & their perceived effectiveness– FDU VS NTNU

	FDU	NTNU	p-value
Students will be given cash coupons after attending the library workshops	3.33 (SD=1.098)	4.37 (SD=0.858)	$p<0.05$
Students can earn credits (like other academic courses) after attending the workshops	3.90 (SD=1.188)	4.30 (SD=0.865)	$p<0.05$
Professors invite the reference librarians to teach library workshops inside the classrooms in person instead of waiting for the students to join	3.67 (SD=1.098)	4.00 (SD=0.906)	$p<0.05$
Students who get the highest scores will be awarded with gifts	3.42 (SD=0.977)	3.58 (SD=1.034)	$p>0.05$
Professors make it mandatory for the students to attend to the workshops	2.92 (SD=1.278)	3.30 (SD=1.309)	$p<0.05$
Total average	3.44	3.91	

(5-point Likert scale)

3.4.6 Students' Perceptions Towards Professional Competence of Reference Librarians

Students at both FDU and NTNU were asked to rate the professional competence of the reference or ILE librarians. The survey results show that the NTNU librarians received relatively high scores in the following three areas: service-oriented (score 4.39), friendly (score 4.35), and helpful (score 4.32). On the other hand, FDU librarians were described by student respondents as helpful (score 4.13), service-oriented (score 3.96), and friendly (score 3.94). In fact, Jacoby and O'Brien (2005) found that the friendliness of the reference staff was one of the best predictors of students' confidence in their ability to find information on their own. Interestingly, the reference librarians at both FDU and NTNU received comparatively low scores in the following three areas: (1) engaging, (2) interesting, and (3) creative. The total mean scores for FDU and NTNU were 3.65 and 3.96, respectively, indicating that NTNU students generally rated the professional competence of their reference or ILE librarians higher than FDU students.

The results indicate significant differences between the two universities for most of the attributes, the p-value is less than 0.05. This indicates that students' opinions of librarians' professional competence differ between the two institutions. In terms of being service-oriented, NTNU librarians received a significantly higher rating than

FDU librarians ($p < .05$). When it comes to being helpful, NTNU were also rated significantly higher ($p < .05$). NTNU librarians received significantly higher ratings for being friendly ($p < .05$). For being patient in listening to needs and giving supportive guidance, NTNU librarians were rated significantly higher ($p < .05$). Professionalism was another area where NTNU received significantly higher ratings ($p < .05$). NTNU staff were rated significantly more intellectual ($p < .05$). Efficiency at work did not significantly differ between the two universities ($p > .05$). There was no significant difference in the outgoingness of the staff at the two universities ($p > .05$). NTNU librarians received significantly higher ratings for being creative ($p < .05$). NTNU staff were rated as significantly more interesting ($p < .05$). The two universities did not significantly differ in how engaging the staff were ($p > .05$). For the ability to understand student needs, even when they are not good at expressing themselves, NTNU staff received significantly higher ratings ($p < .05$).

Table 3-6 Students Perceptions Toward Reference Librarians: FDU vs. NTNU

	FDU	NTNU	P-value
Service-oriented	3.96 (SD=1.076)	4.39 (SD=0.818)	$p < .05$
Helpful	4.13 (SD=0.991)	4.32 (SD=0.827)	$p < .05$
Friendly	3.94 (SD=1.018)	4.35 (SD=0.767)	$p < .05$
Patient in listening to my needs giving supportive guidance	3.84 (SD=0.987)	4.26 (SD=0.877)	$p < .05$
Professional	3.82 (SD=1.090)	4.16 (SD=0.862)	$p < .05$
Intellectual	3.71 (SD=0.965)	4.07 (SD=0.821)	$p < .05$
Efficient at work	3.78 (SD=1.026)	3.88 (SD=1.001)	$p > .05$
Outgoing	3.41 (SD=0.920)	3.68 (SD=0.985)	$p > .05$
Creative	3.29 (SD=1.054)	3.60 (SD=0.842)	$p < .05$
Interesting	3.27 (SD=1.031)	3.60 (SD=0.923)	$p < .05$
Engaging	3.31 (SD=1.056)	3.44 (SD=0.964)	$p > .05$
They always know what I need, even though I am not good at expressing myself	3.37 (SD=0.958)	3.82 (SD=1.037)	$p < .05$
Total average	3.65	3.96	

(5-point Likert scale)

3.4.7 Satisfaction Toward the Overall Scope and Contents of ILE Programs

Participants were asked to rate the overall scope and content of the ILE programs using a five-point Likert scale. Although a majority of the FDU students agreed that the overall content of the ILE programs was clear and easy to follow (score 4.04), many of them did not find these programs to be very useful and relevant to their current research/assignments (score 2.78) (see Table 3-7). However, many NTNU respondents agreed that library orientation is helpful in creating a positive image of their university library and its services among students (score 4.04). Interestingly, NTNU students also

disagreed that the overall content of the ILE programs was relevant to their research and learning (see Table 3-7).

In table 3-7, comparisons are being made between FDU and NTNU on various parameters related to the library and its services, with a p-value of less than 0.05 considered statistically significant. FDU had slightly better content clarity and simplicity of following than NTNU ($p < .05$). NTNU students found the library orientation more helpful in promoting the University Library and its services than FDU students. This difference was statistically significant ($p < .05$), showing a real difference between the two universities. Both universities rated the University Library's ILE programs similarly, and the difference was not statistically significant ($p > .05$), indicating similar satisfaction levels. FDU's materials were more relevant and valuable to current research/assignments than NTNU's. FDU's content may be more relevant to students' current research or tasks than NTNU's ($p < .05$). The total average ratings of all the factors considered were almost similar at both universities with FDU having an average rating of 3.58 and NTNU with 3.55.

Table 3-7 Level of Satisfaction Towards Scope and Contents of ILE Programs: FDU vs. NTNU

	FDU	NTNU	p-value
Overall content is very clear and easy to follow	4.04 (SD=0.929)	3.95 (SD=0.796)	$p < .05$
Library orientation is helpful in terms of building a positive image of about the University Library and its services amongst the students	3.86 (SD=0.960)	4.04 (SD=0.755)	$p < .05$
Overall quality of the ILE programs provided by the University Library is satisfied	3.65 (SD=1.092)	3.63 (SD=0.837)	$p > .05$
Overall contents are very useful and relevant to my current research/assignments	2.78 (SD=1.035)	2.58 (SD=0.837)	$P < .05$
Total average	3.58	3.55	

(5-point Likert scale)

3.4.8 How Much Students Value the Importance of ILE Programs

Questionnaire item number 8 was designed to examine the extent to which student respondents valued the importance of ILE programs. The survey results indicate that students at both FDU and NTNU felt that “ILE workshops should be made mandatory for students to attend by the faculty. In particular, FDU students felt that “ILE is one of the most important parts of students' overall learning at the university. Nevertheless, NTNU students still thought that they could “make good use of the library resources even if they do not actively participate in the ILE programs” (see Table 3-8).

The data uses a two-sample t-test with the presumption of different variances to compare student opinions on ILE at FDU and NTNU. FDU rated faculty-mandated ILE seminars higher than NTNU ($p < .05$). FDU students may value mandatory ILE workshops more.

FDU rated ILE as an important aspect of university learning significantly higher than NTNU ($p < .05$). FDU students may value ILE higher in their university education. NTNU was more optimistic than FDU that students can access library resources even if they don't participate in ILE programs. NTNU students may feel more confidence using library resources independently due to this statistically significant difference ($p < .05$). Both colleges' students assessed the value of mastering ILE before graduation as equal ($p > .05$), demonstrating a shared sense of its relevance. The overall mean scores for FDU and NTNU were 3.91 and 3.89, respectively, indicating that students from both universities have similar overall perceptions of the importance of ILE programs, with FDU students rating the importance slightly higher than NTNU students.

Table 3-8 Perceptions Toward ILE Programs: FDU vs. NTNU

	FDU	NTNU	p-value
ILE workshops should be made mandatory for students to attend by the faculty	4.20 (SD=1.154)	4.05 (SD=1.085)	$p < .05$
ILE is one of the important parts of students' overall learning in the university	4.06 (SD=0.937)	3.95 (SD=0.718)	$p < .05$
Students can still make good use of the library resources, even they do NOT take part actively in the ILE programs actively	3.86 (SD=1.084)	4.04 (SD=1.054)	$p < .05$
All students should understand what ILE is before the graduation	3.53 (SD=0.881)	3.53 (SD=0.854)	$p > .05$
Total average	3.91	3.89	

(5-point Likert scale)

3.4.9 What First Thing Came to Respondents' Mind During Information Searching

Question 6 asked student respondents if they were unable to find materials (e.g., a book or research article) to complete their research/assignments, what would be the first thing they would think of. The survey results indicate that for FDU students, the top three ways to find the information were: (1) "via Google," (2) "ask the university librarians," and (3) "ask professors." In contrast, students at NTNU reported the following ways to find the information: (1) "Via Google," (2) "Ask the university librarians," and (3) "Ask my classmates" (see Figure 3-5). In short, Google was reported to be the most popular among participants at both FDU and NTNU.

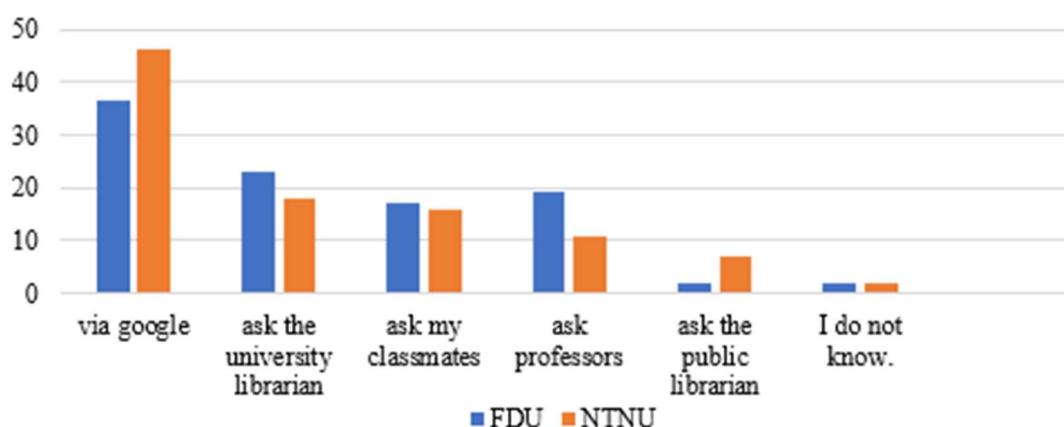


Figure 3-5 What First Thing Came to The Students' Mind When They Were Unable to Find Materials to Conduct Their Research/Assignments: FDU vs. NTNU (%)

3.4.10 Students' Comments on ILE and Library Services

At the end of the questionnaire, I asked respondents to fill out comments about the ILE or library services. FDU students mentioned that they are reluctant to ask librarians for help because librarians look busy. Also, ILE should be made more fun and interesting (e.g., using games in ILE) to enhance students' learning. Similarly, a report by ACRL (2015) pointed out that multiple ILE sessions or activities related to a course are more effective than one-time instruction sessions. When librarians design ILE, they should think about the process of how students write papers. That would be a better course for users, like a course specifically on a research project, because it is easier to explain how to approach the assignment rather than talking about general resources, and it would be more related to their learning process. This will be helpful for the library's contribution to students' learning and research.

The students from the two universities pointed out that more promotion is needed for ILE. Most of the time, students do not participate in ILE because they do not know the information well. To attract more students to participate in ILE, cooperation with faculty members and student committees is needed, and updating the information on the TV screens outside the library can be an effective way.

Table 3-9 Students' Comments from Fudan University

	Respondents' information	Comments
1.	Female/Bachelor	According to the characteristics of each College, the library should organize specific ILE for the various College systematically.
2.	Female/Bachelor	Service attitude needs to be improved.
3.	Female/Bachelor	The ILE programs need to be more entertaining and interesting.

4.	Female/Bachelor	I am hesitant to go to the tailor-made IL instruction since it is kind of troublesome for the busy librarians.
5.	Male/Bachelor	Make it fun, so users will become interested in the ILE.
6.	Female/Master	Open more specific courses for different majors.
7.	Female/Master	More promotion needed about databases on the library homepage.
8.	Female/Master	Book updates are not enough
9.	Female/Master	More ILE programs for freshmen.
10.	Female/Master	Management model needs to be improved.
11.	Female/Master	More ILE promotion activities should be carried out to let students know.
12.	Female/Master	More information retrieval courses needed.
13.	Female/Master	More ILE activities.
14.	Female/Master	More activities like book-talk meeting.
15.	Female/Master	Book classification hope to do better.
16.	Male/Master	More ILE promotion needed.
17.	Male/Master	ILE should be flexible in time.

Table 3-10 Students' comments from the National Taiwan Normal University

	Respondents' information	Comments
1.	Female/ Bachelor	More ILE promotion should be need.
2.	Female/ Bachelor	Library is very good and has many resources, but more promotion would be better.
3.	Female/ Bachelor	The services of the part time students are lack of passion for services.
4.	Male/Bachelor	More promotion to let the users known
5.	Male/Bachelor	The library open time should be longer
6.	Female/Master	Promote the library services and resources to make the best use. Most of the time is that not the students have no interest, but they don't well know about library.
7.	Male/Bachelor	Library has many functions and services, and

		they are easy to use so ILE is not always necessary.
8.	Female/Master	It is highly advanced and modernized. A conducive environment for learning indeed.
9.	Female/Master	The library really buys a lot of electronic resources. That is really helpful. Proud of our library.
10.	Master	It's quite and I like study here.
11.	Female/Master	Update the information on screen outside library is effective way
12.	Female/Master	Their teaching added further value to the openly downloadable instruction notes.
13.	Female/Master	More space, more discussion rooms, better decoration and ILE instruction of location is better for users.
14.	Male/Master	More promotion would be needed especially for ILE

3.5 Discussion

To continually improve services, library administrators must understand the priorities and preferences of the users they serve. The survey results show that the student respondents at both FDU and NTNU came from diverse backgrounds and possessed a variety of knowledge and skills. The diversity of learning needs and expectations among students, as they came from different academic disciplines, levels of motivation, interests, and levels of study, will be discussed in detail in the following sections.

3.5.1 Survey Respondents: Gender Ratio, Academic Disciplines, and Level of Study

Regarding the gender distribution, a significant proportion of participants from both academic institutions were identified as female, as presented in Table 3-1. According to previous research conducted by Funmilayo (2013) and Bassi and Camble (2011), it was found that there was no statistically significant disparity between male and female students with regard to their utilization of library resources. In addition, research would be needed to determine why most student respondents in the current study were female. The gender breakdown of the questionnaire respondents largely paralleled the “general” phenomenon—that is, the students who tend to frequent the library are often female. In addition, a larger percentage of NTNU respondents were studying LIS at the postgraduate level (see Table 3-1). Librarianship has traditionally been a female-dominated profession (Lupton, 2006). Even as the LIS professions are expanding and becoming more diverse, along with the increased participation of men in the profession, the results indicate that the students choosing to enroll in these MLIS programs are still predominantly female, and there is no exception for NTNU. The gender breakdown of the respondents to the questionnaire was largely in line with the “general” perception of the LIS profession as a “feminine” profession or one associated with women. According to Dickson (2002, p. 105), men mostly choose to enter LIS as a last resort to avoid being seen as “unqualified

for a position in a traditionally male profession.”

For the NTNU students, since they were postgraduate students in different academic disciplines, due to the nature, requirements, and academic or student level of their research and assignments, they needed more assistance from the librarians to teach them how to use databases (i.e., step-by-step instructions with practical exercises) to conduct proper “postgraduate level” research (see Table 3-3). This also explains why, when NTNU students were unable to find materials to complete their research/assignments, many of them turned to their professors or the university librarians for help or guidance and were now less dependent on Google than most FDU students (see Figure 3-1). In contrast, for FDU respondents, the library catalog (OPAC) was not always the first resource they would consult to complete their research or assignments (see Figure 3-1). The majority of the FDU respondents were at the undergraduate level, 10 were business and economics majors and nine were engineering majors (see Table 3-1). Because of their academic disciplines and their different levels of study (mostly undergraduate), they did not need to conduct in-depth research writing, besides they can always find the latest information and scholarly publications from Google and/or OPAC. According to Posey (2009), the information-seeking behavior of library users based on “convenience over quality” is alarming to librarians (p. 12). This trend has intensified as more academic libraries have adopted the internet-centric model for delivering information to users. In fact, since 1996, “face-to-face” reference transactions have declined as internet information gateways have become more popular (Thompson et al., 2007, p.456). According to the University of California Libraries, “Students expect simplicity and instant gratification, and Amazon, Google, and iTunes are the standards by which libraries are judged (Kenny, 2002, p. 7). Academic libraries have undergone a paradigm shift to improve the quality of their services in response to the serious threat posed by the Internet, particularly Google Scholar, to remain competitive.

The results are also found in the study by Collins and Stone (2014). They found several statistically significant differences in various dimensions of use between both high-level disciplinary groupings and lower subject-level groupings. While music students are heavy library users within the arts subject-level grouping, arts students use library resources less than those in social science disciplines, contradicting findings from studies at other institutions. Also, many studies have found that engineering students are the least engaged library users across all resources (Nackerud et al., 2013; Obasuyi & Idiodi, 2015). Investigating the impact of library value on students' education, it was found that there is a significant difference in library value on students' education based on their department. The resulting differences may be due to the level of development of information resources and services provided in different libraries, as perceived by students. In assessing the performance of libraries in Syria, Restoum and Wade (2013) obtained a similar result, indicating differences in the level of satisfaction of students based on their faculty.

3.5.2 Library Digital Resources and Relations to Students' Learning Levels/Needs/Modes

The survey results show that the student participants at both NTNU and FDU considered the workshops on e-books and e-learning to be the most important of all the ILE programs offered (see Table 3-2). The findings suggests that students from both universities heavily depended on the digital resources offered by their respective academic libraries. These resources were utilized not only for research-related tasks such as assignment writing, but also to supplement their overall formal education. Hence, the student participants

possessed a comprehension of the significance of identifying, locating, assessing, and proficiently utilizing the information resources furnished by their respective university libraries. The ILE librarians at both NTNU and FDU were also aware of the needs and expectations of their student users. As a result, they invested a lot of manpower and resources in organizing workshops focusing on the use of e-resources. For example, 50% of the library workshops organized by NTNU and FDU are focused on e-resources. Such findings were also supported by the University of Maryland University College, where a survey was conducted to examine trends in library use—and the largest percentage of respondents indicated that remote access to electronic resources was the most useful service (Kelly & Orr, 2003).

Furthermore, the results also show that the student participants at NTNU (the majority of whom were PhD students), due to their level of study, considered the following to be the most important parts of the ILE programs, for example, research (thesis/dissertation/final year project), consultation, database instruction (e.g., database retrieval through direct face-to-face instruction with hands-on exercises). Rudner et al. (2002) also reported that graduate students are among the heaviest users of electronic journals. In addition, Rudner's (2002) study found that graduate students tended to be heavy users, consulting electronic journals extensively when conducting research for their theses or dissertations. Therefore, graduate students at NTNU considered research consultation and database instruction to be more important to them, while undergraduate students tended to rely less on the library for research. As Fleming-May and Yuro (2009) further explain, graduate students are more likely to use electronic journals and digital theses or dissertations than undergraduate students for the purpose of learning proper academic writing style, identifying research gaps, understanding the current state of others' research, as well as familiarizing themselves with different techniques for data collection and analysis, etc. Such findings also support another study by Washington-Hoagland and Clougherty (2002), who also reported that graduate students at the University of Iowa recognized the importance and necessity of participating in the e-resource-oriented workshops and were constantly looking for more opportunities for ILE tailored specifically to their level, since much of their research and assignments depend heavily on the latest scholarly publications and other resources available in online format.

Conversely, FDU students rated the perceived importance of research advice and database instruction significantly lower than their NTNU counterparts. The observed variation could be attributed to the demographic composition of the surveyed FDU students, who were primarily undergraduates hailing from business and engineering disciplines (see Table 3-1). The information needs, learning styles, research methods, and assignment requirements of non-liberal arts students differ notably from those of their liberal arts counterparts. These differences in academic background and level of study could potentially influence students' perceptions of the importance of certain IL programs, highlighting the need for tailored approaches to meet different IL needs.

Analyzing the ILE programs at FDU and NTNU using the AARRR model provides insights into their effectiveness. In terms of acquisition, better communication, and promotion of the ILE programs at NTNU may have contributed to students valuing them more highly compared to FDU students. This suggests that NTNU has been more successful in attracting students to its programs. Regarding activation, students' initial engagement with ILE programs seems to be stronger at NTNU, as evidenced by the higher

value placed on “research consultation” and “database instruction.” This implies that NTNU's programs have a stronger impact on students' IL skills. Regarding retention, it can be inferred that programs with higher perceived importance may lead to better retention of students in IL programs. In this context, offering “library instruction” and “course assignment consultation” at FDU and “research consultation” and “database instruction” at NTNU could potentially improve retention rates. By examining the ILE programs at both universities through the lens of the AARRR model, a more comprehensive understanding of their effectiveness and areas for improvement can be gained, ultimately enhancing the overall learning experience for students.

3.5.3 Respondents' Ratings Towards Overall Quality of ILE Programs

According to the librarians, the two university libraries do not conduct regular user satisfaction surveys on their ILE programs for various administrative and staffing reasons. To assess the degree of contentment among students, a survey was conducted wherein the participants were requested to evaluate the general caliber and substance of the ILE programs by means of a five-point Likert scale. In general, the students at both universities expressed contentment with the quality of the ILE programs provided by their respective libraries. Many FDU students agreed that the overall content of the ILE programs was “very clear and easy to follow.” Meanwhile, many respondents at NTNU agreed that such programs were “helpful in creating a positive image of the university library and its services among students” (see Table 3-7). However, many students at both universities did not agree that the overall content was useful and relevant to their current research and assignments, which means that the purpose of the ILE has not been achieved and the students' needs and expectations in this regard have not yet been fully met (see Table 3-7). Heath et al. (2004) suggested that the expectation of convenience among library users may also contribute to this tendency, as evidenced in their evaluation of online information access by students within an academic library. Given that there were relatively many MLIS students in the NTNU group surveyed, it is natural and logical that many of these MLIS students consider themselves already effective and independent library users. Therefore, they think that programs are good for building a positive image, but not useful. Therefore, more attractive incentives need to be provided to attract students to participate in ILE programs. It would be interesting to conduct further research to examine MLIS students' perceptions of ILE, as many of these MLIS students are expected to be skilled users of library resources.

The survey results show that despite the clarity and ease of understanding of the ILE programs at both universities, students perceive them as lacking relevance and usefulness to their current research or assignments. To enhance the uptake and preliminary involvement of students, it is advisable for universities to revise the content of their ILE programs to ensure congruence with the academic requirements of students. This can be achieved by integrating practical illustrations, case studies, and experiential exercises that are customized to their preferences. Furthermore, students who perceive ILE programs as pertinent and valuable are inclined to endorse them to their colleagues, leading to a rise in word-of-mouth recommendations. Through the effective resolution of students' apprehensions regarding the practicality and pertinence of academic programs, universities can augment student engagement, refine research proficiencies, and elevate scholarly accomplishments, culminating in heightened levels of student achievement.

Furthermore, the librarians at both universities have conveyed that it is imperative for

them to remain up-to-date and pertinent with the swiftly evolving instructional technologies and research or learning trends of the university community, due to the constantly changing information needs and behaviors of students, as well as the information explosion and its influence on the publishing industry.

Analysis of the ILE programs and library services at FDU and National NTNU using the AARRR model reveals potential areas for improvement. To improve acquisition, both institutions should focus on regularly updating their English websites and providing information equivalent to their Chinese counterparts. Collaboration with faculty members and student committees can also help to better promote ILE programs. In terms of activation, FDU and NTNU should ensure that their ILE programs are engaging, relevant, and tailored to students' needs by offering courses on research projects, academic writing support, and hands-on activities. Addressing the concerns and suggestions raised in the survey and comments section, such as making the programs more entertaining, offering multiple ILE sessions tied to a course, and ensuring that librarians are accessible, can contribute to higher retention rates. In addition, creating a positive student experience can increase word-of-mouth referrals. By addressing concerns and suggestions, improving promotional efforts, making ILE programs more engaging and relevant, and ensuring librarians are available to help, universities can increase participation, improve research skills, and contribute to better academic outcomes for students.

3.5.4 Incentive Strategies for Encouraging Students to Attend ILE Programs

According to FDU and NTNU librarians, they also tried different incentive strategies to attract more students to their ILE programs. Survey results showed that giving students cash vouchers was the most attractive incentive for NTNU students. Meanwhile, students at FDU indicated that they strongly preferred to receive academic credit for attending the library workshops (See Table 3-5). When students were asked why they were not interested in participating in library programs, a large proportion of NTNU respondents stated, "I want to go, but they (library workshops) always conflict with my class schedule" (see Table 3-3). According to a separate study conducted by Hoffmann et al. (2008), students do not have sufficient time to enroll in ILE programs due to their heavy course loads. To resolve this issue, the authors suggested that ILE programs be offered at various times to accommodate students' varied schedules. To address this issue, the FDU Library established the online ILE programs. In this way, FDU students can participate in ILE programs online when they have time. NTNU Library is also in the process of creating an online ILE program to achieve a similar purpose.

Although the FDU Library invests a great deal of staff time and effort in making its IL instruction available online, survey results indicate that these programs are not well known among FDU students. As Posey (2009) pointed out, the digital trend has increased, and more and more academic libraries are adopting the Internet-centric model of delivering information and IL to users. According to Yi (2016), libraries need to find effective ways to promote their services and resources to patrons to attract patrons, create awareness among non-users, and raise awareness of available services and resources. Indeed, "academic library websites serve as gateways that support the library's research and educational needs" (Posey, 2009, p. 37). According to Yi (2016), in the current digital environment, online media techniques (e.g., library websites and online social media tools/platforms) were found to be the most effective for promoting library services and resources, including ILE. As a result, NTNU and FDU should develop as many channels

and new approaches as possible to promote ILE to make it more visible, engaging, and accessible to students.

Universities around the world have used a variety of approaches to market ILE programs. The survey results show that students at NTNU preferred to be rewarded with cash vouchers after attending the library workshops. In contrast, students at FDU preferred to receive (academic) credits instead. According to the NTNU librarian, the NTNU library already has a long tradition of rewarding students with small incentives (giving them small souvenirs, e.g., supermarket coupons or action figures from comics or movies, etc.) for attending their library workshops. In addition, it would be good if the faculty members could give us their class time to offer the orientation, some workshops, and to design the courses according to their needs, so that they could see the relevance of what they have learned and then apply their IL skills to their assignments and their studies. However, NTNU Library has not yet started ILE programs for credit as other academic courses. Further research would be needed to determine the reasons why FDU students preferred to receive credits after attending the ILE programs.

Duke and Tucker (2007), Critz, et al. (2012), and Yi (2016) all emphasized the importance of good marketing for library programs and the importance of tailoring programs to meet the needs of students. In this study, interviews with librarians at FDU and NTNU also emphasize that how to promote services to all users is a very important challenge, because young people have a different online environment and preferences compared to about ten years ago due to the rapid growth of information needs and communication and digital technologies. In addition, students at both universities reported that they did not find the programs interesting, creative, and engaging (see Table 3-6). According to Beetham and White (2014), students have a wide variety of digital and learning practices. They have unclear ideas about how they will learn at university and what constitutes legitimate learning practices, especially digital practices, in a university context. University libraries need to be proactive in managing students' ideas and expectations about their university experience, including expectations about the digital learning environment. Students want more guidance about academically credible sources and academically legitimate uses of online content. Students value experience with workplace technologies and research-like digital practices. Because they are so accustomed to the digital environment, so accustomed to multimodal ways of learning (Jenkins, 2006), they are so accustomed to communication practices in terms of textual, aural, linguistic, spatial, and visual resources or modes, etc. However, the traditional ILE is one-dimensional and non-interactive, so students find it neither interesting nor engaging. As a result, if students' interest and attention cannot be sustained (they feel bored), they would simply not return to take part in more programs organized by the library. As Hernon et al. (1999, p. 10) emphasized, "We [librarians] must create educational experiences that students want to participate in, not just endure." Edgar (2006) explained that if the academic library does not provide quality services such as convenient patron access, reference assistance, library instruction..., students will often act on their own perceptions to quickly abandon the services, even if the essence of the services are there. If their essential services are not provided, students will gradually perceive this underlying reality and abandon the library.

The revenue aspect of the AARRR model, as applied to ILE, can be interpreted as the rewards or incentives that motivate students to participate in ILE programs. By understanding the types of incentives that are most appealing to students, educators can

help universities attract more participants and increase the perceived value of ILE programs. By identifying incentives that appeal to students, educators can help universities attract more participants and increase the perceived value of ILE programs. Incentives can also influence initial engagement, as students who are rewarded with cash vouchers or academic credits may be more likely to participate and actively engage in learning, recognizing the benefits of ILE programs early on. In addition, offering incentives can contribute to higher retention rates, as students who continue to see value in ILE programs through cash vouchers or academic credits may attend multiple sessions and develop their IL skills over time. Incentivized students may also be more likely to share their positive experiences with their peers, leading to increased word-of-mouth referrals. By creating rewarding experiences, universities can leverage student networks to attract more participants.

In the case of NTNU and FDU, student responses revealed different incentive preferences. While NTNU students preferred cash vouchers after attending library workshops, FDU students were more inclined to earn academic credit (see Table 3-5). This variation suggests that understanding the specific context and preferences of the target audience is critical to designing effective incentives for ILE programs. By addressing the revenue aspect of the AARRR model in this way, educators can design ILE programs that are more appealing to students, ultimately leading to increased participation, engagement, and learning outcomes.

Quality service is defined as the timely delivery of services and more than what the user requests (Nitecki, 1996). In other words, the service must deliver the expected product at the expected time (Pritchard, 2001). Although the students at FDU indicated that e-mail announcements are the most effective way to get them to attend library programs because program schedules and other information can be delivered to all students in a timely manner, the reality is that most students simply do not read batch e-mails sent from their university's central system. In summary, the most effective ways to attract students to participate in ILE programs can be summarized as follows:

(1) Work with student associations (both undergraduate and graduate) to promote library resources and services, as well as the wide range of ILE programs, to support their learning and research needs.

(2) As Posey (2009) pointed out, in the emerging days of the virtual library, web presence, convenience, and timeliness are considered success factors (p. 38). To use online social networking applications (commonly used by students) to publicize their ILE programs. WeChat and Weibo are the predominant online social networking platforms in mainland China, with a particular appeal to the younger population. With the aim of maximizing outreach to students through online platforms, the FDU Library implemented the Weibo and WeChat services in 2011 and 2014, respectively. Facebook is prohibited on the Chinese mainland for political reasons. The opposite is true in Taiwan. In 2009, the NTNU Library also launched a Facebook page to interact with its students. The content of the NTNU Library's Facebook page is updated almost daily. By using Facebook, NTNU librarians can improve their presence and communication with the student community in a virtual way, although Facebook is not as interactive and engaging compared to other online networking applications (e.g., LINE, WeChat, Weibo, WhatsApp, etc.).

3.5.5 Expected Professional Competence and Attitudes of ILE Librarians in the Digital Age

Undoubtedly, students' perceptions of the service attitudes of reference or information services librarians could influence how willing students are to participate in ILE. As Whitlatch (1990) stated, "Librarian courtesy, interest, and helpfulness are cortical to successful service delivery. Libraries must select and retain staff who have this service orientation toward users" (p. 205). Simmonds and Andaleen (2001) identified several factors that influence user satisfaction, including responsiveness, competence and assurance, tangibles, and resources. According to Posey (2009), library users often judge their experience not only on whether they received the information they sought, but also on the service attitude, service quality, and enthusiasm of the library staff. According to Gremmels and Lehmann (2007), "Friendliness of the reference staff was one of the best predictors of students' confidence in their ability to find information on their own". The survey results showed that the NTNU librarians received higher ratings for their overall service attitude and professional competence compared to their FDU counterparts. Therefore, it can be concluded that student satisfaction with librarians is directly proportional to their reliance on the librarians' services and frequency of library use. Students appreciated using the library and its services more the more dependent they were on the librarians.

The survey results suggest that students at both universities perceive librarians as service-oriented, friendly, and helpful, which can attract students to use library services and engage in ILE programs. NTNU librarians, who scored higher in these areas, may have a stronger acquisition impact on students compared to FDU librarians. Friendly and helpful librarians contribute to initial engagement with library services and ILE programs by making students feel supported and welcomed. Increasing librarians' engagement, creativity, and ability to make programs interesting could further improve initial activation. While the survey results do not directly address retention, librarians' professional competence plays a role in maintaining student engagement. Addressing the relatively low scores in engagement, creativity, and interest may help to further improve retention rates. Students who have positive experiences with helpful and friendly librarians may be more likely to recommend library services and ILE programs to their peers. By improving librarians' professional competencies, especially in the areas of engagement, creativity, and interest, both universities could increase the likelihood of student referrals to ILE programs. The professional competence of librarians is a crucial factor in determining the return on investment for student success. This is because a higher level of perceived competence can result in greater engagement in ILE programs, better academic outcomes, and improved research skills among students.

The significance of self-efficacy in shaping the attitudes and behaviors of individuals is emphasized by the social cognitive theory. The study findings indicate a positive correlation between students' contentment with ILE librarians and the caliber of ILE programs they engage in. This association may have an impact on their self-efficacy in utilizing library resources. Additionally, the finding that the librarians at NTNU received higher ratings regarding their service attitudes and professional competencies implies that their interactions with students may have a positive impact on the students' self-efficacy. The results of this study suggest that librarians operating within ILE possess the capacity to make noteworthy contributions towards enhancing students' self-efficacy. This can be

achieved through constructive engagements and the provision of high-quality ILE programs that are customized to meet the distinct requirements of various student cohorts.

Given that ILE (information or reference services) librarians operate at the forefront of their profession, it is imperative that they possess a robust acumen in customer service, coupled with exceptional communication and marketing proficiencies. These competencies and dispositions are akin to those of a business manager. As Brunsdale (2000) noted, academic libraries must develop successful marketing plans to reach customers and thrive in an information age that emphasizes consumer convenience and competition. To do so, libraries must adopt a private-sector approach. Meanwhile, the role of the librarian has evolved from information specialist to customer service provider (Posey, 2009). In other words, ILE librarians cannot afford to be intimidated by the idea that they must actively market themselves and their services to students and faculty throughout the university to draw them into the library and thereby optimize the use of available resources and services. The librarians at both FDU and NTNU also agreed that the skills and attitudes mentioned above are essential to running successful ILE programs at their respective universities. According to them, *“We as [ILE] librarians can no longer afford to just sit behind the reference desk and wait for students to come in and ask questions. Nowadays, we must spend a lot of our staff time on marketing strategies-finding different ways to reach out to students and faculty at all levels. We also have to be very flexible and not assume that one style/mode of ILE will fit all. Because users from different academic disciplines simply have drastically different learning preferences and research foci. In addition, the current digital environment and rapidly evolving communication technologies have completely changed the way our end users use libraries and access our resources. Not to forget, we are in constant competition with Google (Baidu in the case of mainland China)”*. As Posey (2009) points out, *“In the electronic age, information seekers are accustomed to instant access, increasing the need for quality library service”* (p. 13). From the perspective of these students, what is the rationale behind visiting the library when they believe that they can conveniently locate the required information on Google? According to Sadeh's (2007) report, OCLC found that most students, 89%, initiated their search for electronic information using a search engine such as Google. In contrast, only 2% of students began their search using the library's website. This preference for search engines was attributed to their perceived speed, convenience, and ease of use.

3.5.6 Close Collaborations with Teaching Staff

Many IL courses must promote the collaboration between the faculty (department) and the library, with the aim of helping students to develop these skills in order to enable them to recognize different information sources and to use information in a correct and appropriate way (Agnes & Popescu, 2010). They need to acquire a set of skills that enable them to understand what the library services are and how to use them; what are the library departments; what is the importance of the academic library in supporting research skills; how to find information sources; applying ethical principles in consulting and using information sources, etc.

The librarian supports the role of teachers by building information skills and discovering methods to integrate them into the course (Wijayasundara, 2008). In this role, librarians encourage, support and nudge faculty in setting learning priorities that ensure students develop the skills that will enable them to be effective lifelong learners in this ever-

changing and increasingly digital world. There is an ongoing need for lifelong learning.

As mentioned earlier, collaboration with faculty was considered one of the most effective ways to encourage students to participate in library-organized ILE. According to the FDU and NTNU librarians, the ultimate advantage of such collaboration is that the librarians could tailor different learning packages and/or design the content of their workshops according to the curricula taught by the faculties. As the FDU and NTNU librarians pointed out, if students could see the relevance and direct benefits of these library workshops, high attendance would be guaranteed. Another way to ensure high attendance is to make these ILE workshops mandatory for students by integrating them into their core curriculum. Survey results show that students at both FDU and NTNU indicate that involving their professors in encouraging students to attend ILE programs could be an effective way to ensure high attendance rates (see Table 3-4). Perhaps it is a cultural phenomenon, common in many Chinese (Confucian) societies, that teachers or professors have more formal authority and influence in shaping students' learning, even if the outcome of such learning is not directly reflected in their final academic results. Librarians at both FDU and NTNU should consider following the ILE model implemented by other academic libraries in North America, which is to take a more proactive step to collaborate with various faculty members on a regular basis. According to FDU and NTNU librarians, close collaboration with faculty members would be ideal, however, not all faculty members are eager to work with librarians in this format.

Academic libraries are under increasing pressure to demonstrate quality and efficiency. As Cook et al. (2003) stated, "Focusing more energy on meeting ... customer expectations are critical in today's environment." Meanwhile, the results of this study also suggest that improving students' information literacy and library skills is an ongoing effort for many librarians. Despite such challenges, ILE librarians should strive to act as IL specialists, ILE leaders, and curriculum leaders. This means working with faculty in different academic disciplines to understand their expectations for student research levels and learning needs in their respective fields. This will enable librarians to be effective partners with these faculties in developing tailored user guides that will further facilitate student interest and engagement. In other words, successful ILE is not only about teaching students how to find the information they need, but also about effective communication and liaison between librarians and students on an ongoing basis.

3.5.7 Ways to Boost the Information Literacy Education Programs' Attendance Rate

Applying the AARRR model to the reasons for nonparticipation in ILE programs at FDU and NTNU reveals opportunities for improvement that ultimately contribute to students' academic success. The survey results indicate that improved communication and marketing of ILE programs at both universities is critical to making them more accessible and appealing to students. By offering orientation sessions, hands-on workshops, and online tutorials, the universities can demonstrate the benefits of ILE programs and emphasize their importance in developing students' research and IL skills. Addressing nonparticipation factors, such as providing flexible scheduling options and raising awareness about program timing, could potentially increase retention rates. In addition, promoting the benefits of ILE programs and sharing success stories may inspire students to encourage their peers to participate. By ensuring that students are well informed, offering flexible scheduling options, and demonstrating the value of ILE programs, universities can increase participation, which could subsequently lead to improved

academic performance and overall student satisfaction.

The survey results suggest that both FDU and NTNU students recognize the value of ILE workshops and believe that requiring them would be beneficial. This recognition can help universities attract more participants and emphasize the importance of ILE programs. While FDU students view ILE as a critical aspect of their overall learning experience, NTNU students believe they can effectively use library resources without active participation in ILE programs. To activate NTNU students, universities should emphasize the additional benefits of participating in ILE programs. In addition, mandating ILE workshops and emphasizing their importance in improving research and learning outcomes may contribute to higher retention rates. When students perceive ILE programs as valuable and beneficial, they are more likely to recommend them to their peers, increasing word-of-mouth referrals. Therefore, promoting the importance of ILE programs and making them mandatory can lead to increased participation, improved research skills, and improved academic performance.

The survey results suggest that effective communication strategies are critical to attracting, activating, and sustaining participation in ILE programs. The use of successful acquisition strategies, such as batch emails, announcements on the university library homepage, and the involvement of professors to encourage participation, can lead to increased student awareness and engagement with the program. Initial participation can be further increased by fostering trust and relevance through professor endorsement and effective marketing on the library homepage. While the survey does not directly address retention, consistently informing students of new ILE program offerings and updates through various communication channels can contribute to sustained engagement over time. In terms of recommendation, students are likely to recommend ILE programs to their peers if they have a positive experience, which can be facilitated by consistent communication and professor endorsement. Effective marketing and outreach strategies can enhance participation in ILE programs, leading to improved academic performance, research skills, and overall student satisfaction, thereby yielding a favorable return on investment.

The research emphasizes the significance of customizing ILE programs to cater to the distinct requirements of diverse student demographics. The investigation revealed that the academic disciplines and academic standing of students had a notable impact on their evaluations of ILE initiatives. The discovery aligns with the principles of constructivist theory, positing that learners are actively engaged in constructing their own comprehension of a given subject or concept through their unique experiences and interactions with the surrounding environment. As per the constructivist theory, the acquisition of knowledge is a dynamic process that involves active construction of information through experiential learning and interactions with the surroundings. The results of the study support this theory, as both FDU and NTNU students emphasized the importance of ILE programs in their academic journey and recognized the value of their university libraries and resources in their research and formal learning processes. In this regard, “library instruction” and “course assignment consultation” at FDU and “research consultation” and “database instruction” at NTNU could potentially contribute to higher retention rates by addressing students' individual needs and enhancing their learning experiences.

Finally, both FDU and NTNU librarians pointed out that positive word-of-mouth is

always a good way to increase attendance—that is, to create a good reputation and positive image of the library among the student community. Because students would listen to their friends about their experiences with the library, the “current customers” are the best resource to generate more students to attend the ILE programs. FDU and NTNU librarians also highlighted the following:

- 1) Positive word of mouth is the most effective advertising.
- 2) Monitor our interactions with students and always think about what their needs are first.
- 3) Offer ILE programs in different formats, modes, and time slots.

In short, be good at what we do as ILE librarians.

3.6 Conclusion

The objective of this chapter is to distinguish between the customers' perspectives regarding the anticipated ILE services and the degree to which these services have fulfilled the expectations of the students at FDU and NTNU.

Student respondents at both FDU and NTNU indicated that ILE workshops by faculty staff should be mandatory for students as part of the curriculum. The findings of this investigation also indicated a necessity for ongoing promotion of the offerings provided by this library. The findings of the questionnaire-based investigation indicate that several significant factors influenced the perceptions of student participants towards the ILE programs offered by the library. These factors include the academic disciplines of the students, their study level, and their satisfaction with the librarians. Notably, the quality and content of the ILE programs in which the students participated were strongly correlated with their levels of satisfaction.

Answer to Sub-RQ 3-1: The survey results indicate that most students at both NTNU and FDU considered ILE to be important. In addition, students at both NTNU and FDU considered e-resource workshops to be the most important of all ILE programs offered by their respective university libraries. Survey results also show that students at both universities indicated that involving their professors to encourage students to participate in ILE programs could be an effective way to ensure high participation rates. Finally, the results of this study indicate that the NTNU librarians received higher overall ratings for their service attitudes and professional competencies compared to their FDU counterparts.

Answer to Sub-RQ 3-2: Both FDU and NTNU students acknowledged the importance of ILE programs in their academic journey. FDU students felt that ILE should be a required part of their university education. However, NTNU students felt that they could make good use of library resources without actively participating in ILE programs.

Answer to Sub-RQ 3-3: Students from both universities said that they would ask their university librarians for help if they could not find the materials they needed for their research or assignments. This suggests that students at both FDU and NTNU recognize the value of their university libraries and the resources provided within their research and formal learning processes.

There exists a positive correlation between the degree of reliance of students on the ILE program and their perception of the program's worth, as well as their assessment of the

quality of library services and the service providers, specifically the ILE librarians. In addition, it is becoming increasingly important for professionals in the field of ILE, such as librarians, to exhibit their indispensability and effectiveness. In brief, the students surveyed at NTNU exhibit a slightly elevated level of engagement in inquiry-based learning within the framework of ILE, which can be attributed to the demands and characteristics of their academic discipline and educational level. Additional investigation is required to ascertain whether students in the fields of science and engineering at FDU use resources beyond the confines of the university library setting, both in print and digital form, to participate in alternative forms of inquiry-based education.

Similar to other research endeavors, this study possesses inherent limitations. The data for this study was obtained via online questionnaires administered at two university libraries located in Taipei and Shanghai. The research did not entail any supplementary firsthand observations or interviews with the student subjects to substantiate the findings. Furthermore, the research was conducted on a restricted sample size. As of September 2016, the combined enrollment of the two universities amounted to 38,193 students. The study was carried out utilizing a restricted sample of 109 students hailing from two academic institutions. Consequently, the outcomes of the survey might not accurately represent the encounters of students at other academic institutions within the identical locality. The questionnaire employs the term “library user education” to refer to the ILE activities arranged by the library. However, it is possible that others may have varying interpretations of this term, leading to ambiguity in their conceptual understanding.

Despite its limitations, this study provides insight into how students at these two universities in Asia perceived the range of ILE programs offered by their university libraries. More importantly, the findings have implications for how ILE and research services should evolve to serve this student population with needs different from traditional academic disciplines.

Chapter 4 Students' Perceptions of IL Education: A Comparative Study of Two Universities in Mainland China and Japan

4.1 Introduction

This chapter aims to use inquiry-based learning as a lens to extend the scope of this research to similar universities in Asia, namely the University of Tsukuba (UT) and Peking University (PKU). The present investigation aimed to distinguish between the perspectives of patrons regarding the nature and manner of provision of ILE services, and the degree to which these services fulfilled the expectations of students at UT and PKU. The present chapter was directed by the subsequent research inquiries:

Sub-RQ 4-1. What are the similarities and differences in students' attitudes and perceptions between the two universities (UT and PKU) toward the series of ILE programs conducted by their respective university libraries?

Sub-RQ 4-2. To what extent do these students value the ILE programs carried out by the two university libraries?

Sub-RQ 4-3. What is the degree to which students at UT and PKU integrate the ILE programs provided by their respective university libraries into their formal learning and current research practices?

The inquiries were employed in formulating the hypotheses of the investigation. The proposed conjectures were formulated in the following manner:

Sub-HP 4-1: There are differences in students' attitudes and perceptions of the importance of ILE programs between the two universities due to multiple factors.

Sub-HP 4-2: Students consider ILE as important and essential for their daily learning and research, but the level is different.

Sub-HP 4-3: There are service gaps between the students and the librarians in the ILE programs.

4.2 Overview of Study Subjects

As a multicase comparative study, a mixed research approach was used in this study. To understand the ILE in each of the two universities, I first conducted a survey of library websites and interviews with librarians to understand the situation. Interviews were also conducted with faculty and students at each university to understand the learning style and degree of integration of inquiry-based learning as background information.

4.2.1 Information Literacy Education in the University of Tsukuba

UT, located in the Ibaraki Prefecture, has 18 college clusters and schools with a total enrollment of approximately 16,476 students (9,795 undergraduate students and 6,681 graduate students as of 2015). The UT library system is dedicated to being the core of academic information through cooperation with the local community, research laboratories, and educational organizations in Japan and overseas.⁸ It consists of the Central Library and four specialized libraries—the Medical Library, the Art and Physical Education Library, the Otsuka Library, and the Library on Library and Information Science. The libraries provide a variety of services, including well-developed reference services. They continue to strengthen their collections, resources, and services to become even more attractive and reliable. The UT Libraries hold approximately 2.6 million volumes of books. It offers more than 29,954 e-books (titles), 28,970 open access electronic journals (titles) that users can freely access, and many databases such as Web of Science, SciFinder, and CiNii-Articles.

In October 1981, the UT Libraries began to create an OPAC system in the library. In May 1993, the OPAC became accessible via the internet. Through the site, students can access approximately 27,200 books and 25,700 journals from PCs in the library or research labs. On the UT Library homepage, there are tabs for “Collections,” “Services,” “Support,” “Contact,” “Alumni & Visitors,” and “Share.” Of these six content menus, three are about the ILE: Collections, Services, and Support. “Collections” is the guide for materials of the university library, “Services” is the guide for library services, and “Support” is the guide for various support and tips for using library materials and services. In the contents of the collections, there are search options. Librarians from UT mentioned that their strategic plan is this:

So far, we have helped them find materials, use databases, summarize documents, and prepare papers and presentations. These ILE are given for freshmen to seniors, goal-specific, step-by-step, and continuous. It is important that the students themselves recognize what kind of skills they need to acquire from the beginning.

According to the strategic plan, the UT Library, with the support of the National

⁸ University of Tsukuba: <http://www.tsukuba.ac.jp/en/about-university/lib-hos-lab> (Accessed on 05th June, 2016)

University Library Association, established a learning and research support system according to the Information Literacy Competency Standards for Higher Education (the 2015 version). The mass support program is part of the library's learning and research support activities for students and researchers, which were classified and arranged according to the level of an information use behavior process (see Table 4-1). The category of library mass support program was divided by content and level. The table below shows the list of library mass support program categories. The creation of this systematic diagram has had several notable effects. First, it has visualized the complete support program offered by the affiliated library, allowing for an assessment of any excesses or deficiencies in the program and subsequently leading to discussions about potential new programs. Second, it has allowed for a clear presentation of the library's initiatives and proposals when collaborating with other departments. Third, it has encouraged a more conscientious consideration of student information use patterns and educational effectiveness in outreach and information dissemination efforts. Finally, the systematic chart has served as a milestone for sharing perspectives on learning support within the affiliated library.

Table 4-1 Library Mass Support Program Category List⁹

contents	Level	Teaching style	Faculty
A Use the library	1 Elementary level	W (workshop)	F(Faculty)
B Search for information	2 Intermediate level	C (class)	V (database provider)
C Manage & analyze the information	3 Advanced level	L (LA seminar)	
D Convey your thoughts		E (E-learning)	
E Extend your knowledge			

⁹ Retrievable at: <https://www.tulips.tsukuba.ac.jp/lib/ja/about/systemdiagram> (Accessed on 05th June, 2016)

The library offers workshops and seminars on how to use library resources and databases that are useful for writing reports and papers, mainly in spring and fall. More specifically, ILE is held periodically from April to June and October to November. In addition, there are tailor-made ILE for individuals and classes to satisfy users' schedules. On the webpage detailing ILE at UT, there are reasons of why ILE workshops are needed for students, faculty, and staff. For students, they can learn how to properly evaluate the literature for writing papers or reports. For faculty and researchers, the sessions teach them how to use basic search tools. For staff, they can learn how to review the literature, which is useful to support excellent research activities in universities. Below is the web page of the ILE detail in the UT library (see Figure 4-1). Unfortunately, there are no English translations for the details of these workshops. Further study is needed to find out the reasons why there are no detailed instructions for library workshops in English.

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📄 探し方ガイド(事実)

📄 探し方ガイド(出版情報)

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附属図書館では、論文作成や研究に必要な文献情報を入力するのに役立つデータベースを各種ご用意しています。本学の学生や教職員の皆さんを対象として、これらのデータベースや図書館の利用法についての講習会を開催しています。講習会には毎年4月から6月、10月から11月にかけて定期的に開催する講習会と、ご希望に合わせたオーダーメイド講習会（筑波地区/東京地区）があります。どうぞお気軽にご参加ください。

現在、全部の全ての講習会を予約なしで受講して頂けます

文献情報データベースの講習会を受講すると・・・

- **学群生・大学院生の方は**
レポートや論文を書く前に必要な文献をきちんと調べたり、授業で得た知識についてより深く学ぶために文献を調べたりする方法がわかります
- **教員・研究員等の方は**
基本的な検索ツールを使いこなす方法がわかります
- **事務職員の方は**
本学の優れた研究活動を把握したい時などに役立つ文献の調べ方がわかります

2016年秋季の講習会日程を公開しました。皆さまふるってご参加ください。

日程表 / Schedule

中央図書館 / 留学生向け(for International Students) | 体育・芸術図書館 | 医学図書館 | 図情図書館 | 大塚図書館

Figure 4-1 The Webpage of ILE Details at The University of Tsukuba Library¹⁰

4.2.2 Information Literacy Education at Peking University

PKU is a multifaceted academic institution situated in the city of Beijing, China, with a strong focus on research. Established in the year 1898, the university in question holds a position of high regard and is one of the most esteemed academic institutions in China. PKU is widely acknowledged as one of the preeminent academic institutions in China

¹⁰ Retrievable at: <https://www.tulips.tsukuba.ac.jp/lib/ja/support/guidance>.

and Asia. The institution provides a diverse array of undergraduate and graduate curricula spanning various fields such as the arts, humanities, sciences, engineering, medicine, and law. Based on an examination of data obtained from university websites, it can be deduced that PKU had approximately 35,915 students (14,116 undergraduate and 21,799 graduate) during the 2015–2016 academic year. PKU is recognized for its unwavering dedication to upholding academic standards of excellence. The institution boasts a distinguished faculty comprised of esteemed scholars and researchers who are deeply committed to delivering a superior educational experience to students. The Beijing University Library, commonly referred to as PKU Library, is a prominent academic library in China, renowned for its expansive collection of resources. The PKU Library has designated a specialized director for the ILE program, and a team of experts has been assigned to oversee the planning and implementation of the program. Additionally, select librarians from other departments have been recruited to participate in the ILE program.

To improve students' IL and academic literacy, the PKU Library Research Support Center has established a three-dimensional ILE system, which includes a formal credit-based course “Retrieval and Utilization of Electronic Resources,” and a general education curriculum platform core course,¹¹ “Retrieval and Utilization of Information Resources,” jointly offered with the Department of Information Management. Furthermore, an online course titled “Retrieval and Utilization of Digital Library Resources” has been developed to address the retrieval and utilization of electronic resources comprehensively. This course is accessible through various online educational platforms in China, including NetEase Open Course. It has been recognized as one of the excellent classes by the National Ministry of Education.

In addition, as an offshoot of the online service, the PKU library has developed an online IL skills assessment platform. By establishing a question bank system, students are trained

¹¹ The general education curriculum platform core courses were established in 2009 as a foundational platform for students entering related departments. These courses are interdisciplinary and form the common basis for similar disciplines. They are designed to strengthen students' basic knowledge of subjects, expand their professional choices, and enhance their overall development through the integration and intersection of subjects. Based on the characteristics of the departments and their interrelationships, the university has established four general subject areas: Science and Engineering, Humanities, Social Sciences, and Economics and Management. This course was for social sciences.

to learn basic lessons online and test their IL by answering questions. In order to adapt to the study habits of current students, the library has also developed and launched two mobile games: a freshman version (basic version) and a senior version (advanced version). The freshman version is relatively simple, introducing new students to the library's basic rules and regulations through games, while the senior version is more in-depth, requiring students to complete levels by answering questions. The library launches the freshman version of the mobile game at the beginning of each fall semester and the senior version of the mobile game in the spring semester, using a prize competition to generate student interest in the library's ILE program. Another major component of ILE at PKU Libraries is the IL Workshop. Since 1999, PKU libraries have offered a branded program called "One Hour Lectures." There are about 27 topics and more than 40 regular lectures each semester.

ILE at PKU Libraries has undergone continuous changes and developments since its inception in 1999. In the beginning, the traditional lecture course design was basically adopted for user training, with the library resources and layout as the starting point, and the lecture content was designed by combining the library resources with the specific needs of students through surveys. In 2016, the seminar system was adjusted and designed according to a complete research process, such as thesis topic selection, literature research and literature review, thesis writing standard and academic ethics standards and embedded various resources and services of the library. At the same time, a series of lectures with different content and focus are also provided for different users. The lecture system is designed according to the research process and has shown good planning and development and will be further explored and improved in the future.

An important point to note is that the PKU Libraries have actively responded to the trend of the overall development and change of the university, and have adjusted their work in accordance with the development policy of the university, implementing the system of subject librarians according to the major categories of departments, and developing special subject services by departments, with a subject service director in each department and several departmental subject librarians under each department. The librarian of PKU emphasized the role of the library in the educational reform of the university, which provides important basic support in the whole process of change. The library should provide timely support for the university's changes, from resource construction to services.

PKU has changed its teaching approach from full-time lectures to a combination of instructor-led lectures, self-directed learning, group discussions and presentations, with many additional practicum courses, abandoning the traditional fill-in-the-blank approach

to test taking and focusing on enhancing students' skills. As a result of PKU's curriculum reform, students need more help from librarians or subject librarians to complete projects assigned by their instructors. The library aims to enhance its service offerings through the establishment of an online consultation portal, expansion of subject librarians' outreach to various departments, and provision of training to research assistants catering to specific subject groups. Furthermore, the library shall furnish faculty members with the contact details of all subject librarians, who shall be subsequently recommended to students requiring assistance, with the aim of promoting library usage and collaborating with them to offer additional services. The library is collaborating with the Faculty Research Institute to produce a set of specialized lectures that will be disseminated exclusively to faculty members and postgraduate students.

In terms of promotion, several publicity channels have been developed, including exhibition booths, posters, BBS, WeChat, Weibo, the library's website, and electronic screens in the library. In addition, the library attaches great importance to collaborating with student teams, such as cooperating with the Peking University Lecture Information Association and other student associations to disseminate lecture activities in students' common social environments, further expanding communication channels for promotion. The library also provides a customized content service by publishing a "One Hour Lectures" manual every semester, which outlines regular activities and provides contact information and customization methods and channels for scheduled activities. If departments or students have needs, they can contact the library staff to design customized lectures.

Both UT and PKU have implemented comprehensive ILE programs that aim to enhance students' research and learning skills through various teaching approaches. Regarding similarities, both universities provide a diverse array of workshops, seminars, and courses that cater to various skill levels and subjects to assist students in their academic pursuits. The ILE programs have been customized to cater to distinct user cohorts, including but not limited to undergraduates, graduates, faculty members, and staff personnel. In addition, both the UT and PKU libraries have established strategic plans that address the importance of ILE and collaborate with relevant departments and organizations.

However, there are some differences in their approaches to ILE. PKU has a more comprehensive and advanced ILE system, with credit-based courses, online courses, and mobile games to accommodate student preferences and habits. PKU has also established a system of subject librarians who provide specialized services according to departments and align their work with the university's development policies. In addition, PKU's ILE

promotion methods include extensive use of social media and collaboration with student associations to reach a broader audience. In contrast, UT's ILE focuses mainly on workshops and seminars, with less emphasis on digital learning methods and promotion strategies. In addition, UT's library website does not provide English translations for its workshop details, which may limit accessibility for international students. Overall, both universities have implemented ILE programs to support their students and staff, but PKU demonstrates a more advanced and diverse approach to meeting the evolving needs of its users.

4.2.3 Learning Style and Information Literacy Education in UT vs. PKU

UT and PKU are both leading national comprehensive universities in Asia. One point of connection between the two institutions is the similarities in the cultural backgrounds of their students in terms of learning styles. This contextual background can also be seen in the course requirements and learning environments of each university. Although there exists a stereotype that portrays Asian students as passive learners, it is noteworthy that PKU cultivates a research-oriented and active academic environment. The scholars at PKU have found that students pursuing social sciences, humanities, and arts at the undergraduate level are required to produce comprehensive academic essays as final assignments for each course, with a length ranging from 8,000 to 10,000 words. Typically, a significant proportion of course assignments necessitate the utilization of proficient research abilities, even among undergraduate students. In addition, students at PKU are expected to participate actively in class discussions on a regular basis, and Western-style collaborative learning is strongly emphasized in many academic disciplines. In this high-level, Western-style, inquiry-based learning environment, PKU students are expected to create their own questions and gather supporting evidence (information) to answer questions to meet assignment requirements and instructor expectations. In this learning environment, the PKU system (curriculum) can be seen as more inquiry based. The research environment is further supported by the relatively recent implementation of a subject library system in 2006. This system was introduced as a way for PKU to transition into a world-class research university, thereby improving its world rankings, as well as training future generations of students to learn through a collaborative and inquiry-based curriculum.

Although still under the process of development, leaving much room for further refinement, the PKU Library currently has a total number of 32 subject librarians and 13 reference librarians working under the concept of ILE—all set up with the aim to provide tailor-made teaching and research support services (at all levels) to most academic

disciplines offered at PKU. In other words, almost every single faculty has their own subject librarian(s) to work closely with users to meet their highly specialized information needs. One of the core duties of the subject librarian working at PKU Library include the following tasks: (1) develop and organize the library resources; (2) provide subject-specific reference and information services; and (3) conduct subject-oriented library instructions (including IL skills) to cater to the specific needs of students from different academic disciplines. Since students from different disciplines have varying learning styles and different information needs, they tend to use different library resources and have distinctive information-seeking behaviors.

For UT, although the term “inquiry-based learning” exists in many Japanese educational encyclopedias, and many Japanese scholars could fluently recite the definition of this term in the modern educational context, at the implementation level, Japanese students and educators seem to have a very different understanding of how inquiry-based learning should be carried out (or selectively carried out), as well as its expected learning outcomes. In the Japanese university system, students are mostly expected to write summaries, short reports, or literature reviews as course assignments based on lectures attended or readings assigned by professors during class time, even at the master's level.

Moreover, many such assignments, including graduate theses, place great emphasis on literature review and factual presentation (e.g., searching for definitions and origins of terms, terminologies, and/or historical developments of concepts or policies, and the like). Typically, Japanese students are not required to employ personal anecdotes as exemplars to substantiate their arguments, nor are they expected to incorporate the research of other scholars to construct their own academic discourse and contentions.

Prior research has endeavored to investigate certain challenges pertaining to critical thinking within the realm of higher education in Japan, alongside the obstacles associated with the adoption of inquiry-based learning pedagogies. Many polemical studies have criticized Japanese universities for failing to achieve their goals as universities. They have often been accused of producing the next generation of graduates who are not intellectually curious or motivated to learn (Hall, 1998). Despite the criticisms of these older studies, universities in Japan have implemented more inquiry-based learning curricula, especially in the field of medicine. However, studies in this area have still expressed some of the problems that instructors have in their implementation.

A study of a problem-based learning program for medical students at Kobe University found that despite attempts to encourage more active learning, there were many students

who relied too heavily on “super achievers” and preferred a more passive learning environment (Iwata & Doi, 2017). The authors concluded that such a passive learning education system was antithetical to clinical practice, and that active learning needed to be introduced into the Japanese education system at the primary and secondary levels. Sugimura and Shimizu (2010) echoed this sentiment, noting the difficulties that many first-year Japanese students face when transitioning to higher education from a more passive learning system in secondary school. Thus, although Japanese curricula have attempted to develop more problem-based learning programs, there are still difficulties in practice because students are still used to passive learning from previous education.

This is also true of the library context. With such a passive attitude toward learning, the university library is mostly seen as a place for quiet study in solitude, while the librarian is seen as someone whose sole duty is to manage the circulation desk. Hendricks (1991) points out that academic libraries in Japan are not expected to fulfill the same roles as their North American counterparts. In Japan, academic libraries lack adequate reference services. Students do not even seek out reference librarians for fear of inconveniencing them—this would result in a potential “loss of face” and possible public embarrassment (Ramsay, 2005). For this reason, fewer students at UT see a real need to visit the physical library outside of quiet study hours or to consult a LUE librarian in person to find relevant research materials (in different languages, in large quantities, and in a variety of formats) from the library on their own when writing assignments.

Unlike PKU, UT does not have a comparable subject specialist system. According to Donkai (2004), it is difficult to establish such a subject librarian system among academic libraries in Japan, although many scholars have been emphasizing its importance for years (only Kanazawa Institute of Technology started a subject librarian system in 1982). Nagata et al. (2006) highlighted that in certain nations, college and university librarians are regarded as “professionals” and are incorporated into the “academic staff” with “faculty status.” Irrespective of the hierarchical position held by a librarian in Japan's library organization, their role is limited to that of a non-teaching administrative staff member. This implies that their responsibilities are confined to conventional librarian tasks, such as collection development, cataloging, and circulation. Their duties involve such traditional roles, which may not be fully aligned with the new ways young people are learning and researching in the digital age, especially with the increasing emphasis on collaborative, project-based, and inquiry-based learning.

In contrast to a system in which faculty bring students to a customized library instruction session for specific assignments, UT's Learning and Research Support program is broader

in nature. The program encompasses five distinct content categories, namely: (1) library utilization; (2) acquisition and retrieval of information for scholarly papers; (3) information analysis and management; (4) effective communication of ideas; and (5) expansion of knowledge. Furthermore, it is customary for the University of Texas Library to conduct library orientations for graduate students exclusively at the onset of every fresh semester. Typically, these orientations are arranged at the onset of the academic term, and there may be insufficient time to provide comprehensive guidance to incoming students.

4.3 Survey Protocol

The primary measure of students' perceived importance of ILE was a questionnaire. The questionnaire was developed through a collaborative effort. The researchers first held discussions with ILE librarians at both institutions to obtain background information on the ILE programs conducted at each university. The original questionnaire was written in Chinese and then translated into Japanese for the survey of UT students. The research period at PKU was from September to November 2016, while the research period at UT was from April to May 2017. At PKU, the questionnaire was first distributed to the students in paper form at the PKU library, followed using WeChat (an online mobile text and voice messaging communication application commonly used in mainland China) to collect survey responses from various student groups at the campus-wide level. At UT, a similar campus-wide approach was used to distribute the questionnaire to students of different academic disciplines and levels of study—that is, the questionnaire was first administered in person by the researcher at the UT library. The researchers then sent the same questionnaire digitally through an online application called LINE, which runs on smartphones or tablets. A combination of paper and online methods for administering the questionnaires was intended to maximize the scalability and speed of data collection at both university campuses. A total of 426 responses were collected from both universities, with 200 responses from PKU and 226 from UT (see Table 4-2). The data collected was analyzed using descriptive and inferential statistics using SPSS software. As noted above, LUE and ILE can be considered synonymous and interchangeable terms in the context of this study. Specifically, ILE in this study refers to library-based, organized activities related to IL. While the term “library user education” was used in the initial questionnaire, it can be directly replaced with “information literacy education” to maintain consistency throughout the study. It is noteworthy that the replacement of terms may result in a certain level of comprehension gap, as the terminology employed by participants in responding to the survey pertains to library user education. The extent of the knowledge gap can be mitigated to some degree due to the questionnaire's use of terminology that aligns with

the educational initiatives of the library. Furthermore, the questionnaire provides specific options pertaining to the library's daily ILE activities.

4.4 Survey Results

User demographics may strongly influence the information needs and perceptions of student respondents toward the university library. Of the 426 total responses, 252 (59%) were female, while the remaining 174 (41%) were male (see Table 4-2). A complete list of the academic majors of the student respondents is shown in Table 4-2. It should be noted that of the 226 respondents at UT, a large number (127/56%) were graduate students, while 62 (27.4%) were LIS majors. On the other hand, graduate students made up only 27% of the total respondent population at PKU. Interestingly, of the 200 PKU respondents, 62 (31%) were LIS majors (see Table 4-2).

Table 4-2 Profile of Student Respondents: UT vs. PKU

	UT	PKU	Total
Male	83	91	174
Female	143	109	252
Undergraduates	99	146	245
Postgraduates	127	54	181
Respondents' Majors			
Library & Information Science	62	62	124
Social Sciences	36	32	68
Education	11	17	28
Business	6	13	19
Information Technology	37	19	56
Language	18	18	36
Science	22	26	48
Medicine	4	2	6
Arts	8	0	8
Engineering	22	11	33
Total	226	200	426

ILE supports users and enables them to make the best use of information. It is often referred to as IL instruction, library orientation, reader education, and IL, among others (Ren, 2000). The first item of the questionnaire asked students to rate their perceived importance of the range of ILE programs using a five-point Likert scale, and the “not applicable” option was not provided. The mean scores and standard deviations (SDs)

were reported for each ILE program, and T-values and p-values are used to assess the statistical significance of the differences between the two universities. The survey results indicated that out of all nine ILE programs, UT students considered (1) “research consultation” to be the most important, followed by (2) “library orientation” and (3) “Virtual reference.” In contrast, students at PKU considered (1) “library instruction (focusing on electronic resources),” (2) “library orientation,” and (3) “database instruction” to be comparatively more important (see Table 4-3). The overall mean scores for PKU and UT were 4.06 and 3.75, respectively, indicating that overall, PKU students rated the importance of ILE programs higher than UT students.

Using the two-sample t-test, the means of two independent groups were compared. This statistical test, known as the Welch's t-test, is appropriate when it is presumed that variances are not equal. The p-value measures the probability that a difference observed could have occurred by coincidence alone. In this analysis, the significance threshold is $p < .05$. This indicates that if the p-value is less than 0.05, the null hypothesis of equal means is refuted and the difference in means is deemed statistically significant. For library instruction on E-resources, PKU students rated the program higher than UT students, and the difference was statistically significant ($p < .05$). Similarly, for library orientation, PKU students rated it higher than UT students with a statistically significant difference ($p < .05$). In the case of research consultation, UT students rated it higher than PKU students, with the difference being statistically significant ($p < .05$). For database instruction, PKU students had a higher rating than UT students, with a significant difference ($p < .05$). For a general library tour, PKU students rated it higher than UT students, and the difference was statistically significant ($p < 0.05$). When it comes to subject-specific library courses, PKU students again rated it higher than UT students, with a significant difference ($p < .05$). For virtual reference services, PKU students rated it higher than UT students, with a statistically significant difference ($p < .05$).

Table 4-3 Range of ILE Programs and Their Perceived Importance Amongst Respondents: UT vs. PKU

	UT	PKU	T-value	p-value
Library instruction (catered for E-	3.76 (SD=0.928)	4.42 (SD=0.804)	-7.674	0.005 ($p < .05$)

Library orientation	3.83 (SD=0.903)	4.23 (SD=0.888)	-4.809	0.008 (p<.05)
Research consultation	3.99 (SD=1.018)	3.80 (SD=0.931)	-1.961	0.047(p<.05)
Database instruction	3.67 (SD=0.929)	4.20 (SD=0.902)	-6.362	0.004 (p<.05)
Course assignment	3.68 (SD=1.007)	3.91 (SD=0.973)	-0.653	0.403 (p>.05)
General library tour	3.58 (SD=1.000)	3.91 (SD=1.101)	-3.664	0.001 (p<.05)
Subject-specific library	3.70 (SD=0.913)	4.12 (SD=0.886)	-2.229	0.021 (p<.05)
Online Information	3.72 (SD=1.002)	3.67 (SD=1.122)	0.670	0.614 (p>.05)
Virtual reference	3.82 (SD=0.932)	4.00 (SD=0.946)	-2.424	0.047 (p<.05)
Total	3.75	4.06		

The questionnaire asked students why they did not participate in the ILE programs offered by their respective university libraries. The survey results indicate that there were very small differences between UT and PKU in this area. For UT students, the top three reasons for not wanting to participate in ILE were lack of information about the content of ILE programs, not knowing the time of the programs, and scheduling conflicts. PKU students all raised similar issues with ILE programs but felt that time was the most important factor influencing their decision not to participate in ILE programs (see Table 4-4). These findings are similar to those of Kiilu and Otiye (2016), who found that the main reasons for infrequent or non-use of library resources included lack of awareness, perceived lack of relevance, lack of time, long distance to the library, lack of skills in using electronic resources, access to internet from home, and borrowing from other libraries.

Comparing the two groups involved the t-test, specifically the independent two-sample t-test assuming unequal variances. This statistical test permits the comparison of the

means of two distinct groups to determine whether or not they differ significantly. For the statement about not being well informed about ILE programs, UT students agreed more strongly than PKU students, and the difference is statistically significant ($p < .05$). Regarding the perception that ILE programs are boring, both UT and PKU students showed similar levels of agreement, and the difference was not statistically significant ($p > .05$). When it comes to not knowing why they do not participate, UT students showed more agreement than PKU students, and the difference was statistically significant ($p < .05$). Finally, for the belief that the programs are not useful, UT students agreed more than PKU students, and this difference was statistically significant ($p < .05$).

Table 4-4 Reasons Why Students Do Not Take Part in ILE Programs: UT vs. PKU

	UT	PKU	T-value	P-value
I am not well informed by the details of the ILE programs that are provided by the University Library (except library orientation)	3.59 (SD=0.997)	3.11 (SD=1.247)	2.967	0.003 ($p < .05$)
I am interested in, but I do not know when these ILE programs are conducted	3.48 (SD=1.145)	3.27 (SD=1.205)	1.907	0.082 ($p > .05$)
I can find information by myself	3.08 (SD=1.167)	3.00 (SD=1.220)	0.602	0.507 ($p > .05$)
I want to go; they always clash with my class schedule.	3.22 (SD=1.079)	3.25 (SD=1.096)	-0.142	0.898 ($p > .05$)

The topics/format of the ILE programs look boring	2.82 (SD=0.984)	2.81 (SD=1.166)	0.372	0.072 (p>.05)
I don't know why	2.98 (SD=1.178)	2.63 (SD=1.196)	2.997	0.006 (p<.05)
I don't think they are useful for me at all	2.72 (SD=1.200)	2.37 (SD=1.108)	3.107	0.004 (p<.05)
Total average	3.12	2.92		

The questionnaire asked respondents to rate the effectiveness of various outreach and marketing strategies to promote the ILE programs initiated by UT and PKU. The survey results show that UT students considered the following to be the most effective ways to encourage students to participate in the ILE programs: sending mass emails to students, sending messages through social networking platforms, and posting announcements on the library's homepage. On the other hand, PKU students felt that asking professors to encourage student participation, sending batch emails, and sending messages through social networking platforms would be most effective (see Table 4-5).

The t-value represents the test statistic for the difference between the means of the two groups. A higher absolute t-value indicates a greater difference between the means, while a lower absolute t-value indicates a smaller difference. The p-value indicates the probability of observing a difference between the means that is at least as extreme as the one found in the data if there were no true difference between the groups. A lower p-value (typically less than 0.05) indicates that the observed difference is statistically significant and unlikely to be due to chance.

From Table 4-5, when it comes to putting up posters throughout the entire campus, PKU students rated it higher than UT students, with a statistically significant difference (p<.01). Asking professors to encourage students to attend the ILE programs was rated higher by PKU students than UT students, and the difference was statistically significant (p<.05). Making announcements on the university library homepage had similar ratings from UT and PKU students, with no statistically significant difference (p>.05). The strategy of sending batch emails to all students was rated higher by PKU students than UT students, with the difference being statistically significant (p<.05). Sending messages via online

social networking platforms/Apps was also rated higher by PKU students than UT students, with a statistically significant difference ($p<.05$).

Table 4-5 Ways for Promoting ILE Services and Their Perceived Effectiveness: UT vs. PKU

	UT	PKU	T-value	P-value
Put up posters throughout the entire campus	3.56 (SD=1.095)	3.66 (SD=1.010)	- 2.666	0.001 ($p<.05$)
Ask professors to encourage the students to attend	3.61 (SD=1.050)	4.07 (SD=0.959)	- 0.426	$p<.05$
Make announcements on university library homepage	3.71 (SD=0.940)	3.66 (SD=1.010)	0.557	0.577
Send batch emails to all students	3.78 (SD=0.967)	3.97 (SD=0.982)	- 1.973	0.049 ($p<.05$)
Send messages via online social networking platforms/Apps	3.73 (SD=1.002)	3.90 (SD=1.039)	- 2.041	0.030 ($p<.05$)
Total Average	3.67	3.85		

Students were also asked which incentives would be more effective in getting them to participate in ILE programs. The survey results show that students at UT preferred to be rewarded with cash vouchers after attending the library workshops. On the contrary, students at PKU preferred to receive (academic) credits instead (see Table 4-6).

The t-tests comparing student perspectives on library workshop practices at the UT and PKU showed statistically significant differences favoring PKU on all counts ($p<0.05$). Practices included providing cash coupons for attending workshops, offering academic credits for workshop attendance, and having professors invite reference librarians into classrooms for workshops. PKU students also showed a stronger preference for rewarding

high-scoring students with gifts and making workshop attendance mandatory. Consequently, the overall average response is higher for PKU students (3.83) than for UT students (3.43).

Table 4-6 Incentives for Attracting Students to Attend ILE Programs and Their Perceived Effectiveness

	UT	PKU	T- value	P- value
Students will be given cash coupons after attending the library workshops	3.76 (SD=1.049)	3.91 (SD=0.909)	-2.647	p<0.05
Students can earn credits (like other academic courses) after attending the workshops	3.70 (SD=1.172)	4.31 (SD=1.044)	-5.672	p<0.05
Professors invite the reference librarians to teach library workshops inside the classrooms in person instead of waiting for the students to join	3.57 (SD=0.985)	4.19 (SD=0.926)	-7.202	p<0.05
Students who get the highest scores will be awarded with gifts	3.38 (SD=1.046)	3.81 (SD=0.949)	-5.672	p<0.05
Professors make it mandatory for the students to attend to the workshops	2.75 (SD=1.166)	2.96 (SD=1.318)	- 14.440	p<0.05
Total Average	3.43	3.83		

Students at both universities were asked to rate the professional competence of the reference or ILE librarians. The mean and standard deviation (SD) for each attribute are presented, with T-values and p-values indicating the statistical significance of the differences between the two universities (see Table 4-7). The average total scores for each

institution (UT's 3.56 and PKU's 3.62) indicate that PKU students perceived the ILE librarians at PKU to be more user-friendly, service-oriented, and professionally competent than their UT counterparts. Interestingly, the reference librarians at both UT and PKU received comparatively low scores in the following three attributes: (1) engaging, (2) interesting, and (3) creative.

To compare the two groups, the t-test, specifically the independent two-sample t-test assuming unequal variances, was used. This statistical test compares the means of two independent groups to see if they are substantially different from one another. In a comparison of student perspectives on librarians between UT and PKU, significant differences were found in perceptions of staff being service-oriented, helpful, friendly, and intellectual, all favoring PKU ($p < .05$). However, perceptions of librarians being professional and efficient at work were similar between the two universities ($p > .05$). Although PKU librarians were viewed as more outgoing, this difference was not statistically significant ($p > .05$). Traits such as being interesting and engaging, as well as being creative, showed no significant difference between the two universities ($p > .05$). In terms of the total average ratings, PKU's librarians received slightly higher ratings (3.62) than UT's (3.56). While the ratings for most attributes are quite close between the two universities, PKU's librarians tend to be rated slightly higher in several areas, notably in terms of being service-oriented, helpful, friendly, and intellectual. This indicates a slightly more positive overall perception of the librarians at PKU compared to UT.

Table 4-7 Students Perceptions towards Reference Librarians: UT vs. PKU

	UT	PKU	T-value	p-value
Service-oriented	3.84 (SD=0.897)	3.90 (SD=0.910)	-1.011	$p < .05$
Helpful	3.90 (SD=0.891)	3.91 (SD=0.854)	7.378	$p < .05$
Friendly	3.55 (SD=1.030)	3.93 (SD=0.844)	-2.483	$p < .05$
Professional	3.82 (SD=0.884)	3.91 (SD=0.906)	-1.767	$p > .05$
Intellectual	3.58 (SD=0.918)	3.72 (SD=0.936)	-3.344	$p < .05$

Efficient at work	3.72 (SD=0.944)	3.72 (SD=0.936)	-0.670	p>0.05
Outgoing	3.41 (SD=0.893)	3.47 (SD=0.885)	-3.549	p>.05
Interesting	3.24 (SD=1.007)	3.16 (SD=0.979)	0.106	p>.05
Engaging	3.38 (SD=0.942)	3.23 (SD=0.939)	0.400	p>.05
Creative	3.23 (SD=0.929)	3.20 (SD=0.924)	-8.178	p>.05
Total Average	3.56	3.62		

Participants were asked to rate the overall scope and content of the ILE programs using a five-point Likert scale. Most of the UT students agreed that the overall content of the ILE programs was clear and easy to follow (score 3.78, see Table 4-8). On the other hand, many PKU respondents agreed that the library orientation was helpful in creating a positive image of their university library and its services among students (score 4.00). The average total score for each institution (UT's 3.66 and PKU's 3.72) indicates that PKU students were slightly more satisfied with the range of ILE programs offered by their university library than their UT counterparts (see Table 4-8).

The t-test, specifically the independent two-sample t-test assuming unequal variances, was utilized to compare the two groups, UT and PKU. This statistical test allows for the comparison of the means from two different groups to determine if they are significantly different from each other. Regarding the clarity and ease of following the overall contents of the ILE programs, UT students rated it higher than PKU students, and the difference was statistically significant ($p < .05$). When asked whether the library orientation is helpful in terms of building a positive image of the University Library and its services, PKU students rated it higher than UT students. This difference was statistically significant ($p < .05$). For the overall quality of the ILE programs provided by the University Library, both UT and PKU students gave similar ratings, and the difference was not statistically significant ($p > .05$). Regarding the relevance and usefulness of the overall contents of the ILE programs to current research/assignments, both UT and PKU students also gave similar ratings, and the difference was not statistically significant ($p > 0.05$).

Table 4-8 Level of Satisfaction Toward Scope and Contents of ILE Programs: UT vs. PKU

	UT	PKU	T-value	P-value
Overall contents are very clear and easy to follow	3.78(SD=0.757)	3.62 (SD=0.855)	4.903	p<.05
Library orientation is helpful in terms of building a positive image of about the University Library and its services amongst the students	3.48 (SD=0.767)	4.00 (SD=0.836)	-6.487	p<.05
Overall quality of the ILE programs provided by the University Library is satisfied	3.69 (SD=0.714)	3.62 (SD=0.986)	0.940	p>.05
Overall contents are very useful and relevant to my current research/assignments	3.72 (SD=0.875)	3.65 (SD=0.862)	0.810	p>.05
Total Average	3.66	3.72		

Questionnaire item number 8 was designed to examine the extent to which students perceived the importance of ILE programs. The results of the survey indicated that students at both UT and PKU considered ILE to be one of the most important parts of students' overall learning at the university. Despite this, students at UT and PKU still felt that they could “make good use of library resources even if they do not actively participate in the ILE programs”. In addition, both university students did not agree that “ILE workshops should be made mandatory for students to attend by the faculty”. The average total score for each institution (UT's 3.47 and PKU's 3.59) indicated that PKU students had a slightly higher perception (in terms of importance) of the ILE programs offered by

their university library than their UT counterparts (see Table 4-9). The T-values represent the results of t-tests used to determine whether the differences in means between the two universities are statistically significant, with p-values indicating the level of statistical significance. The students from PKU consistently gave higher average ratings than those from UT for the statements “ILE is one of the important parts of students’ overall learning in the university” and “All students should understand what ILE is before the graduation”. This suggests that students at PKU place a greater emphasis on the importance of ILE in their university education. The differences in these statements were statistically significant ($p < .05$) as per the provided T-values and p-values.

The statement “Students can still make good use of the library resources, even they do NOT take part actively in the ILE programs actively” received a slightly higher rating from UT students, although the difference was also found to be statistically significant ($p < .05$). For the statement “ILE workshops should be made mandatory for students to attend by the faculty”, UT students gave a higher rating. This indicates a higher preference among UT students for mandatory ILE workshops. Despite the difference in averages, the p-value indicates that this difference is statistically significant ($p < .05$). The total average response was slightly higher at PKU (3.59) compared to UT (3.47).

Table 4-9 Perceptions towards ILE Programs: UT vs. PKU

	UT	PKU	T-	P-
ILE is one of the important parts of students’ overall learning in the university	3.86 (SD=0.863)	4.21 (SD=0.816)	- 3.962	$p < .05$
Students can still make good use of the library resources, even they do NOT take part actively in the ILE programs actively	3.36 (SD=0.784)	3.28 (SD=1.134)	0.645	$p < .05$
All students should understand what ILE is before the graduation	3.81 (SD=0.749)	4.20 (SD=0.821)	- 4.925	$p < .05$

ILE workshops should be made mandatory for students to attend by the faculty	2.87 (SD=1.023)	2.68 (SD=1.160)	1.402	p<.05
Total Average	3.47	3.59		

Question 6 asked student respondents who they would consult if they were unable to find materials (e.g., a book or research article) to complete their research assignment. The survey results indicate that for UT students, the top three ways to find the information were: the internet, classmates, and university librarians. PKU students also found the internet and classmates to be important sources of information, followed by university librarians and professors (see Figure 4-2). In short, the internet was reported to be the most popular among participants at both universities. This is not surprising given the findings of the Online Computer Library Center (OCLC, 2006), which reported that 89% of college students' searches for electronic information began with a search engine (e.g., Google), while 2% began with the library's Web site—because students found search engines faster, more convenient, and easier to use in comparison.

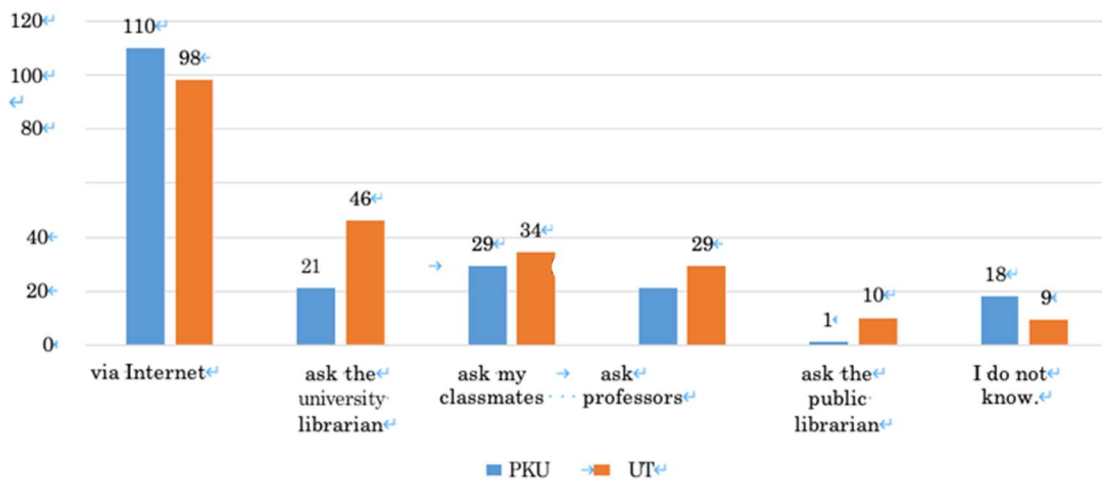


Figure 4-2 Who Students Would Prefer to Consult When They Were Unable To Find Materials for Their Research Assignments

4.5 Discussion

4.5.1 Different Learning Modes and Assignment Requirements

Despite the stereotypes of students from the CHC, the survey results indicate that the PKU students expressed higher evaluations of the overall ILE programs in many respects compared to the UT students. It was assumed that the different levels of perceived importance found between the two groups of students were a direct result of the different task requirements, which in turn shaped the different learning practices, information needs, and library use patterns of the two groups of students. It is believed that students at PKU are expected to engage in a more advanced level of inquiry-based learning. According to the researchers at PKU, the true essence and benefits behind implementing true inquiry-based learning at PKU is to educate the next generation of graduates with the necessary skills to think critically, creatively, solve problems independently, work or learn collaboratively, and so on. In other words, it equips these young graduates with the core skills that will enable them to succeed in the increasingly globalized job market. Furthermore, the emphasis on collaborative learning is intended to foster the next generation of PKU graduates to be able to embrace diversity in the workplace, work with people from different backgrounds to achieve shared/common goals, and thereby achieve greater productivity (Laal & Ghodsi, 2012). In addition, through true inquiry-based learning, students would be able to develop higher-level thinking skills (not just recalling facts), oral communication, self-management, and leadership skills, promoting student-teacher interactions, increasing self-esteem and sense of responsibility, and most importantly, exposure to and increased understanding of diverse perspectives (Divaharan & Atputhasamy, 2009). Moreover, the capacity to work efficiently with others as a successful collaborator has emerged as an essential aptitude for achieving professional and personal triumph, as well as a fundamental component for survival in the progressively interconnected and diverse world with a unified global economy (Karpova, 2011; Looi et al., 2010; Munoz & Huser, 2008; Smith & Bath, 2006). According to the findings of the American Society for Horticultural Science in 2007, collaborative learning offers a platform for students to cultivate and enhance skills that are crucial for their career advancement. The competencies encompass proficient communication, successful conflict resolution, innovative thinking, and efficient time allocation.

In contrast, Japan is commonly perceived as a society that prioritizes conformity and collectivism, placing greater emphasis on obedience as opposed to collaborative approaches to problem-solving (Sugimoto, 2014). As mentioned earlier, Western-style collaborative learning could be seen in Japan as leading to unnecessary conflicts that

create more disagreements—and thus disrupt social harmony. Therefore, independent problem solving, and critical thinking are not emphasized (and are often discouraged) because problem solving, and knowledge are usually sought from senior members of groups rather than through collaboration with each other (peers). The researchers strongly believe that all these socio-cultural and pedagogical factors are influential in shaping the learning practices of the student respondents, resulting in different perceptions of ILE programs between the two student groups. In the following sections, I will further discuss and compare the survey results collected at PKU and UT.

According to the constructivist theory, the acquisition of knowledge is an active and constructive process that involves individuals constructing their own understanding through their experiences and interactions with the environment. In the present investigation, it was observed that students with PKU had a greater number of favorable encounters with ILE initiatives and librarians. This outcome can be attributed to the prioritization of inquiry-driven and cooperative learning approaches. This instructional approach aligns well with constructivist theory as it encourages students to actively engage with information, build on their prior knowledge, and work together to create new understandings. In contrast, the learning environment for UT students may be more focused on information, which may not encourage the same level of active engagement and knowledge construction.

4.5.2 Subject Librarianship and Inquiry Based Learning

In comparison to their UT counterparts, the survey results showed that PKU students overall gave higher ratings (more positive views) to the professional competence of ILE librarians (e.g., more helpful, friendly, and professional). These findings can be explained by constructivist theory, which emphasizes the active process of constructing knowledge through experience and interaction with the environment. In an inquiry-based learning context, students construct their own understanding of a topic, leading to critical thinking skills and the development of IL. This is consistent with the goal of ILE programs that seek to foster these skills. The social cognitive theory places significant emphasis on the influence of self-efficacy in determining an individual's behavior and level of motivation. Greater self-efficacy is associated with enhanced experiences in ILE programs, as it instills in students a sense of assurance in their capacity to effectively interact with library resources and effectively engage with the course material. Direct interactions with ILE librarians can enhance students' self-efficacy by providing guidance, support, and positive reinforcement.

PKU's Subject Librarian System is an example of the university library's efforts to invest in ILE services and support inquiry-based learning. This system is a pioneer in mainland China, as less than half of major Chinese universities employ subject specialists (Tang & Xia, 2010). By recognizing the importance of IL skills in an inquiry-based learning environment and investing in resources and staff, the PKU library has positioned itself as a collaborator in implementing true inquiry-based learning on a campus-wide level.

Conversely, the absence of a subject librarian system at UT is noteworthy, particularly given its status as a premier institution in Asia that prioritizes both pedagogy and scholarly inquiry. The researcher's ability to identify the complete range of factors contributing to the absence of subject librarians at UT is limited, as several factors, such as budgetary constraints, senior management or administrative decisions, and professional qualifications, may be involved. Nonetheless, the scholars assert that the absence of subject librarians is among the potential contributors to the reduced assessments of ILE initiatives and librarians at UT. As mentioned earlier, many Japanese faculty and students may not see the real need to implement inquiry-based learning, even at the university level-or learning that involves critical thinking is considered inconsistent with the collectivism that Japanese society emphasizes (Hashimoto & Yamagishi, 2015). In fact, as Zhang (2006) notes, students who are accustomed to a collectivist society may “restrain themselves to avoid acting differently from others, [and] rarely participate in open discussions for fear of having to debate or confront other students” (p. 170). In other words, this is the opposite of what inquiry-based learning emphasizes. Because of the lack of subject librarians, the UT library offers only very general instruction. As mentioned earlier, true inquiry-based learning is closely tied to competence in IL skills and active library use. Since inquiry-based learning is not emphasized in Japanese universities, it is natural that students at UT do not recognize their university library and ILE as an integral part of their formal learning.

Other factors contributing to less positive views of UT librarians may be that librarians in Japan are not fully seen as equal partners in teaching by their academic counterparts. In fact, this situation has affected learning and research practices at the university level in various ways. On the contrary, the situation is very different from PKU in that librarians are considered as “academic staff” with faculty status, and they are expected to serve as teaching (co-teaching) partners, especially for the subject librarians who are responsible for supporting all teaching, learning, and research activities for the entire university community. In addition, UT librarians are not as actively involved in providing IL instruction and other research consultation services and do not have the same faculty

status as their PKU counterparts. Therefore, the researchers strongly believe that these could be the main reasons that lead to the UT librarians receiving lower professional competence scores compared to their PKU counterparts.

To continue the point about the subject library system and its relationship with inquiry-based learning, it is important for academic libraries to provide customized ILE programs at different levels to meet the different needs of different student groups. According to Gregory, et al. (2014), the academic library should collaborate with different faculties, including the distribution and co-design of course materials, as well as encouraging faculty members to recommend students to consult subject librarians as part of the research process for their students. However, as mentioned earlier, similar to many other universities in Japan, there is no established subject librarian system at UT Library. The reason is that many issues related to the professional training of subject librarians are still unresolved. According to the UT librarians, since the librarian's position, rank, and professional qualification requirements are different, they are not seen as intellectual equals by their faculty colleagues, which may have made it more difficult for academic librarians in Japan to establish any form of formal or ongoing collaboration (especially in IL skills instruction) with them.

As noted above, this study was conducted with the belief that inquiry-based learning should be the quintessential form of higher education. There is a wide range of instructional approaches to achieving inquiry-based learning. Regardless of the style or approach (cognitive learning, constructivist learning, project-based learning, or authentic learning, etc.), they all place a strong emphasis on creating an environment that is conducive to the following:

- Learning should be student-centered;
- Encourage students to use and learn from multiple resources and a variety of media; and access to such resources should extend beyond the school or even the physical library;
- Students' projects/assignments should include real research components (e.g., students are expected to construct their own narratives that reflect their own understanding of the given/chosen topics, rather than just regurgitating facts);
- Lifelong learning beyond the current assignment;
- Teachers and librarians forming closer instructional collaborations, with both librarians and teachers playing interchangeable roles.

According to Marcum (2009), inquiry-based learning is characterized by a participatory approach in practice and a constructivist approach in theory. Therefore, librarians should prioritize the support of students' needs rather than enforcing a particular disciplinary agenda upon them (p. 361). To clarify, it is anticipated that librarians will assume a crucial function in establishing a setting that fosters inquiry-based learning methodologies. Within this context, the ILE librarians hold a significant responsibility of serving as knowledgeable mentors to assist students in navigating the various portals of information. This may involve providing guidance and support to students as they engage in the research process. None of these goals can be achieved without students' mastery of basic IL skills. As Fister (2013) points out, "It may be the very ubiquity of IL that makes it hard to pin down. After all, what scholarly activity doesn't involve information literacy?" (p. 2). Indeed, several studies have found that IL contributes significantly to inquiry-based learning in a variety of ways (Levy & Petrusis, 2012; Wenger, 2014). According to Marcum (2009), the library ought to function as a "discovery center" where individuals can independently seek knowledge to address their own queries using the available resources (p. 359). This approach differs from dependence on an external authoritative entity, such as an educator, to prescribe the method of information acquisition and the information to be acquired. In this specific setting, it is expected that librarians, specifically those with expertise in ILE, will serve as active co-instructional partners in the implementation of inquiry-based learning programs that meet the educational needs and preferences of students at all academic levels. In other words, "the library provides a uniquely fertile site for learning how to inquire. It's a common ground for all disciplines and a place where meaning is made, not transmitted" (Fister, 2013, p. 4).

Unfortunately, many university teachers (especially in many Asian countries) have not been trained to teach with an inquiry-based approach, and very often higher education systems are politically and structurally arranged to support other approaches or agendas. This may account for the different perceptions and expectations of ILE librarians found among PKU and UT student groups. The implications are that for higher education institutions that opt for inquiry-based learning, we would expect that the roles of their librarians in the educational sector (especially for the ILE librarians) would increasingly include teaching responsibilities, especially in teaching IL skills, instructional design, as well as other facilitator or information mediator, or even performing learning space designer roles.

In conclusion, the differences in UT and PKU students' views of ILE programs and librarians can be attributed to the different emphasis on inquiry-based and collaborative

learning, as well as the level of interaction with ILE librarians. The dissimilarities in students' attitudes and experiences with ILE programs can be elucidated by the constructivist theory and social cognitive theory. These theories emphasize the significance of an interactive and stimulating learning milieu, as well as the influence of self-efficacy in shaping students' outlooks and encounters with ILE programs. To enhance the efficacy of ILE programs, it is imperative to customize them to meet the distinct requirements of learners, integrate facets of inquiry-based and collaborative learning, and foster direct engagement with ILE librarians.

The AARRR framework can be used to analyze the effectiveness of ILE programs and students' experiences with these programs. Acquisition refers to attracting students to participate in ILE programs. In the context of UT and PKU, it is important to evaluate the outreach and marketing strategies used by the universities to promote their ILE programs. The results show that although students value ILE programs, there are differences in their awareness and participation. Efforts should be made to improve the effectiveness of marketing strategies such as posters, announcements, and online platforms. Activation includes ensuring that students have a positive initial experience with ILE programs. Results indicate that PKU students generally have a more positive view of ILE programs and librarians than UT students. Improving the quality of the initial experience could include improving the overall content of the ILE programs to make them clearer and more relevant to students' current research or assignments. Retention is about keeping students engaged and returning to the ILE programs. The results show room for improvement in the areas of creativity, engagement, and interest. Tailoring programs to the needs of different student groups and incorporating more interactive and engaging activities could improve retention rates.

In the context of ILE programs, “revenue” could be interpreted as the value generated for the students and the university, such as improved research skills, higher academic performance, and increased library usage. The study suggests that students at both UT and PKU view ILE as an essential part of their overall learning experience. However, there is potential for further improvement of the programs to provide even greater value. Referral refers to students promoting the ILE programs to their peers. Results indicate that PKU students have more positive experiences with ILE librarians and are more likely to share these experiences with their peers. Encouraging students to share their experiences and promote positive interactions with ILE librarians could help expand the reach and impact of the programs.

The present research study is limited in its capacity and resources to comprehensively

identify the multitude of factors that contributed to the divergent perceptions and learning disparities observed between the PKU and UT cohorts. Additionally, the study is unable to exhaustively elucidate the reasons underlying the presence and absence of the subject librarian system in the respective universities. Furthermore, it is not within the scope of the researchers' objectives to engage in such actions. Notwithstanding its constraints, this research has delineated a roster of potential sociocultural and curricular elements that, in the researchers' estimation, are instrumental in shaping the divergent perspectives and dispositions towards ILE initiatives and ILE librarians. The researchers believe: “true” inquiry-based learning and active/competent library use simply go hand in hand. Without the appropriate IL skills to conduct proper research at a higher level, “true” inquiry-based learning simply cannot be achieved, regardless of the level of study.

4.5.3 Information Literacy Education Prior to and Outside of the Library

ILE outside of the library setting plays a critical role in shaping students' perceptions of its importance and value. UT students believe that they can effectively use library resources without actively participating in ILE programs because they receive IL training not only in the library, but also through first-year education and other courses such as the Data Science Literacy Program (DSL Program), which is taught by Information Engineering faculty. The DSL Program, which consists of two required courses, Information Literacy and Data Science, focuses on basic IL and computing skills and developing an objective, data-driven approach to decision making. The curriculum, which is required for all first-year students in various disciplines, covers the entire data science lifecycle using real-world data, while teaching the principles of computers, software, and the Internet and emphasizing information ethics, security, and intellectual property rights for responsible Internet use. Although there is a well-developed ILE system outside the library, the role and importance of ILE within the library for students should not be underestimated.

In contrast, the PKU Library offers stand-alone online courses, such as Searching and Using Digital Library Resources, as well as stand-alone credit courses, such as Retrieving and Using Electronic Resources. Given the library's prominent presence in these stand-alone credit courses, students at PKU are likely to rate its ILE offerings higher than those at UT.

In addition to ILE outside the library and within the university, a crucial aspect is the emphasis on ILE prior to entering higher education. In conjunction with ILE beyond the confines of the library and within the institutional setting, a pivotal element pertains to

the prioritization of ILE prior to matriculation into postsecondary education. The governments of China and Japan have instituted various measures to encourage ILE in primary and secondary schools. These policies prioritize the incorporation of technology into the curriculum and aim to enhance students' access to, evaluation of, and application of information. The Japanese Ministry of Education revised the secondary school curriculum in 1999 to emphasize the significance of information use skills at all educational levels. Consequently, the subject of "Information" was mandated for high school students in 2003. The students are provided with a range of options, namely Information A, B, or C, each of which explores discrete aspects of IL.

A circular pertaining to the dissemination of Information Technology Education in primary and secondary schools was released by the Ministry of Education in China in the year 2000. The aim of this endeavor was to augment the delivery of information technology instruction in elementary and high schools, with a projected timeline of five to ten years, commencing in 2001. The "School-to-School" initiative was implemented to accelerate the progress of basic information education in primary and secondary educational institutions. These projects ensure that students enter university with a basic understanding of IL and are better prepared for the digital age. However, since this questionnaire did not address the relevant ILE experiences prior to entering university, it was not possible to investigate this aspect. However, it is important to acknowledge that such experiences can play a significant role in shaping students' overall IL skills and perceptions.

4.6 Conclusion

The results show that PKU students, overall, have a more positive view of the ILE programs and the professional competence of the ILE librarians in their respective university libraries compared to their UT counterparts. Inquiry and collaborative learning seem to play an important role in shaping the curriculum and students' learning practices at PKU, whose system is strongly influenced by the North American style of research and collaborative learning. The recent emphasis on inquiry-based and collaborative learning is intended to help students foster creativity, embrace diversity, and go beyond lists of basic facts. Some of these skills and qualities may not be seen as appropriate for Japanese society, in the sense that research beyond information is not as highly emphasized within the higher education system.

Such positive views are based on PKU students' positive experiences with the PKU Library as student users. The researcher believed that their positive experiences were a

direct result of the fact that PKU students are competent and independent in using PKU Library resources, as they are equipped with the necessary IL skills. PKU ILE librarians (more specifically, subject librarians) play an important role in imparting such important IL skills to their student users. PKU students have more direct (face-to-face) interactions with the ILE librarians, and many students feel that these encounters are more positive.

Answer to Sub-RQ 4-1: The survey results indicate that students at both UT and PKU view ILE as an important part of their overall university experience. While UT and PKU students believe they can make good use of library resources without active participation in ILE programs, PKU students have a more positive view of ILE programs and librarians than UT students. The study highlights the importance of tailoring ILE programs to meet the needs of different student groups in fostering positive attitudes toward ILE programs and librarians.

Answer to Sub-RQ 4-2: Students at both universities value the ILE programs offered by their libraries, with differences in the services and aspects of the programs prioritized. Although satisfaction levels were generally high, there is potential for improvement in the areas of creativity, engagement, and interest. Identifying these areas for improvement could lead to increased relevance and better alignment with students' specific needs.

Answer to Sub-RQ 4-3: The study suggests that subject librarians and inquiry-based learning play an important role in shaping students' attitudes toward ILE programs and librarians. Students at UT and PKU moderately integrate ILE programs into their research practices and formal learning in the context of inquiry-based learning. There is room for greater integration, which could lead to improved outcomes and engagement by addressing identified gaps and challenges.

It is beyond the scope and resources of this research study to identify all the possible factors that led to the distinct perceptions and learning differences between the PKU and UT groups, as well as to uncover every single reason for the availability of the subject librarian system and its lack between the two universities. Despite its limitations, this study has identified a list of possible socio-cultural and curriculum-related causes or factors that the researchers believe result in different views towards ILE and librarians themselves, from the researchers' perspective and experience as current and former UT students. The researchers believe that inquiry-based learning and active/competent library use simply go hand in hand. Without the appropriate IL skills to conduct proper research at a higher level, true inquiry-based learning simply cannot be achieved.

One additional constraint pertains to the utilization of the phrase “library user education”

in the questionnaire to denote the ILE initiatives organized by the library. The term in question may be subject to differing interpretations among the responders, thereby resulting in a need for more clarity in their conceptual comprehension. This finding indicates a constraint of the research.

In this study, because we did not include items on the questionnaire that asked students in what situations or when doing what types or formats of assignments they would go to the library, and whether they encountered certain difficulties or successful experiences in using the library, and whether such experiences were in fact learning- or assignment-related, we were unable to determine what levels or forms of inquiry-based learning practices were actually related to library use. Thus, we were not able to determine to what extent or in what forms inquiry-based learning practices were related to library use. Hence, the outcomes of our research may possess a degree of ambiguity. Notwithstanding its constraints, the scholars aspire that this investigation may serve as a stimulus for other researchers to undertake additional inquiries into the correlations between collaborative or inquiry-based learning and library utilization across diverse academic levels and from the vantage points of various academic fields on an international and intercultural scale.

Chapter 5 Students' Perceptions of Credit-based IL Courses in Mainland China

5.1 Introduction

Restrictions due to the pandemic have further increased the push for online learning and research, further reinforcing the need for high motivation to achieve IL. Alongside the ongoing shift from traditional modes of learning and teaching to more student-centered approaches, IL is becoming an important focus of institutional agendas for strategic and pedagogical development (Fraillon et al., 2014; Nicholson, 2018). However, one of the main challenges facing IL instructors is how to provide learning strategies and experiences that motivate students to learn and apply these skills (Kasowitz-Scheer & Pasqualoni, 2002). Therefore, it is important to incorporate students' motivation, self-efficacy, and perceptions of IL into the instructional design of these courses. However, most studies focus on younger students such as undergraduates (e.g., Harris, 2017; Hinchliffe et al., 2018; Zakharov & Maybee, 2019), and most of the literature focuses only on Western countries and not on China.

Graduate students occupy a unique position in academic enterprises—they have more specialized skills and needs than undergraduates but are not as able to explore resources as professors (Siegel, 2009). Therefore, it is incumbent upon the library to consider how to approach IL with this population. Because of the growing emphasis on IL, more and more colleges and universities are offering stand-alone credit-based IL courses. In Chinese universities, IL is a required course for LIS majors and an elective course for social science and natural science majors (Huang et al., 2016). IL in higher education is a topic of ongoing interest and concern for those involved in teaching and learning. Nonetheless, there exists a deficiency in actively involving postgraduate students through unconventional and inventive means. The aim of this study is to ascertain the attributes of postgraduate students with regards to IL courses. Specifically, we endeavor to determine the motivation, self-efficacy, and perceptions of first-year master's students. The research questions are as follows:

Sub-RQ 5.1. To what extent do graduate students evaluate the content of IL courses?

Sub-RQ 5.2. Are there differences in graduate students' perceptions of IL courses based on different learning formats?

Sub-RQ 5.3. Are there any differences in graduate students' perceptions of IL courses based on gender?

These queries were used to generate the study's hypotheses listed below:

Sub-HP 5-1: Graduate students place a high value on ILE because of their research and learning needs.

Sub-HP 5-2: There are differences in graduate students' perceptions of IL courses based on different learning formats.

Sub-HP 5-3: There are differences in graduate students' perceptions of IL courses based on gender.

5.2 Overview of Study Subjects

5.2.1 Information Literacy Education in the University of Science and Technology of China

This study was conducted in a credit-based IL course at the University of Science and Technology of China (USTC). Based on an examination of data obtained from university websites, it can be deduced that USTC had approximately 7,370 undergraduate and 17,035 graduate students during the 2018–2019 academic year. The Information Consulting Department is mainly responsible for ILE in the USTC library. The librarians refer to the American information literacy standards for content planning when designing activities but adopt a customized service model according to users' requirements. The training of students is carried out in three parts: orientation, customized training, and systematic courses, with the aim of improving students' IL and helping them to better complete their research work. ILE activities are conducted annually at different levels, with undergraduate students participating in library visits and graduate students participating in onsite lectures. In designing the content of the activities, the library focuses on diversification and stereoscopic presentation of content, combining online and offline to better present the library's resources to users, such as the Freshman Column website, which introduces students through video animation or library cartoon images. Customized training is designed to meet the individual needs of users. To better meet the needs of users, in-depth communication with faculties and departments on specific issues is conducted to achieve precision in target, content, time, and place.

The systematic credit course is designed to enhance students' IL and facilitate their research activities. This credit-bearing course centers on the fundamental concepts of prevalent databases and tools. This program offers a holistic education that is not limited to specific fields or areas of expertise. Its aim is to assist users in understanding the fundamental processes involved in research and to develop their skills in obtaining,

analyzing, organizing, and utilizing information for research purposes. The course's pedagogical strategy is blended, encompassing both a massive open online course (MOOC) and a traditional face-to-face classroom environment. In addition, the department offers integrated courses for specific specialized subjects on the premises and establishes affiliations with other departments and publishers to supplement cooperative courses and enrich course content.

5.2.2 The Credit-Based IL Course at the University of Science and Technology of China

The course was selected because it is the most popular IL course at USTC, and the most popular IL course among Chinese university MOOCs. In addition, this course was identified as a Chinese national top-level course (Ministry of Education of the PRC, 2019). The National Top-Level Course Project is a large-scale project in Chinese higher education that uses open educational resources to improve the quality of higher education (Haklev, 2010). The course titled “Literature Management and Information Analysis” aims to enhance the aptitude for rapid learning, scientific research, problem-solving, and augmenting insight, and innovation skills. The material was segmented into four distinct sections, namely information acquisition, information management, information analysis, and information sharing collaboration and innovation, as illustrated in Table 5-1. In addition, the course was divided into two classes with different teaching approaches but the same course content; one was lecture-based (C1) with 350 students, and the other was a blended learning model mixed with e-learning and a few lectures (C2) with 150 students.

The course content design through the process of information acquisition, information management, information analysis, sharing, collaboration and innovation was divided into three sections. The first panel aims to improve study skills. The second panel mainly aims to improve students' ability to search the literature, involving databases and literature management software, such as Endnote, Inoreader, Mendeley, and other software. The third panel focuses on information analysis, using a tool, HistCite, as a case study. The last panel aims to improve students' creative thinking skills through brainstorming. Three assignments correspond to the course content.

Table 5-1 Course Contents

Time	Course Contents	IL Contents
Week 1	The information society challenges and curriculum design	Information awareness

Week 2	Learning and searching	Information seeking
Week 3	RSS-synchronous world news	Information management
Week 4	Personal knowledge management tools - notes + mind map	Information management
Week 5	Top Ten Information Sources and Library Resources	Information seeking
Week 6	Introduction to the Database – WOS and Scopus	Information seeking
Week 7	Document Management Software - Endnote X9	Information analysis
Week 8	Quickly locate key documents – HistCite	Information analysis
Week 9	Trends and research topics	Information analysis
Week 10	Problem-solving and brainstorming	Sharing, collaboration, innovation
Week 11	Six Thinking Hats and Course Summary	Sharing, collaboration, innovation

5.3 Survey Protocol

The questionnaire was designed to explore the students' motivation and perceptions regarding the IL course. The questionnaire was divided into four parts: motivation, perceptions, self-efficacy for IL, and demographic information. All participants were assured that their data would remain anonymous. Only students currently enrolled in the course were included. The total number of potential participants was 500. The questionnaire was developed using online survey tools. A structured, self-administered, 12-item online questionnaire was deemed appropriate as an effective tool for accessing geographically dispersed communities. To evaluate the questionnaire, I conducted a pilot test with 20 graduate students who had previously taken the course, made some changes to the definition of terms, and shortened some phrases based on their comments. In addition, I conducted reliability analysis to calculate Cronbach's alpha was 0.969 and KMO value was 0.952. The survey was administered to the participants after the

conclusion of the course in December of 2018, with an invitation extended to all students who were present during the instructional sessions to participate in the questionnaire. The statistical software package SPSS was utilized to conduct data analysis through the implementation of ANOVA and t-test methods.

Moreover, 10 follow-up interviews were conducted to investigate the fundamental factors that account for the survey outcomes. The research investigation involved a sample population of ten participants who were registered in graduate programs spanning a range of disciplines, including chemistry, physics, materials science, computer science, social science, and geography. The duration of each online unstructured interview was 20 minutes. The outcomes that were documented were subsequently transcribed and scrutinized through the utilization of NVivo.

5.4 Survey Results

5.4.1 Demographic Information

A total of 500 students were enrolled in the course: 350 students in lecture-only classes and 150 students in blended learning classes. A response rate of 81% was achieved, as evidenced by the return of 405 questionnaires. The research sample comprised 405 individuals, of whom 261 (64.44%) self-identified as male, and 144 (35.56%) self-identified as female. As aforementioned, the curriculum was divided into two discrete classes, each utilizing unique pedagogical approaches while maintaining identical course content. The sample size for the lecture-only class (C1) is 267, while the blended learning class (C2) has 138 responses. Table 5-2 demonstrate that a significant percentage of the responses are focused on scholarly fields such as chemistry, materials science, physics, and computer science. The present investigation employed the statistical technique of Analysis of Variance (ANOVA) to examine gender disparities across multiple academic institutions. The findings of the study indicate that there exists a statistically significant variation in gender samples across various colleges ($p < .05$). This suggests that there are discernible differences in gender samples among different colleges. The findings of the analysis suggest that gender exhibits statistical significance at the 0.05 level across 12 distinct disciplines ($F = 4.028, p = 0.045$).

Table 5-2 Profile of Respondents: USTC

	Number	Percentage
Male	261	64.44%

Female	144	35.56%
Total	405	100%
Lecture-only class (C1)	267	65.92%
Blended learning class (C2)	138	34.08%
Total	405	100%
Respondents' majors		
Chemistry	175	43.21%
Materials science	111	27.41%
Physics	51	12.60%
Information technology	40	9.87%
Geography	13	3.21%
Social sciences	9	2.22%
Math	6	1.48%
Total	405	100%

5.4.2 Intrinsic vs. Extrinsic Motivation for IL courses

The first question asked students to rate their motivation for taking IL courses. Table 5-3 provides a statistical summary of the statements related to the rationales utilized by students in their course selection process. The table displays the mean and SD. The dataset has been partitioned into two discrete subsets, denoted as (C-1) and (C-2), and subsequently stratified based on gender, specifically male and female. The statistical technique employed to investigate the impact of gender and course format on motivation was ANOVA. Furthermore, statistical significance values (p-values) have been furnished for the purpose of comparing gender and class. The survey results indicate that the student participants were highly motivated to choose IL courses, especially the intrinsic

motivation aspect (see Table 5-3). The results also show that extrinsic motivation to take these IL courses is strongly influenced by course evaluations, course schedules, and recommendations from senior students.

C1 students rated “the course content would be useful in the future” as the highest motivation, compared to C2 students who rated “gaining all kinds of knowledge is very important” as the highest motivation. In addition, C1 and C2 students reported “I don’t know why” as the lowest motivation. Through t-test results, the results indicated that class has a significant positive correlation with “Because gaining all kinds of knowledge is very important to me” ($p < .05$). Blended learning students have higher motivation for IL courses.

The data also reveal some significant gender differences in certain reasons for course selection, such as future benefits, importance of academic work, and course content being necessary for study and life. The data presented in Table 5-3 suggests that female students exhibit higher levels of motivation in comparison to their male counterparts. The results indicate that there is a noteworthy affirmative association between gender and the reasons for enrolling in a course, specifically, “gaining all kinds of knowledge is very important to me,” “I think this course would be beneficial in the future,” “learning about academic work is very important to me,” and “this class gets a high rating.” All the associations yielded p-values below 0.05. Furthermore, the average score of male students (4.33) exhibited a statistically noteworthy decrease in comparison to the average score of female students (4.57). In contrast to their male counterparts, female students held the belief that IL courses would yield future benefits and placed a greater emphasis on the significance of acquiring knowledge pertaining to academic work.

Table 5-3 Level of Motivation for IL Course: USTC

	Average (C-All)		Average (C-1)		Average (C-2)		Gender			Clas s
	Mea n	SD	Mea n	SD	Mea n	SD	Male	Female	p- value	p- valu e
Because I think this course would be beneficial in the future.	4.42	.725	4.41	.716	4.43	.744	4.33 (SD=0.78)	4.57 (SD=0.59)	.002* *	.384
Because learning about academic work is very important to me.	4.40	.754	4.40	.704	4.41	.843	4.32 (SD=0.81)	4.56 (SD=0.61)	.002* *	.210
Because gaining all kinds of	4.37	.675	4.32	.665	4.46	.685	4.32 (SD=0.8)	4.45 (SD=0.6)	.005* *	.011 *

knowledge is very important to me.							1)	1)		
Because I am interested in the content of this course.	4.13	.815	4.15	.784	4.10	.874	4.08 (SD=0.8 6)	4.22 (SD=0.7 2)	.122	.436
Because the content of this course is necessary for my study and life.	4.00	.813	3.99	.814	4.04	.814	3.91 (SD=0.8 3)	4.17 (SD=0.7 3)	.002* *	.180
Because this class gets a high rating.	4.00	.875	4.00	.839	4.01	.944	3.91 (SD=0.9 3)	4.17 (SD=0.7 3)	.005* *	.791
I have a strong purpose for choosing this course.	3.94	.920	3.92	.900	4.00	.959	3.92 (SD=0.9 3)	3.98 (SD=0.9 0)	.560	.094

If I did not choose this course, I would feel sorry.	3.79	.991	3.78	1.018	3.83	.943	3.73 (SD=1.04)	3.90 (SD=0.88)	.111	.867
Because of the recommendation of senior students.	3.60	1.214	3.62	1.179	3.56	1.284	3.52 (SD=1.27)	3.74 (SD=1.10)	.073	.094
Because I am fascinated by the instructor's personality.	3.50	1.055	3.43	1.060	3.60	1.057	3.42 (SD=1.06)	3.63 (SD=1.01)	.054	.117
Because the course timetable suits my schedule well.	3.43	1.045	3.47	1.025	3.34	1.097	3.38 (SD=1.06)	3.51 (SD=1.01)	.229	.777
Because it is easy to get the credits.	3.31	1.108	3.30	1.119	3.30	1.105	3.40 (SD=1.14)	3.14 (SD=1.02)	.022*	.743

I do not know why	2.18	1.19 6	2.26	1.24 5	2.01	1.08 1	2.19 (SD=1.2 1)	2.17 (SD=1.1 8)	.865	.058
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(Notes: 5-point Likert scale: 1 = strongly disagree to 5 = strongly agree, C1 stands for the lecture-only class, C2 stands for blended learning class, C-All stands for all students; * $p < .05$, ** $p < .01$.)

5.4.3 Students' Self-Efficacy in IL Courses

The second inquiry pertained to the self-efficacy aspect of the students' encounter with the IL courses. The dataset has been partitioned into two distinct subsets, denoted as C-1 and C-2, and subsequently segmented based on gender, specifically male and female. The current investigation employed ANOVA to examine the influence of course format and gender on self-efficacy. Based on the information provided in Table 6-4, it was determined that students expressed confidence in their ability to effectively utilize library resources for their future academic endeavors and research. In addition, responses expressed their confidence in IL, such as "Compared to other students who have not taken this course, I believe that my IL is higher." Furthermore, C1 students showed higher self-efficacy in effective use of library resources and information analysis than C2 students. However, C2 students showed higher self-efficacy in IL and information management. Notably, blended learning students had higher scores when the differences were significant. The class has a significant positive correlation with "My IL is higher than other students who did not take this course" ($p < .05$). Blended learning students had a higher score than lecture-only students, meaning that blended learning students had higher self-efficacy in this IL course.

The statistical analysis using the t-test revealed a noteworthy and affirmative association between gender and self-efficacy in the context of the assertion "I am confident that I will be successful in information management" ($p < .05$, as presented in Table 5-4). When the p-value is less than 0.05, it suggests that the observed disparities between male and female students are improbable to be attributed to chance fluctuations. Hence, it can be inferred that a noteworthy dissimilarity exists between genders concerning self-efficacy in information management, as male students exhibit greater levels of self-efficacy in this domain. The findings indicate a significant statistical disparity in the self-efficacy levels of male and female students in utilizing library resources. The results of the statistical analysis indicate that female students exhibited a significantly greater level of self-efficacy, as evidenced by a p-value of less than 0.05. The statistical significance of the observed disparities between male and female students is substantiated by a p-value that is less than 0.05, which suggests that the differences are improbable to have arisen randomly. Hence, the findings suggest a significant statistical difference in the degree of self-efficacy concerning the utilization of library resources, implying that females exhibit a greater level of self-efficacy in this domain.

Table 5-4 Level of Self-Efficacy in the IL Course: USTC

	Average (C-All)		Average (C-1)		Average (C-2)		Gender			Class
	Mean	SD	Mean	SD	Mean	SD	Male	Female	p-V	p-V
In future study and research, I will use library resources effectively.	4.20	.689	4.25	.620	4.12	.739	4.14 (SD=0.70)	4.33 (SD=0.66)	.008**	.255
My IL is higher than other students who have not attended this course.	4.03	.833	4.01	.798	4.09	.900	4.05 (SD=0.86)	3.99 (SD=0.78)	.484	.038*
I know how to apply what I have	4.01	.724	3.99	.732	4.07	.711	4.00 (SD=0.74)	4.03 (SD=0.69)	.682	.261

learned in this course in my future career.										
I know how to apply what I have learned in this course to other courses.	4.00	.714	3.99	.687	4.02	.769	3.99 (SD=0.71)	4.00 (SD=0.72)	.918	.073
I believe that I will succeed in information management.	3.93	.757	3.90	.760	3.99	.754	3.99 (SD=0.73)	3.81 (SD=0.80)	.017*	.272
I believe that I will succeed in information analysis.	3.89	.769	3.90	.786	3.88	.739	3.92 (SD=)0.75	3.83 (SD=0.80)	.244	.324

*(Notes: 5-point Likert scale: 1 = strongly disagree to 5 =strongly agree, C1 stands for the lecture-only class, C2 stands for blended learning class, C-All stands for all students; * $p < .05$ ** $p < .01$.)*

5.4.4 Students' Perceptions of IL Courses

As we look closely at student motivation in IL courses, we should consider how students view IL and information seeking and the paths they take in completing the research process. The third question concerned students' perceptions of IL courses. Students strongly agreed that the IL course should not be limited to the practice course but should guide students on how to learn. They believed that this course helped them in their lifelong learning (see Table 5-5). However, students disagreed with the statement that students can use web resources to complete a project without library resources. Although students showed a high perception of IL courses, they also agreed that students could fully use the library without participating in ILE.

As shown in Table 5-5, C1 students strongly supported the argument related to the library, such as “This course changed my view of the library” and “Librarians play an important role in my study and research.” Conversely, the C2 participants exhibited a robust concurrence with the contention concerning the significance of registering for an IL program, as exemplified by statements like “The attendance of such courses holds great importance for postgraduate students” and “The acquisition of knowledge through this course will facilitate my future learning endeavors”. The findings of the study corroborate our prior assertion that students exhibit a noteworthy level of self-efficacy concerning IL. Furthermore, a noteworthy positive correlation was observed among the perspectives of the students who held the belief that “Engaging in such courses holds significance for graduate students” ($p < .05$), “The instructor placed emphasis on the significance of this course” ($p < .01$), and “The arrangement of the course tasks holds value” ($p < .01$).

Females consistently scored higher than males across almost all the statements, indicating a more positive attitude towards the IL course. This difference was statistically significant ($p < .05$) in statements such as “All students should improve their IL before graduation” “This course changed my view of the library” “Undergraduate students should study such courses”, and “University should make this course compulsory course.” Moreover, the last two statements showed a significant gender difference with p-values less than 0.01, indicating a strong significance.

Table 5-5 Perceptions of the IL Course: USTC

	Average (C-All)		Average (C-11)		Average (C-2)		Gender			Class
	Mean	SD	Mean	SD	Mean	SD	Male	Female	P-value	P-value
The IL course should not be limited to the practice course but should guide students to learn how to learn.	4.30	.752	4.31	.696	4.28	.852	4.25 (SD=0.78)	4.39 (SD=0.70)	.066	.536
This course helps me in lifelong learning.	4.28	.715	4.27	.639	4.31	.844	4.26 (SD=0.73)	4.33 (SD=0.69)	.302	.172
Participating in such courses is	4.27	.725	4.25	.688	4.33	.794	4.23 (SD=0.76)	4.35 (SD=0.66)	.132	.041*

significant for graduate students.										
All students should improve their IL before graduation.	4.26	.702	4.25	.681	4.28	.745	4.19 (SD=0.74)	4.38 (SD=0.61)	.008**	.654
The knowledge gained in this course will help my future learning experience.	4.27	.636	4.24	.660	4.33	.664	4.24 (SD=0.65)	4.32 (SD=0.60)	.215	.132
The instructor made me realize the importance of this course.	4.20	.713	4.15	.722	4.32	.683	4.15 (SD=0.74)	4.29 (SD=0.66)	.061	.003**

My anxiety will decrease when I use library resources in the future.	4.07	.717	4.08	.712	4.07	.731	4.05 (SD=0.72)	4.12 (SD=0.71)	.360	.578
The class assignment design of this course is precious.	4.08	.824	4.05	.824	4.14	.824	4.02 (SD=)	4.19 (SD=)	.054	.007**
This course changed my view of the library.	4.01	.838	4.03	.807	3.98	.900	3.91 (SD=0.88)	4.19 (SD=0.72)	.001**	.293
Undergraduate students should study such courses.	4.06	.892	4.02	.901	4.15	.870	3.98 (SD=0.96)	4.22 (SD=0.73)	.010*	.144
The University	4.01	.838	4.01	.788	4.02	.932	3.99	4.05	.490	.964

library is the student learning center.							(SD=0.87)	(SD=0.78)		
This course helped me reduce my anxiety about the information society.	3.90	.839	3.86	.821	3.99	.871	3.95 (SD=0.84)	3.81 (SD=0.84)	.114	.205
I will ask librarians for help in the future.	3.81	.858	3.80	.854	3.84	.873	3.77 (SD=0.88)	3.89 (SD=0.81)	.360	.083
University should make this course compulsory course.	3.74	1.005	3.72	.979	3.78	1.058	3.66 (SD=1.06)	3.88 (SD=0.88)	.042*	.284

Librarians play an important role in my study and research.	3.66	1.000	3.68	.975	3.64	1.053	3.72 (SD=0.96)	3.56 (SD=1.06)	.129	.989
Students can make full use of the library without participating in ILE.	3.18	1.172	3.20	1.143	3.17	1.236	3.30 (SD=1.17)	2.97 (SD=1.14)	.005**	.507
Students can use the web resources to complete the project well without library resources.	2.85	1.335	2.91	1.320	2.75	1.371	2.98 (SD=1.31)	2.62 (SD=1.36)	.008**	.039

(Notes: 5-point Likert scale: 1 = strongly disagree to 5 = strongly agree, C1 stands for the lecture-only class, C2 stands for blended learning class, C-All stands for all students; * $p < .05$ ** $p < .01$.)

5.4.5 Perceptions of Course Contents

The fourth question asked students to evaluate the content of the IL course. According to Table 5-6, the incorporation and utilization of technological resources in foreign literature was deemed the most significant topic by the students. Enhancing problem-solving abilities and implementing effective study strategies were deemed necessary. The utilization of software tools such as Endnote, HitsCite, and SPSS was mandated as a third requirement. Additionally, the results suggest that the group of “tools for managing personal knowledge” was perceived by the participants as the least crucial subject matter. On the contrary, C2 students perceived “Introduction to library resources and services” as the least necessary. Comparing groups C-1 and C-2, the mean ratings for each topic are quite similar, indicating that there are no significant differences between the two groups.

T-test results also indicated that gender was significantly correlated with the perception of necessity toward the overall contents of the IL course. Females consistently gave higher ratings to every topic than males. For topics such as “Endnote, HitsCite, SPSS, and other software tools” “Academic paper submission” “How to use a search engine” “Academic paper writing specification” “Introduction to library resources and services” and “Personal knowledge management tools such as notes, Mind map” there were statistically significant differences in ratings between genders ($p < .05$).

Table 5-6 Level of Necessity Toward Overall Contents of the IL Course: USTC

	Average (C-All)		Average (C-1)		Average (C-2)		Gender			Class
	Mean	SD	Mean	SD	Mean	SD	Male	Female	p-V	p-V
Introduction and use of electronic resources in foreign literature	4.44	.621	4.42	.597	4.48	.675	4.39 (SD=0.64)	4.52 (SD=0.57)	.043*	.417
Literature research method	4.42	.646	4.39	.630	4.48	.675	4.36(SD=0.67)	4.53(SD=0.59)	.012*	.093
Improve problem-solving skills	4.42	.705	4.41	.638	4.44	.820	4.37(SD=0.75)	4.51(SD=0.60)	.064	.087
Efficient learning strategy	4.42	.672	4.41	.644	4.44	.725	4.39(SD=0.70)	4.48(SD=0.63)	.187	.529
Endnote,	4.41	.717	4.38	.742	4.47	.664	4.33(SD=0.76)	4.56(SD=0.60)	.001**	.060

HitsCite, SPSS, and other software tools										
Innovation trends and research topics	4.39	.732	4.38	.657	4.41	.860	4.33(SD=0.78)	4.50(SD=0.63)	.025*	.184
How to follow up on the latest news	4.33	.682	4.30	.677	4.40	.689	4.27(SD=0.70)	4.44(SD=0.63)	.015*	.318
Facts and data retrieval	4.30	.711	4.30	.624	4.30	.858	4.25(SD=0.76)	4.39(SD=0.60)	.052	.411
Academic paper submission	4.28	.810	4.26	.730	4.30	.948	4.17(SD=.87)	4.47(SD=0.65)	.001**	.221
How to use a search engine	4.27	.694	4.30	.648	4.23	.776	4.20(SD=0.72)	4.40(SD=0.63)	.005**	.639
Academic paper writing	4.26	.794	4.27	.715	4.26	.930	4.15(SD=0.84)	4.47(SD=0.65)	.001**	.942

specification										
Introduction and use of electronic resources in Chinese literature	4.21	.744	4.19	.736	4.27	.760	4.18(SD=0.78)	4.27(SD=0.68)	.241	.931
Understanding the challenges of the information society	4.18	.690	4.18	.657	4.20	.753	4.17(SD=0.68)	4.20(SD=0.72)	.686	.431
Introduction to library resources and services	4.14	.777	4.16	.678	4.11	.941	4.06(SD=0.81)	4.29(SD=0.69)	.004**	.966
Personal knowledge management tools such as notes, Mind	4.14	.806	4.12	.767	4.17	.879	4.05(SD=0.84)	4.31(SD=0.71)	.002**	.212

map										
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(Notes: 5-point Likert scale: 1=strongly disagree to 5 =strongly agree, C1 stands for the lecture-only class, C2 stands for blended learning class, C-All stands for all students; * p < .05 ** p < .01.)

5.4.6 Instructor and Teaching Approach

The fifth question investigated the most appropriate person to teach IL courses. The result shows that 40.25% of the students preferred faculty who are proficient in IL, and 28.64% of the students indicated that faculty who are professional in IL and in the same field as themselves (see Figure 5-1). The reason for this is that faculty have research experience, so they are perceived to know more about research content than the librarian. In addition, they are perceived to be good at teaching and can relate to their research practice, and students can understand the knowledge more deeply. Therefore, 3.7% of the students considered LIS faculty as the most appropriate person to teach IL courses.

Further comments included: “I think the competence of the faculty who major in library information science knows the most, and it is teaching, which of course requires a teacher but not a librarian, and also the other faculties are not suitable to teach library courses because they do not always know much about libraries.” However, 15.8% of the students thought that librarians who were skilled in information retrieval and analysis were the most appropriate. However, only 2.96% of students preferred university librarians as instructors. About 18.76% of the students chose librarians as their instructors. According to the students, the IL course instructor needs to have a LIS background and computer skills. This requirement suggests that IL course instructors urgently need to improve their skills.

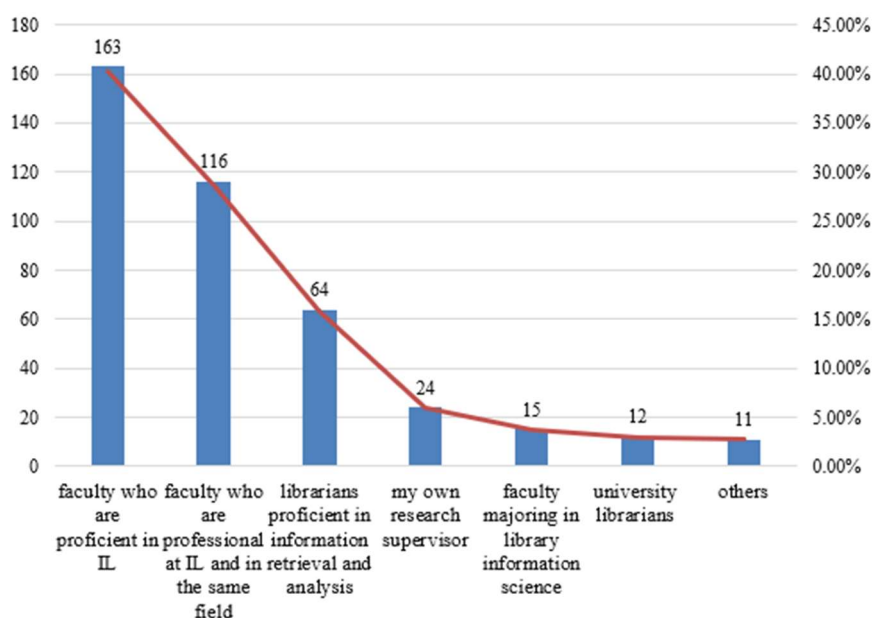


Figure 5-1 Students' Perception on The Most Appropriate Person for Teaching IL Courses (n=405)

The questionnaire also asked about students' information-seeking behavior. When faced

with problems in finding information, 40% of the students would continue to search various databases (see Figure 5-2). Another 28.15% said they would ask their classmates for help. However, only 6.42% of students indicated that they would seek help from university librarians.

The last question asked about the most appropriate instructional approach for delivering IL courses. In the survey results, 46.17% of the students preferred lectures with group activities (see Figure 5-3). Students mentioned that having only lectures is inefficient. It is difficult to concentrate on listening to the lecture. However, group work is an output process, which makes it easy to understand and comprehend. Compared with e-learning, face-to-face teaching was considered highly efficient, and group activities can better internalize the course content and mobilize the classroom atmosphere. In addition, although e-learning allows students to study at flexible times and places and can be reviewed at any time, it is inefficient for those who lack self-confidence. On the other hand, 26.17% of students prefer flipped classrooms. 19.26% of students chose lectures with hands-on practice. Approximately 3.7% of students preferred lecture only and 3.21% preferred e-learning. The results indicated that students look forward to active educational activities in IL courses instead of passive learning.

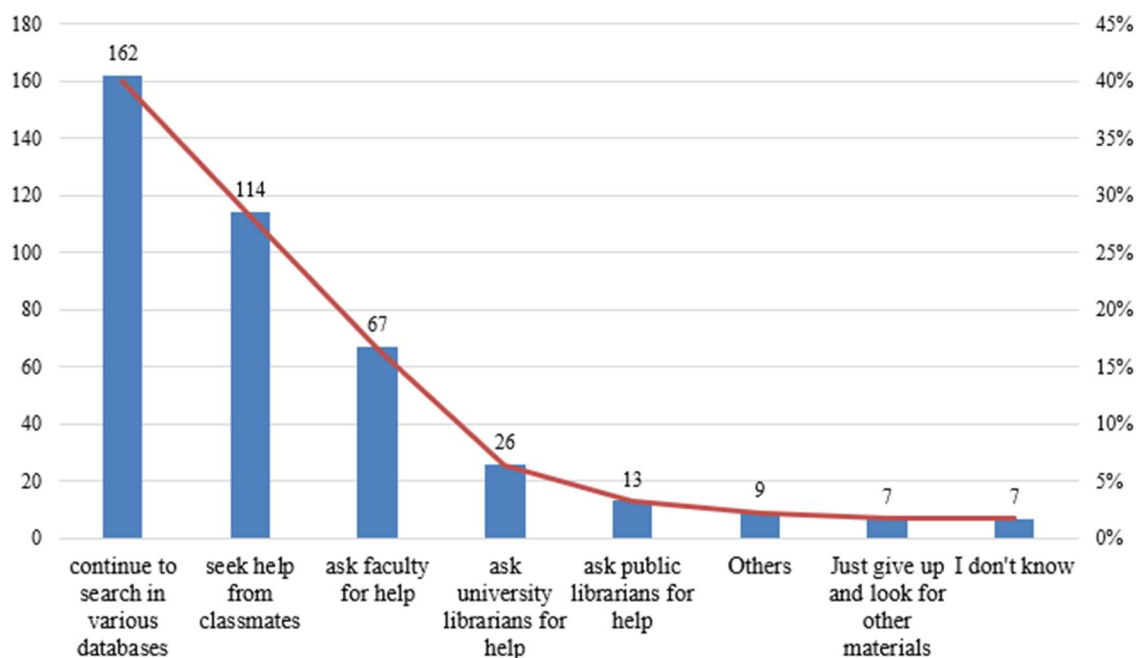


Figure 5-2 Students' Information-Seeking Behavior When They Have a Problem: USTC (n=405)

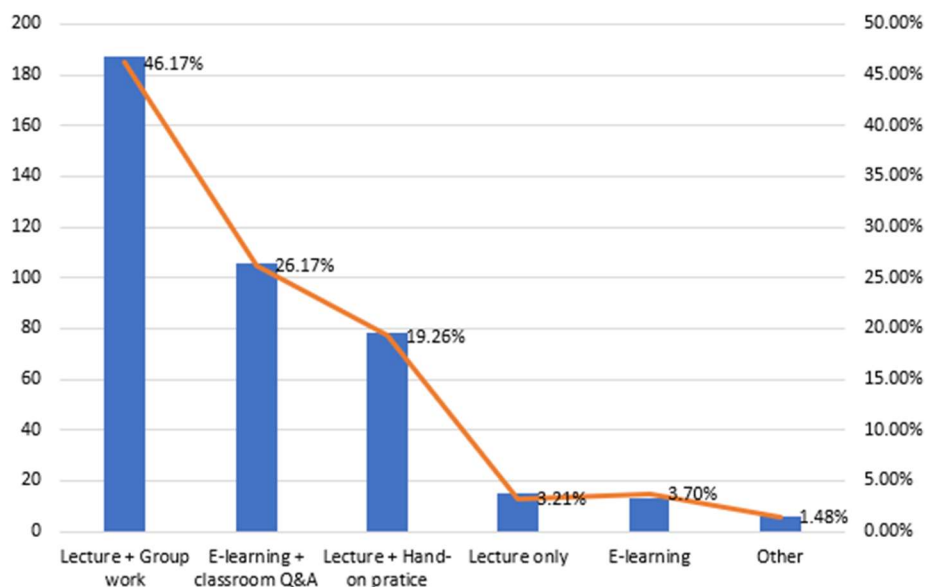


Figure 5-3 Students' Perception of the Most Suitable Teaching Approach to Deliver IL Courses: USTC (n=405)

5.4.7 Students' Comments on the Course

Table 5-7 indicates the feedback provided by the students regarding the course material, the instructor, and the pedagogical methodology. The findings from the interview further elucidated the reasons for enrolling in the course, including the desire to acquire knowledge on the utilization of Endnote and the ability to conduct searches for foreign literature.

Additional insights regarding the students' perspectives on the course were garnered through the outcomes of the interviews. *"This course can help first-year graduate students get started with research to save much time. It is essential to use tools to search for knowledge and develop good research habits efficiently."* Moreover, even though the results reported that *"this course helped me reduce my anxiety about the information society."* Students also expressed their anxiety about the developing information society. *"Nowadays, even with the rapid development of the Internet, it is difficult to learn new knowledge. Because the resources on the Internet are hard to distinguish. In addition, the amount of information is huge, and it is difficult to extract information in a time-consuming and exhaustive way."*

Students also presented their changes during the courses. *"I originally wanted to learn how to find more literature, especially in foreign languages. However, it turns out that this course taught me more about technology development. This course made me realize*

that I am so ignorant about the development of technology. I should pay more attention to the latest information.”

The interview results indicate that students highly recommend the course content. A chemistry student points out that: *“At first, I came with the mentality of learning software (such as Endnote), but it turns out that I have also learned many other things. Not only for research but also for critical thinking and problem-solving skills for work or daily life. This is the best course I have seen about IL.”* In addition, one physics student reported, *“In the past, when it comes to completing some assignment or conducting some literature review, the first step was to search the Internet and then read the article, that is, the process of collecting data and viewing the data is mixed. In the end, I cannot remember anything even if I reread it. Sometimes, I even cannot find it out again. Through this course, we separate the information collection and learning so that each material can be returned and know the source and can be rated after the collection to indicate the importance of each piece of data. As a result, the efficiency and quality have been greatly improved. Through this course, my learning ability has been greatly improved.”*

Another student, when discussing what they learned, mentioned, *“From this course, I can learn not only tools but also many ways of thinking and doing things, and the ability to create collisions of ideas. Not only for research but also problem-solving skills for work or everyday life.”*

The findings of the interview revealed that the students acquired not only the skill of conducting searches but also the ability to conduct research and even underwent a shift in their perception of information. A student expressed that their initial objective was to acquire knowledge on how to conduct extensive research in foreign languages. However, the course facilitated their understanding of the present technological advancements, highlighting their lack of awareness and emphasizing the need to remain updated with emerging trends. The student further acknowledged the significant financial worth of the course.

Students pointed out that this course is much more than learning IL skills; it also teaches time management. *“This course made me realize how important it is to master how to obtain and retrieve information. It is important to find the information you want from the vast amount of information. Time is a non-renewable resource. This course makes me realize how important it is to manage my time!”*

“This course made me recognize the importance of information and improve my information searching ability that obtains and uses high-quality information efficiently.

In addition, this course made me realize that IL skills are not only a set of skills but also a time investment, innovative thinking, and sharing awareness in the digital age. After finishing this course, I feel that my horizons in literature searching have been greatly expanded, and my search ability has also improved greatly. Before, I only knew how to find journals and dissertations in the database as research materials, but after the course, I learned to pay attention to the conferences, funding projects, application guides, and even some of the things that we often overlooked before, such as news reports.”

Other interviews supported this argument. For example, one student mentioned, *“This course made me realize the importance of information and improved my ability to search for information that efficiently obtains and uses quality information. In addition, this course made me realize that IL skills are not only a set of skills, but also an investment of time, critical thinking, and sharing awareness in the digital age.”*

Table 5-7 Interview Results with Students

Number	Major	Gender	Class	Comments on contents	Comments on instructor	Comments on the teaching approach
A	Chemistry	M	1	<i>The content of this course is very reasonable, and it is easy to understand.</i>	<i>The instructor is open-minded and very logical.</i>	<i>You can feel the instructor's passion and emotion directly.</i>
B	Physics	M	1	<i>There was a lot to gain from the course. I enjoyed the class because it was beneficial. Therefore, I recommend this class for additional credit. It is worth at least four credits!</i>	<i>The instructor constantly improves her teaching methods, always attempting to teach a more optimal solution.</i>	<i>Through lectures, online quizzes, time-limited assignments, and group discussions and sharing. It was a challenging but fruitful course.</i>
C	Materials science	F	1	<i>This course taught me how to study efficiently and read the literature, which can improve</i>	<i>The instructor has a sense of humor and makes the lecture</i>	<i>We can learn much more research topics from other departments through</i>

				<i>the efficiency of my research.</i>	<i>interesting.</i>	<i>group discussions.</i>
D	Information science	M	<i>I</i>	<i>The course focuses on tool use and mindset training, imparting methods rather than results. Use tools to increase productivity and save time and effort—train to think and find ways to solve problems from their roots.</i>	<i>After the course, I understood why senior students recommended this course.</i>	<i>The humorous class mode and pleasant atmosphere will give us many ideas.</i>
E	Materials science	M	<i>I</i>	<i>In this course, students can learn not just the method but also the way of thinking. Through this course, the instructor has subtly changed how I process information, dramatically improving my research efficiency.</i>	<i>This course is not a boring indoctrination but an exciting instructor who takes you step by step to think.</i>	<i>The lecture-style course made me much more concentrated on what the instructor said.</i>

F	Chemistry	F	1	<i>This course will broaden horizons, increase awareness, learn more about software, access resources, and information efficiently and comprehensively, and learn new ways of thinking.</i>	<i>The instructor was very well prepared for us, very informative, and very passionate.</i>	<i>The lecture-style course was also helpful in increasing collaborative learning.</i>
G	Chemistry	F	2	<i>The course will recommend various software tools to help research and simplify our work and life.</i>	<i>The most important part is the mindset and self-learning that the instructor expresses throughout the course.</i>	<i>I can watch playback to review the course anytime, thanks to the online learning video.</i>
H	Physics	F	2	<i>This course will give you positive ideas that can positively impact your life, learning, and work habits. The concept of time becomes very important in our consciousness.</i>	<i>The instructor is full of experience and is also one of the researchers, so he knows well how to set IL into the research process.</i>	<i>The online course has been very adaptable to my learning time and pace.</i>

I	Social sciences	M	2	<i>The course is beneficial in information retrieval, and it will help in future research paths. ... I think the most crucial part is the mindset and self-learning that the instructor expresses throughout the course.</i>	<i>The instructor is more concerned with transmitting a method and idea than a mere introduction to practice class.</i>	<i>The online video is a real-time course recording, so you can feel the real-time atmosphere even if you are not in the classroom.</i>
J	Geography	M	2	<i>... you can learn a lot of valuable tools to help you understand research. It is also helpful in finding and thinking about the potential problem.</i>	<i>The instructor incorporates many of his experiments and methods in the course design.</i>	<i>I can stop anytime I cannot understand or adjust the video speed. That makes it possible to learn at my own pace.</i>

5.5 Discussion

5.5.1 High Perception and Motivation Toward Information Literacy

One of the key findings of this task was that student participants showed high motivation for choosing IL courses, especially in terms of the intrinsic motivation aspect. According to SDT, this intrinsic motivation is rooted in the need for competence, as students strive to improve their skills and abilities in information seeking. This is consistent with constructivist theory, which posits that learners are motivated when they see the relevance and value of the learning material to their lives. In addition, the results indicated that students enrolled in the courses with clear and specific problems in the information-seeking process. In other words, students have a clear motivation and a vigorous pursuit of knowledge. SCT posits that students' motivation can be influenced by their self-efficacy beliefs and outcome expectations. In this case, students' high motivation for IL courses can be attributed to their beliefs that these courses would be beneficial in the future and that gaining all kinds of knowledge is essential. These beliefs can be seen as outcome expectations that positively influence their motivation to engage in IL courses. In contrast to the current investigation, Zhao (2019) ascertained that postgraduate students may harbor the belief that instruction in IL is deficient in merit and that they possess the competence to carry out research adeptly. The results of the survey indicate that there is a significant tendency among these students to overestimate their abilities, and it is likely that a significant portion of them lack the necessary skills to engage in research at a postgraduate level. The study conducted by Schunk et al. in 2008 revealed that there exists a favorable association between the self-efficacy of students and their cognitive engagement and academic achievement. Students who believe they are competent are more likely to report using mental strategies, self-regulate, and persist in completing complex academic tasks. Further recommendations in this study suggested that librarians should explore how to incorporate the threshold concepts that can guide IL skills instruction. In addition, the author advised that a for-credit course may be an alternative format for a university to achieve this goal.

Furthermore, the findings indicate that external variables, such as course assessment, course timetable, and peer guidance, are significant determinants in incentivizing students to enroll in IL courses. The extrinsic factors can be comprehended through the lens of relatedness, as learners strive to establish connections with their peers and become an integral part of a learning community that espouses comparable objectives and principles.

Redirecting the discourse towards comprehending the students' perception of IL and its

significance in their everyday learning and research, the participants who volunteered for the investigation exhibited a greater degree of drive and self-assurance than what the researchers had anticipated. The role of IL instructors is to learn more about students and how they view information seeking and IL, and to structure course content in ways that make sense and correlate with students' needs. Retention is evidenced by students' advocacy for the inclusion of IL courses in the curriculum and their belief that these courses foster lifelong learning. It is conducive to shaping scientific research logic, mastering the process of processing, gathering detailed information, classifying, extracting, and other time-consuming and labor-intensive processes, and focusing more energy on thinking about significant research. Students recognized the importance of IL courses in shaping their lifelong learning and research skills, which can be related to the concept of self-regulation in SCT. Self-regulation refers to an individual's capacity to regulate their cognitive processes, affective responses, and behaviors to attain their intended goals. By recognizing the value of IL courses in promoting their lifelong learning, students demonstrate self-regulation as they actively seek to improve their IL skills.

Gender was found to be a significant factor influencing several of the findings. Research has shown that gender and individual characteristics can influence students' perspectives on their IL skills. Michalak et al. (2017) compared the confidence gap between males and females regarding their IL skills. In their perceptions of IL talents, female international business students were marginally more confident than their male counterparts. The present study's results indicate a departure from Michalak et al.'s investigation, which revealed that male students exhibit higher levels of self-efficacy in the domains of information management and analysis compared to their female counterparts. The findings of the current investigation indicate that male students exhibit higher levels of self-assurance in the domains of information management and testing as compared to their female counterparts. Moreover, drawing from empirical evidence, it can be deduced that female students demonstrate higher levels of self-efficacy when utilizing library resources. In contrast, female students showed much higher motivation for the IL course. This confidence is consistent with the constructivist notion that learners construct their knowledge based on their experiences and interactions. The observed variations in self-efficacy based on gender and social class imply that the acquisition of knowledge and learning experiences may be subject to diverse factors, including individual traits, course content, and pedagogical methods. In accordance with SCT, self-efficacy pertains to an individual's conviction in their capability to execute specific tasks or attain results. The heterogeneity in self-efficacy can be ascribed to the diverse encounters and responses from the surroundings that students encounter, thereby influencing their self-efficacy convictions. Variations in

self-efficacy have the potential to impact the motivation, learning approaches, and eventual academic achievements of students in IL courses.

5.5.2 From Information Retrieval to Critical Information Literacy

Based on the results, students strongly agreed that the IL course should not be limited to the practice course, but should guide students to learn how to learn, and they believed that this course would help them in lifelong learning. Although IL courses have existed in China for more than 30 years, the content is unified and backward, remaining in the traditional literature retrieval theory (Huang, 2016). Some scholars pointed out that new approaches, technologies, and methods should be considered, especially in information awareness, information law, and information ethics education. Combined with the ACRL Framework for Information Literacy for Higher Education (2015), IL extends the learning curve of students' academic careers and integrates with other educational and social learning goals. IL course design should also extend IL searching skills to focus on critical information literacy (CIL). CIL is a way of thinking and teaching that examines the social construction and political dimensions of libraries and information, problematizing the production and use of information so that library users can think critically about such forces (Tewell, 2018). As a result, CIL can be broader and more conducive to academic learning, individual growth, and social development. CIL goes beyond traditional information retrieval and emphasizes the importance of recognizing and evaluating the biases, values, and power dynamics that shape the information landscape. Graduate students are often required to conduct independent research and write theses or dissertations, making CIL skills essential for academic success. Integrating CIL into graduate education equips students with the ability to navigate the information landscape, evaluate sources, make informed decisions about the information they encounter, and become responsible and engaged information users. CIL enables the development of students' personal and professional aptitudes through the promotion of critical thinking abilities and the cultivation of a discerning attitude towards information consumption. This enhances their ability to engage in knowledgeable and refined discussions and disagreements and prepares them for the information-rich setting they will encounter in their future careers.

Small et al. (2004) asserted that the attainment of practical IL skills not only equips learners with essential competencies but also stimulates their desire to acquire knowledge and pursue information, encourages their inquisitive behavior, and nurtures their inclination towards lifelong learning. They emphasized that ILE is not just a framework of knowledge and skills but reflects an attitude of seeking solutions to information problems, recognizing the importance of mastering information skills, trust in information, and satisfaction in conducting research. IL is much more than literature

searching; it includes information awareness, concepts, ethics, and other aspects. The CIL approach prioritizes the importance of critical analysis, self-reflection, and ethical considerations in the various stages of information creation, dissemination, and utilization. CIL is an academic field that centers on examining the impact of societal, cultural, and political factors on information and its utilization. In the contemporary era of interconnectivity and globalization, enhancing students' IL and competencies, strengthening their education in information ethics, and promoting their personal and psychological growth are of paramount importance. Enhancing information security is a vital factor in preventing unapproved entry to or revelation of sensitive or personal information. Furthermore, it is imperative to provide individuals with the competencies essential to meet the demands of the contemporary information age.

5.5.3 Librarian Identity Versus Instructor Identity

The results show that students perceive a close psychological relationship with faculty members, as they believe that faculty can better understand their needs compared to librarians. This highlights the importance of expertise in facilitating students' knowledge construction. This observation is consistent with the constructivist perspective, which asserts that learning is a social process and highlights the faculty's crucial role in mentoring and supporting students. A discrepancy exists between the expectations of librarians and the perceptions of students regarding appropriate conduct during the process of information seeking. According to Head and Eisenberg (2009), the librarian's approach to research is founded on thoroughness, whereas the student's approach is founded on efficiency.

Ince et al. (2019) believed that librarians are often the only professionals who teach graduate students to become information literate researchers, not only in information practices but also in shaping and developing research thinking. Unexpectedly, only 18.76% of students preferred librarians as their instructors, which means that students do not see the role of librarians in ILE. This situation is not unique to Chinese academic libraries. Cohen et al. (2016) surveyed IL credit courses in the United States and found that only 19% of institutions had IL credit courses taught by librarians. While most of these courses were undergraduate electives of one to two credit hours offered under the auspices of the library, a significant minority required three or four credit hours. The position of IL and the role of librarians in IL are not widely known in the academic community, especially in a positive way.

However, students believed that librarians played an essential role in their study and research (see Table 5-5). Robertson (2003) also highlighted the role of librarians in graduate IL education and the importance of including librarians as information

professionals in IL courses. In the era of digital libraries, librarians' work may extend beyond the library, as information providers enable users to access information without visiting the library. Academic librarians are responsible for providing, enhancing, and distributing both tangible and digital support. To adequately address the unique needs of graduate students, academic librarians involved in graduate education must possess a thorough comprehension of the specific requirements of this student population.

5.5.4 Lecture Versus E-Learning

With the development of information technology, ILE faces many challenges. Students' access to information is more diversified due to the unprecedented abundance of information resources, and new information resources, content, and tools need to be mentioned in ILE. In addition, students prefer interactive, fragmented, and collaborative learning to traditional classroom instruction. Online instruction has been implemented in academic libraries in response to the growing student population. The growing use of online learning platforms is revolutionizing the way students engage with IL instruction. MOOCs are seen as a more accessible and effective way to deliver IL courses. Liao (2019) conducted a website survey to analyze 124 MOOCs on 10 platforms across the country, and found that IL MOOCs present diverse content trends, including data literacy and media literacy. Guo and Huang (2020) investigated the practice of ILE in the mobile environment in China. Their study found that 87.2% of 985 university libraries used the WeChat platform for ILE.

The survey results are similar to other relevant research on pedagogical approaches to IL courses. For example, Detlor et al. (2012) found that active instruction had a significant and direct impact on achieving positive student outcomes, such as reduced anxiety or increased self-efficacy and increased awareness of library resources. Similarly, Magliaro (2011) suggested that graduate students may benefit from different methods of acquiring IL skills through frequent, more in-library, in-class, and online IL instruction. Furthermore, as the technology of library tools continues to evolve, the one-time general library instruction that typically occurs during the first semester of a graduate program is insufficient to provide the most needed IL skills. According to Guo and Huang (2020), because WeChat has become the leading platform and an extension of mobile ILE, university libraries in China have abandoned the independent development of library apps or stopped collaborating with manufacturers to develop them. For example, freshman training, micro-curriculum, and self-quizzing in ILE are more suitable for the WeChat platform.

What is surprising is that students prefer to learn collaboratively and interact with other students in offline classes than in e-learning. From this, we can see that these graduate

students value active learning more than passive absorption of knowledge or skills, and there is an input to output process through group activities. Students' preferences for teaching approaches also support constructivist theory. Most students preferred lectures with group activities or flipped classrooms, indicating a preference for active rather than passive learning. These teaching methods allow students to engage with the material, interact with their peers, and apply their knowledge in practical situations, which is consistent with the principles of constructivist theory. This preference is also consistent with SCT's emphasis on the interaction of cognitive, behavioral, and environmental factors in the learning process. Active learning strategies engage students cognitively and behaviorally while providing a supportive learning environment, which can increase their self-efficacy and motivation for IL courses. The interview results also expressed that the in-class activities help to increase collaborative learning, so a more interactive approach should be included in the MOOC courses. Similarly, Markless and Streatfield's (2007) assessment of academic institutions in the United Kingdom suggests that many IL courses continue to teach IL using a single skill-based and linear process. Online IL instructional videos and texts are becoming less attractive; the online IL instructional process is one-way, isolated, and uncontrolled, lacking real-time interaction in real classrooms, monitoring of progress, and test evaluation. An important issue is how to perceive current changes, how to use modern information technology to conduct ILE, how to increase students' engagement and how to develop students' IL skills. The survey results showed that almost half of the students preferred lectures with group activities. The results of this study suggest the need for a wider range of IL interventions, both in online and face-to-face contexts, that support all stages of the knowledge creation process, not just retrieval. ILE is not just a course that a teacher teaches, but a course that students learn. It should be based on an open, interactive, and experimental model of education (Guo & Huang, 2020). Although MOOCs have been widely used in ILE, our understanding of students' learning experience, acceptance, motivation, and intention toward this teaching approach, especially at the graduate level, is unclear. Gonda et al.'s (2020) research also revealed a difference between undergraduate and graduate students in their use of MOOCs. Graduate students made much more use of the discussion forum, webinar, theory on the topic, assignments, and examples. The researchers believed this is because graduate students already have a bachelor's degree in higher education and know that they are expected to be independent and responsible in their studies. They also have more experience with e-learning and are more open to communication with their classmates and instructors. This finding provides adequate insights for higher education institutions to manage and integrate MOOCs into the ILE curriculum. The results of this study also indicate the need to examine the nature of instructional design and how academic

librarians practice it.

5.6 Conclusion

In conclusion, the results of this study showed that graduate students had high intrinsic motivation for IL courses. The current study highlights that many participants enrolled in the course with a specific purpose. In addition, students showed a strong self-efficacy in IL. Furthermore, many participants preferred instructors who were proficient in IL as the most appropriate person to teach IL courses. Most students preferred lectures with group activities as the most appropriate teaching method for IL courses rather than e-learning. There was a general agreement among the students that IL courses should not be limited to the practice course but should guide students to learn how to learn. The results of the study suggest that instructors should be able and confident to provide appropriate IL courses for graduate students. It is worth redesigning educational activities to meet students' needs and develop their critical IL skills. IL instructors are educators and partners in understanding and respecting students' research needs and future careers. In addition, IL course content should be reviewed every year, just as the entire educational plan should be reviewed throughout.

Response to Sub-RQ 5-1: Graduate students provided positive evaluations of IL course content, identifying the introduction and use of electronic resources in foreign literature, problem-solving skills, and efficient learning strategies as the most valuable aspects of the courses. However, they identified personal knowledge management tools as the least necessary content. This finding suggests that students value practical skills and knowledge that can be immediately applied to their research and academic work.

Response to Sub-RQ 5-2: The study found significant differences in graduate students' perceptions of IL courses based on the learning format. In IL courses, students in blended learning environments reported greater motivation and self-efficacy than those in lecture-only courses. This finding underscores the significance of implementing active learning and engaging teaching methods, such as group activities and hands-on practice, into the design and delivery of IL courses to enhance student learning experiences and outcomes.

Response to Sub-RQ 5-3: The results also revealed significant differences in graduate students' perceptions of IL courses based on gender. Female students showed higher motivation and more positive perceptions of IL courses than their male counterparts. The respondents exhibited a higher inclination towards perceiving the potential advantages of IL courses in the future and placed greater significance on acquiring knowledge pertaining to academic pursuits. The results of the study indicate that male students exhibited higher levels of self-efficacy in the areas of information

administration and information analysis, whereas female students demonstrated greater self-efficacy in utilizing library resources.

The findings of this research suggest that it would be advantageous for educators to consider gender-related differences in motivation, attitudes, and self-confidence when devising and executing IL programs. Academic professionals can create a comprehensive and efficient pedagogical environment that meets the unique needs and expectations of both male and female students.

It is essential to recognize that the dilemma facing the instructional design domain is not limited to the delivery of courses that utilize modern formats or technologies, but also the development of courses that are relevant, engaging, and effective for the students who enroll in them. As stated previously, the purpose of this study was to enhance and improve the engagement of postgraduate students in IL courses through the lenses of motivation, self-efficacy, and perceptions. This highlights the importance of considering students' preferences and needs when designing IL courses. However, this research has certain constraints. The findings of this study may not be generalizable to other universities in the same geographical area, given that it was exclusively conducted at a prominent university in China. Nevertheless, it provides an insight into how graduate students perceive IL courses. In this way, this study provides a reference for practitioners to use or design an IL curriculum to provide teaching strategies and experiences that motivate students to learn and apply IL skills. More importantly, these findings have implications for how IL courses should evolve to serve this student population with diverse disciplinary needs. In future research, it will be essential to obtain data from instructors who teach IL courses to investigate differences between students and instructors. Further research is required to ascertain if there are disparities between students who take the IL course and those who do not in terms of their perceptions and self-efficacy regarding IL. Prospective research should also investigate the impact of IL courses on students' prospective professions and the long-term consequences of ILE on their information-seeking behaviors. This would provide a more complete understanding of the value of IL courses for graduate students.

With the proliferation of digital resource portals, online reference services, and discovery tools, and as libraries continue to digitize collections and provide more direct, consolidated, one-stop access, academic libraries are being forced to rethink their ILE programs and reference services to be more cost-effective and meet the needs of their users. The traditional face-to-face ILE service is not obsolete. Rather, the role of the reference librarian is beginning to shift from information provider to information access consultant in the context of ILE. In an era of changing end-user behavior, ILE librarians are compelled to seek new marketing and outreach strategies, to radically change their

perspectives on end-user needs, and even to change the way they deliver ILE to meet their users' needs. The results of this study are critical to informing LIS professionals as well as current students about contemporary user-centered approaches to ILE.

Chapter 6 Discussion and Recommendations

6.1 Introduction

In this section, I will discuss in detail the various socio-cultural and educational (or more specifically, curricular) factors that influence ILE sessions, as well as students' perceptions of the importance of these ILE services. I show that the different perceptions found in these groups were a direct result of the distinctive learning practices (associated with their CHC) and curricular requirements practiced in these universities.

6.2 Range of ILE Programs Provided at Each University

As mentioned earlier, interviews were conducted with the librarians of the respective universities to clarify the realities of ILE in each university library. The results show that there are similarities and differences in ILE among these universities (see Table 6-1 and Table 6-2). Despite the diversity in educational institutions and curricula among these colleges, there are many parallels in the spectrum of ILE programs available in each university libraries. First, SMS messaging seems to have become obsolete or outdated, and libraries have quickly adopted other newer, more efficient, and free options (such as LINE, WeChat, and WhatsApp) depending on their popularity in each region. Given the current digital environment and the convenience provided by various mobile technologies, all participating university libraries offer digital-based ILE services in face-to-face and online formats. The USTC library offers an online course platform, a Q&A platform, an assignment submission system, and a peer review system to promote independent learning. This indicates that ILE librarians at all five universities also recognize the importance of facilitating students' development of digital skills to cope with the vast amount of information that needs to be searched, refined, categorized, and understood (Liu et al., 2016, 2019).

In contrast to other universities, NTNU is the only library that does not offer a virtual reference service such as “Ask a Librarian.” Because of the low ratio of LIS subject librarians to total student population, students at NTNU are therefore able to receive more individual attention from the ILE librarians. Because of this, the ILE librarians could afford more time and resources to offer dissertation workshops on a more individual (one-on-one) basis. Perhaps this could be one of the main factors why NTNU decided not to set up a virtual reference service.

Table 6-1 Range of ILE Programs Available at Each University Library (Data as of June 2022)

ILE Programs	FDU	NTNU	PKU	UT	USTC
--------------	-----	------	-----	----	------

Library orientations	✓	✓	✓	✓	✓
Freshmen library tours	✓	✓	✓	✓	✓
E-resource workshops	✓	✓	✓	✓	✓
E-learning instruction workshops via the library homepage	✓	✓	✓	✓	✓
Database instruction workshops (e.g., database retrieval through face-to-face with hands-on practice)	✓	✓	✓	✓	✓
Research consultations (one-on-one)	✓	✓	✓	✓	✓
Subject-specific library courses (e.g., writing skills)	✓	✓	✓	✓	✓
Library guides	✓	✓	✓	✓	✓
Virtual reference service (Ask a Librarian)	✓	×	✓	✓	✓
Course assignment	×	✓	✓	✓	✓

consultations (one-on-one)					
Thesis / dissertation / final year project consultations (one-on-one)	✓	✓	✓	✓	✓
Channels for publicizing ILE programs	FDU	NTNU	PKU	UT	USTC
University Library sends a batch of emails to all students/ Email Announcements	✓	×	✓	×	✓
Making announcements on University Library homepage	✓	✓	✓	✓	✓
University Library sends SMS messages (via mobile phone)	×	×	×	×	×
University Library puts up posters throughout the entire campus	×	×	✓	✓	✓
University Library sends messages via	✓	✓	✓	✓	✓

online social media tools (e.g., LINE, WeChat, WhatsApp, etc.) to notify the students					
University Library asks professors to encourage the students to attend	×	×	✓	×	✓

Table 6-2 The Interview Results With Librarians

	FDU	NTNU	PKU	UT	USTC
Reference	According to ALA guidance	According to ALA guidance	Use ALA guideline as a reference	According to the ALA and JLA guideline	According to ALA guidance
The number of Reference librarians	15 (7.7% of all librarians)	24 (39.3% of all librarians)	13(8.6% of all librarians)	5 (8.4% of all librarians)	11(16% of all librarians)
The number of Subject librarians	19	19	32	0	12
ILE targeted each major	Yes	Yes	Yes	Part of	Yes
Customers	Students, faculty,	Students, faculty,	Students, faculty,	Students, faculty,	Students, faculty,

	students and librarians come from partner institutions or other universities	students and librarians come from partner institutions or other universities	patrons come from partner institutions	patrons come from partner institutions	patrons come from partner institutions
Volunteers work	Only work on books borrowing and lending	Only work on books borrowing and lending	Join the ILE promotion	Join the ILE	Join the ILE
Promotion tools	Homepage, WeChat, Email, Weibo	Homepage, FB, Email	Homepage, WeChat, Email, Weibo	Homepage, FB, Email, Twitter	Homepage, WeChat, Email
Fans of Twitter (WeChat) ¹²	900	×	30,000	7,927	800
Fans of FB (Weibo) ¹³	23,914	11,000	44,000	22,000	×
Library website for freshmen	Yes	No	Yes	No	Yes
Mail service	Yes	Yes	Yes	Yes	Yes
Difficulties	Cooperation (cooperate with faculty members and other	Effect (even join these activities the students still can't use the	Users' requests for ILE are diversifying.	Presentation (how to explain it more clearly and	The problem of conflict between training

¹² Latest Tracking Date: April 24, 2023

¹³ Latest Tracking Date: April 24, 2023

	university libraries)	library smoothly)		attractive)	time and patron time
Strategic plan	More online training programs with entertainment	To cooperate with teacher assistants in every department to help subject librarian to hold library ILE programs	Enhance the ILE system according to the research process	To expand the range of the contents through combine instruction with practice	Enables users to self-direct their learning
Evaluation for each ILE programs	Yes	Yes	Yes	Started from 2015	Yes
Skill & knowledge	Presentation skill, information retrieval skill	Communication skill	Presentation skill, information retrieval skill	Presentation skill, information retrieval skill	

From Table 6-2, we can see some similarities among these universities. First, the most prominent similarities are that the contents of the ILE all use the ALA guidelines as reference in the five universities. Secondly, they all have email service, social media promotion service, and a library website to reach out to library users.

In terms of differences, firstly, each university has a unique strategic plan. For the UT library, it seeks to expand the range of content by combining instruction with practice. For FDU's library, more web-based tutorial programs with entertainment (such as using games in online library instruction courses) is under construction. For NTNU's library, there are programs to work with teacher assistants in each department to strengthen efforts to work with faculty to integrate ILE into the curriculum more systematically. For PKU's library, ILE is expanded according to the research process.

Second, the universities have different numbers of reference librarians and subject librarians. USTC's library plans to use technology to visualize and fragment all training

content, support intelligent search and recommendation functions, enable users to learn by themselves, and optimize the degree of targeted training to facilitate information access and better meet users' information needs. The number of reference librarians is 5 in the UT Library and FDU Library, 11 in PKU and USTC, and 24 in the NTNU Library. Both FDU and NTNU libraries have 19 subject librarians, USTC has 12, and PKU has 32 (see Table 6-2). On the other hand, there are no subject librarians at UT, and the reason for this is discussed in the previous chapter (see Chapter 4.2.3). Instead of subject librarians, the UT Library hired graduate students as learning advisors in 2012 to staff the Student Support Desk and provide learning support services to students. In addition, due to the lack of subject librarians, the ILE courses for each subject are only for LIS majors and medicine majors, which are in their respective branch libraries. For the other libraries, there are ILE courses for each major. In other words, compared to other universities, the UT library prefers to provide general instruction rather than subject-oriented instruction. Third, at PKU, USTC, and UT's library, volunteers can join and play an important role in the ILE program. For example, at UT, volunteers oversee library tours—especially for international students and people with physical disabilities. Library volunteers at PKU and USTC participate in ILE promotional activities, especially using word of mouth. While for the other two universities, volunteers only work on circulation or some basic office work. Fourth, FDU, PKU, and USTC have a website especially for freshmen to introduce the library services and tell them how to use the library. Finally, only PKU provides ILE games for students to self-assess and learn.

When it comes to the difficulty of conducting ILE, UT librarians mentioned that presentation is a challenge for them, especially how to explain it more clearly and attractively to students. The librarians of FDU pointed out that cooperation with faculty members and other university libraries is a challenge for them, and the librarians of NTNU said that how to make the ILE programs more effective is quite difficult because students still cannot use the library smoothly and skillfully even though they have participated in these activities. Regarding the professional skills of librarians, the librarians from UT and FDU said that presentation skills and information retrieval skills are the most important for them. However, librarians from NTNU considered communication skills as being the most important skill. Regarding the evaluation for each ILE program, UT started the evaluation for the database instruction courses from 2015. FDU and NTNU have a regular evaluation target for the library instruction courses and the whole library service, including the librarians' satisfaction. The PKU Library has established a regular feedback mechanism to collect timely feedback from participating patrons on whether the lecture design is appropriate, whether the content is practical, and what other lecture content is needed. Each semester, the library will

compile and summarize the feedback to lay the groundwork for new lecture topics in the future. PKU librarians emphasized that the library needs to continuously optimize the ILE system based on patron feedback to gather more user needs to make the ILE valuable and truly serve the patrons. To address this issue, the USTC librarian mentioned the problem of conflict between training time and patron time. The USTC library is innovating orientation activities by having consultants show the library's pre-prepared web-based training videos in the classroom before conducting library tours. The library communicates with the technical department to create a page for booking tours, and consultants can make appointments on the platform according to the actual situation to improve efficiency.

6.3 Promotion and Marketing Strategies for Information Literacy Education

In terms of channels for publicizing ILE programs, all universities use the library homepage and SNS as a tool (see Table 6-1). In addition, FUD, NTNU, and PKU use email announcements. The librarian at USTC mentioned that they use the new communication channels such as WeChat platform and email delivery system to inform students about important events, which effectively improves publicity. WeChat and Weibo are the predominant online social networking platforms in mainland China, with a particular appeal to the younger demographic. The study conducted by Chen et al. (2016) illustrated that the WeChat platform offers essential library services, including active information push, personal information retrieval, and library information retrieval. The active information push feature involves the dissemination of announcements, news, training information, new book notifications, and reading rankings. The personal information retrieval feature enables users to access their borrowing records, renewals and reservations, due date reminders, and user information. Lastly, the library information retrieval feature provides the most recent news, hours of operation, borrowing rules, advance e-book reservations, and advance e-book renewals. In some ways, these features make WeChat a more interactive social media than Facebook or Twitter for promoting library services. Guo (2015) showed that as of August 2014, out of 39 Project 985 universities, 25 libraries (64.1%) introduced the WeChat public platform service. Undoubtedly, WeChat has created a new way of library promotion in China. As a result, it is an appropriate way for libraries to use social media to promote, should raise awareness of the library, and build academic community among the university. At the same time, there are many studies indicating that using social networking sites as marketing and public relations tools of library and information services to build academic committee among students could be effective (Alkindi & Al-Suqri, 2013). However, little research focuses on the content of library promotion with students' information behavior in terms of SNS usage. However, the

promotion should also be combined with the students' information behavior in terms of using social networking tools. For example, the UT Library should be more proactive and promote more on Twitter because students prefer Twitter to Facebook.

According to the comments of the survey respondents, more interactive IL programs are needed to engage students' interest, such as database retrieval sessions with more interactive and hands-on exercises, interactive library games, and more colorful and attractive library bulletin board displays to attract students' attention and sustain their interest. IL games have the potential to engage students, improve IL skills, and thereby increase positive attitudes toward the library and its staff (ACRL, 2015). Taking the example of FDU, which created a digital book for users to learn how to use library services and facilities (see Figure 6-1), and a website specifically for freshmen (see Figure 6-2). All the background information and activity information are provided for freshmen, so students could learn the basic library information from the website even if they missed the library orientation. Besides that, there are two kinds of library tours in FDU, one is an online library tour to know how to use the library service and another one is called library in-depth tour which explains how the library and librarians work, how to do book preservation and conservation and so on. Since all the basic information about how to use library services and resources is available online, the librarians can spend more time giving specific instructions that are course-related and assisting with research. For the NTNU Library, there are online panoramic tours and floor configuration guides to check the descriptions for each area (see Figure 6-3). In addition, the NTNU Library plans to create online tutorial programs for user training, as the FDU Library has done. The UT Library produced videos to introduce how to use the library and made a short movie to attract more students to use the library.



Figure 6-1 The eBook Page of Fudan University Library¹⁴



Figure 6-2 The Webpage of Library User Education for Freshmen¹⁵

In addition, libraries also use mascot characters to create a popular, user-friendly image for the library. The UT library uses a *yuru-chara* (a Japanese term for a mascot character—usually used to promote a place or region, event, organization, or business) to attract more students to the library. The library's official mascots are Tulip-san and GAMA Jumper (see Figure 6-3). Similarly, USTC also created an official mascot for promotion, named Xiaowo (see Figure 6-4). NTNU uses a plush lion as a character to represent the library (see Figure 6-5). However, the UT mascot is created more for university branding and marketing (although it sometimes appears in promotional videos for the library). Although it is interesting to have a mascot character to represent the library, it does not seem to do much to bring people to the library to use its services and resources. However, NTNU also uses the mascot character as an image of a librarian, and it always uses the character to attract more students to come to library user education activities. Consequently, they enjoy significant popularity and recognition among the student community. Conversely, the FDU library does not feature any animated characters. It is said that FDU Library prefers to give students a professional image.

¹⁴ Retrieval at: <http://202.120.227.59:85/book.html> (Accessed on 05th June, 2016)

¹⁵ Retrieval at: <http://202.120.227.59:8080/> (Accessed on 05th June, 2016)



Figure 6-3 The Official Mascots of The University Of Tsukuba Library¹⁶



Figure 6-4 The Library Official Mascots of The University of Science And Technology of China¹⁷



Figure 6-5 The Official Mascots of the National Taiwan Normal University Library¹⁸

¹⁶ Image from the University of Tsukuba Library's Facebook page

¹⁷ Image from the University of Science and Technology of China Library homepage

¹⁸ Image from the library's Facebook page.

6.4 Information Literacy Education Design from the Perspective of Students' Needs

The results indicated that the students did not perceive the programs as captivating, innovative, or involving. It is imperative that academic institutions give due consideration to such feedback and endeavor to enhance their curricula to cater to the requirements and anticipations of their students more effectively. Academic institutions can enhance the appeal, inventiveness, and interactivity of their curricula through various means, such as conducting surveys and focus groups to ascertain the requirements and anticipations of their students, integrating dynamic and tactile pedagogical methods, such as project-oriented learning, case analyses, and simulations, affording students with occasions to collaborate and tackle authentic predicaments, and cultivating a climate of originality. Through the implementation of various strategies, educational institutions can create more interactive and stimulating programs that effectively cater to the needs of their students. According to Tracy and Searing (2014), the presence of an embedded subject librarian means that students are constantly interacting with a variety of subject or campus librarians who visit their classes, supervise internship projects, assistantships, etc. It is probable that a combination of these factors will contribute to a greater awareness of library services (especially ILE) and, consequently, a high estimation of the ILE programs provided by their university libraries.

Academic libraries are under increasing pressure to demonstrate quality and efficiency. As Cullen (2001) noted, "Focusing more energy on meeting customer expectations is critical in today's environment" (p. 663). The fact that student respondents characterized ILE librarians as less "outgoing," "creative," "interesting," and "engaging" suggests a need for increased emphasis on the effectiveness, not just the efficiency, of ILE. As Posey (2009) notes, students (as library end users) often judge their library experience not only on whether they received the information they sought, but also on the service attitude, service quality, and enthusiasm of library staff. In the context of our current study, the researchers believe that the ILE librarians were judged on how energetic or innovative they were in engaging students or promoting their services to the university community. Brunsdale (2000) also noted that for academic libraries to succeed in the information age, they must develop successful marketing plans to reach their users. In addition, students in different academic majors and at different academic levels tend to have different learning styles. Consequently, to facilitate effective student learning, ILE must be aligned with specific research objectives, utilize a variety of learning styles, and provide time for practice and assessment (Bean & Sabrina, 2010). It is also important to ground ILE programs in user needs. According to Dupuis (1999), "For library instruction to evolve, we must consider the nature of our audience. Who are your

students? What do they identify with? What interests them? What kind of learning environments do they thrive in?” (p. 290). Liu et al. (2016) also noted that no one set of rules or ILE program will fit all students or academic disciplines. Therefore, it is essential for librarians to provide ILE and other learning supports that are aligned with students' actual requirements and have the ability to assist students (regardless of their major) in becoming self-directed lifelong learners (Phillips et al., 2019). ILE programs must be adaptable enough to accommodate students from various academic disciplines.

Additionally, students felt that they “should be able to receive academic credit for attending the workshops” and that “professors should invite reference librarians to conduct library workshops in classrooms instead of waiting for students to volunteer to attend these workshops.” Faculty, librarians, technology experts, and community members should be able to collaborate and partner with ILE. To strengthen relationships with faculties, the USTC library has established a Young Scientist Visitation Program, in which young scientists are visited on a regular basis to inform them of the library's current and prospective services and to collect their feedback. The library also introduces library services at university related meetings to encourage faculty to collaborate with the library; and proactively participates in various academic events at the university to understand the actual needs of researchers and seek opportunities for collaboration. In fact, other researchers have highlighted the crucial role that academics play in ILE (Hope et al., 2001; Liu et al., 2019; Phillips et al., 2019). According to Phillips et al. (2019), instructors and librarians need to collaborate in a variety of ways to integrate IL and ILE experiences into the curriculum. In addition, as noted by Hope et al. (2001), librarians have also become increasingly “active and visible in the broader context of higher education; both locally and nationally, librarians are working with other educators on campus to integrate IL learning outcomes into college and university curricula” (p. 16). Leachman and Leachman (2015), as well as Otis and Whang (2007), have documented that the partnership between librarians and faculty in the instruction of IL can result in numerous advantages, such as a rise in the quantity of cited references and an enhancement in the caliber of students' ultimate assignments. Breivik (1999) noted that the acquisition of IL cannot be solely facilitated by librarians and faculty members. Instead, students must acquire IL through experiential learning opportunities provided by these professionals. Allen (2000) argued that for authentic learning to take place, it is crucial for librarians to engage in classroom collaboration with students, and for faculty members to engage in library collaboration with students. The collaborative approach is imperative for achieving favorable educational results. To summarize, the establishment of a robust collaborative culture between faculty members and librarians has the potential to facilitate the achievement of more comprehensive educational goals. Collaborative learning initiatives, such as group-based tasks and assessments by peers,

possess the capability to promote the development of vital IL competencies, such as effective communication, teamwork, and problem solving. The development and implementation of ILE programs should involve cooperation among educational establishments, libraries, and pertinent entities capable of furnishing assistance.

To summarize, proficient ILE necessitates not only imparting the skills to locate pertinent information to students but also fostering effective communication and interaction between ILE librarians and students, as posited by Liu et al. (2016). Continuing collaboration between LIS professors and ILE librarians is necessary for the full realization of the value and benefits of ILE programs. Finally, the findings of the current study suggest that libraries need to find more innovative and creative strategies to tailor ILE programs to engage students—namely, ILE programs with content and coverage that are relevant to the curriculum and students' learning needs. The results of this study also help to shed light on the changing information and learning needs of students and their relationships with ILE in the current digital information environment. Such information is useful for the future design of curricula with IL components to meet the changing needs of the next generation.

6.5 Librarians' Teaching Role and Leadership in Information Literacy Education

The researcher originally expected that the more importance students placed on ILE programs, the higher their ratings of ILE librarians' professional competence would be. However, the actual results of this study contradicted this initial belief. Students have a closer relationship with faculty than with librarians and prefer faculty as instructors for IL courses. Librarians play a crucial role in teaching students to become information literate researchers and in shaping their research thinking. However, results show that students do not view librarians as their preferred instructors for IL courses. To improve ILE, librarians should work to improve students' perceptions of their role in ILE and focus on integrating critical IL into course design.

Academic librarians often lament the fact that students and faculty often overlook their pedagogical role - perhaps being more proactive and innovative in providing ILE could be an effective way to demonstrate ILE librarians' professional competence in this regard. Library advocacy and marketing could also be done through effective ILE programs. In the age of information overload, it is important for ILE librarians to help students as end-users to feel at home in the library and to trust the professional knowledge and competence of the library staff—so that the end-users could make effective and maximum use of the available library resources and services.

The literature has revealed an increasing need for pedagogical and technological skills in the digital environment for librarians. Julien and Genuis (2011) conducted a national

survey of 788 library staff with instructional responsibilities and found that most participants expect to provide some instruction in their workplace, and the largest proportion of participants have been teaching for more than ten years. However, most instruction continues to take the form of short presentations to groups of learners. The results of Dawkins and Gavigan's (2017) study show that school librarians do not value their writing instruction as much as other teachers do. Overall, previous experience is made up of unofficial work experience, reading professional books, and going to classes. Most respondents identify instructional work as integral to their professional identity. However, nearly one-third view this work as a duty or expectation, and a small proportion view it as an imposition.

Librarians need to develop their leadership in ILE, which refers to the role that individuals or organizations play in guiding and directing the development, implementation, and evaluation of IL programs and initiatives. Effective leadership in ILE is critical to ensuring that IL skills are taught and promoted in a meaningful and effective way. The study by Julien and Genuis (2009) revealed the centrality of impact in the experiences of librarians engaged in instructional work and brought into focus the relational aspects of this work and the affective impact of the visibility or invisibility of instructional outcomes. A prominent theme was the expression of “emotional labor”; participants used various methods to manage this occupational stressor as they experienced it in the context of instructional work. Affective responses may also be mitigated by pedagogical training; more extensive preparation for teaching, based on an understanding of learning and the implications of such knowledge for teaching practice, might be expected to facilitate negative affective responses to the teaching role. Julien and Pecoskie (2009) explored the self-perceptions of Canadian academic librarians as teachers. Semi-structured interviews with 48 participants revealed that they experience complex relationships with faculty. Participants discussed these unequal power relations in terms of their self-positioning and the institutional culture of their workplaces. These findings suggest areas of challenge to the full realization of instructional goals that deserve the attention of managers and those charged with preparing librarians for instructional work.

Given the need for a public interface required by ILE librarians' roles, it is logical to assume that librarians strongly influence users' perceptions of the library as a whole. According to Liu et al. (2016), students' satisfaction with librarians was directly related to their dependence on these library services and students' perceived importance of ILE. In this sense, the ways in which students participate in ILE programs can help assess the impact of librarians and libraries on academic success. Because academic libraries often need to demonstrate their value to the community, providing and perfecting ILE

is one of the most effective ways to build evidence of the library's positive impact. This belief is often linked to the need for academic libraries to increase their presence (be more visible) in the university community through various advocacy, community engagement, marketing, and outreach programs. According to Chen and Lin (2011), well-designed IL programs can benefit the library and its staff, faculty, and students. As Chen and Lin (2011, p. 405) point out, "Because of their special expertise, librarians should always be prepared to play a leading role in IL programs. In addition, librarians should also be actively involved in the design and implementation of such IL programs through collaboration with faculty and students." In other words, IL programs should be embedded in the curriculum. Through active participation in ILE programs and constant interaction with ILE librarians, students (regardless of academic discipline) would become more aware of the values and functions of the university library, in addition to improving their IL skills. In other words, ILE programs could serve as an effective channel for promoting the values and contributions of the university library to the academic community as a whole.

6.6 Student Perspective-Oriented Design Model for Information Literacy Education

In Chapter 5, the results of the study indicated that graduate students generally have positive perceptions of IL courses, especially when the courses incorporate active learning strategies and blended learning formats. However, the findings also highlight the need for instructors to consider gender differences in motivation, perceptions, and self-efficacy when designing and delivering IL courses. By addressing these factors, IL course instructors can better meet the diverse needs of their students and facilitate more effective learning experiences.

This paper explores the applicability of the AARRR framework in assessing the effectiveness of ILE programs at different universities as perceived by students. Through this framework, the study seeks to provide insights into how universities can improve their ILE programs to better meet students' needs and expectations. Chapter 3 applies the AARRR model to understand non-participation in ILE programs at FDU and NTNU. Improving communication and marketing of ILE programs is critical to increasing student participation. Offering introductory sessions, hands-on workshops, and online tutorials can showcase the benefits of ILE programs and emphasize their importance in developing students' research and IL skills. Addressing barriers to participation, such as flexible scheduling and raising awareness of program timelines, can increase retention rates. Promoting ILE programs and sharing success stories can inspire students to participate and improve academic performance and satisfaction. Chapter 4 discussed how the AARRR framework can be used to identify areas for improvement and opportunities for growth in ILE programs at UT and PKU. By

focusing on these five key metrics, institutions can better understand their students' needs and preferences, ultimately leading to more effective and engaging IL programs. Chapter 5 used the AARRR framework to understand student motivation and behavior in selecting and participating in IL courses. The framework highlighted the importance of awareness, acquisition, retention, referral, and revenue in measuring student engagement and success in IL courses. By incorporating these metrics into program design and evaluation, educators can develop effective strategies for improving students' IL skills and fostering lifelong learning.

This dissertation proposes a comprehensive approach to increasing participation in IL programs by following the key stages of the AARRR model. Raising awareness of the importance of IL skills and integrating IL content into the curriculum is critical in the awareness stage. Engaging students and fostering a deep interest in IL requires providing interactive, hands-on learning experiences and designing sessions that cater to students' diverse learning styles and preferences. Maintaining student participation and engagement can be achieved by providing value and relevance in IL programs by regularly updating content, incorporating real-world examples, and offering ongoing support to students. Encouraging referrals and designing an attractive incentive system based on audience preferences can also help increase participation. Ultimately, the AARRR framework provides educators with a valuable tool for creating effective and engaging ILE programs that enhance students' IL skills and promote lifelong learning.

Based on the results of this series of multi-case, cross-national, cross-cultural surveys, the researcher developed a model and framework for student-centered ILE (see Figure 6-6 and 6-7). The SPDM is a design model for creating ILE programs that prioritize students' perspectives and needs. Based on the AARRR model, it aims to increase the effectiveness of ILE by improving its engagement, relevance, and usefulness to students. Based on the AARRR model, which is commonly used in e-commerce to measure customer engagement and retention, the SPDM modifies the AARRR framework to better fit the educational context. Specifically, the stages of revenue and referral are switched. This is because in education, the focus is on providing value and long-term benefits to students rather than on acquiring new customers. Therefore, placing Referral as the last stage reflects the idea of providing students with a valuable learning experience that can help them achieve their academic and career goals.

The SPDM for ILE encompasses the key metrics of acquisition, activation, retention, revenue, and referral, with a focus on creating a learner-centered and engaging learning experience that emphasizes the practical value and long-term benefits of IL skills and knowledge. In addition, the SPDM recognizes the importance of ongoing support and resources to help learners apply and extend their new knowledge and skills, as well as

the potential for learners to serve as advocates and ambassadors for the program. By prioritizing the learner's perspective in ILE program design, the SPDM provides a comprehensive and systematic approach to creating effective, engaging, and sustainable ILE programs.

Acquisition is the first stage and focuses on designing content and delivery methods that meet the learning needs and objectives of the target audience. It also involves providing learners with access to relevant sources of information, feedback on their progress, and opportunities for practice and application.

Activation is the second stage and involves creating a welcoming and supportive learning environment that encourages participation and fosters a sense of community among learners. This stage also focuses on the use of effective instructional strategies and learning technologies that accommodate different learning styles and preferences.

Retention is the third stage and emphasizes the importance of ensuring that learners retain their new IL skills and knowledge. This stage involves providing learners with opportunities for reflection, synthesis, and integration, and using techniques such as spaced repetition and retrieval practice to reinforce learning. It also involves providing learners with ongoing support and resources to help them apply and extend their new knowledge and skills.

Revenue is the fourth stage and focuses on the practical benefits and long-term value of ILE. This stage involves demonstrating the practical benefits of the skills and knowledge acquired in the program, as well as highlighting the long-term career and personal benefits of IL. It also involves providing learners with opportunities to demonstrate their new skills and knowledge, for example through credit certificates or portfolio projects.

Referral is the final stage and involves encouraging learners to refer others to the ILE program. This stage can be achieved by creating a positive and engaging learning experience that motivates learners to share their experiences with others. It can also involve using incentives or rewards to encourage learners to refer friends and colleagues to the program.

The SPDM model adopts a student-centric approach in the design and development of projects, thereby ensuring alignment with the needs and interests of the intended student population. Furthermore, the system exhibits flexibility and adaptability, enabling tailoring to address the distinct requirements and objectives of the organization and its learners. Through a closer integration of the AARRR framework with research findings, the SPDM model can be optimized as a more efficacious tool for the development and

execution of successful IL courses.

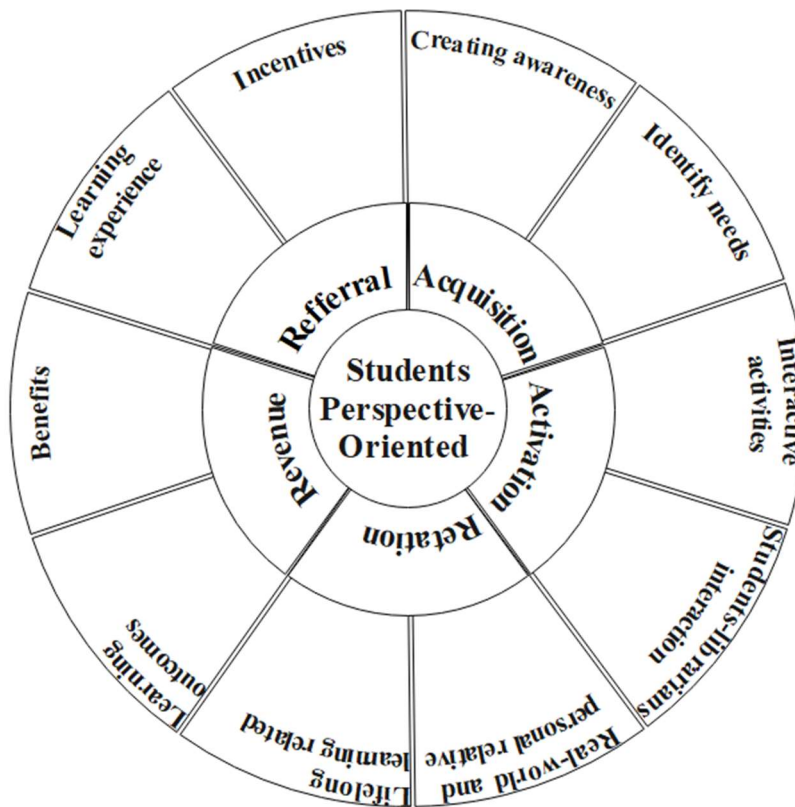


Figure 6-6 Student Perspective-Oriented Design Model (SPDM) for ILE

According to the SPDM, a Student Perspective Workflow (SPWF) is essential to effective design for ILE (see Figure 6-7). This workflow, a process model that details the steps required to design and deliver an IL program that focuses on learner needs and preferences, is based on John Biggs's (1993) 3P mode, which analyzes student learning outcomes through Presage, Process, and Product factors and helps educators identify areas for improvement and implement interventions to enhance learning experiences and achieve better educational outcomes (Biggs, 1999; Biggs & Tang, 2007). This framework includes three aspects: presage, process, and product.

In the presage stage, understanding students' backgrounds and experiences benefits ILE design. Specifically, conducting a needs assessment to identify the IL needs and challenges of the target student population, analyzing demographics such as majors, level of study, and previous library use, and identifying program goals and learning outcomes are crucial.

In the process stage, an ILE program should be designed to meet the needs and interests of the students. First, ILE should be designed to be relevant and applicable to students' lives. This can be achieved by choosing topics that are of interest to students, using examples and case studies that relate to their experiences, and showing how IL skills

can be applied in real-life and personal situations. Second, and most importantly, is the use of active learning strategies, scaffolded instruction, authentic assessment, and student-centered design. Students should engage in active experiential learning activities that enable them to apply and practice IL skills. Instruction should take various forms such as face-to-face seminars, online tutoring, or interactive multimedia resources. Students should be encouraged to think critically and reflect on their learning throughout the curriculum of the ILE. This can be achieved through discussion, reflection, or other assignments that require students to analyze their information-seeking behavior and evaluate the information they find. They are more likely to be active and consistent learners when students are motivated and engaged in learning. ILE instruction should be designed to be relevant, fun, and interactive, giving students opportunities to apply what they are learning in meaningful ways.

In the product stage, continually evaluate the effectiveness of the program using a variety of assessment methods. Evaluation involves using a variety of methods to determine the IL needs and challenges of the target student population, while evaluation involves continuously evaluating the effectiveness of the program and using data to make improvements and ensure the sustainability of the IL program. In addition, cultivating a growth mindset can help students master their learning progress and cultivate a positive attitude toward learning. This includes encouraging students to learning as a process of continuous improvement and growth, develop a encourage risk-taking and experimental study environment, and provide the opportunity to feedback and reflection. Please note that integration and continuity are important aspects of this model. Integration includes aligning the project with existing academic projects and resources. The concept of continuity entails the ongoing assessment and enhancement of projects, adapting them to keep pace with technological advancements and industry standards, and devising strategies for long-term viability. The educational program ought to furnish avenues for learners to enhance their competencies and expertise progressively. The advancement of the project is scrutinized and modified as necessary throughout all these phases.

The process in question necessitates the inclusion of collaboration among stakeholders as a crucial element. It is recommended to motivate stakeholders, including but not limited to students, teachers, librarians, instructional designers, and managers, to engage in project planning, development, dissemination, and evaluation. Conversely, it is imperative for campus leadership, comprising of administrators, educators, and librarians, to accord priority to ILE and establish a campus milieu and ethos that fosters its growth and execution. This can be achieved by providing resources and support for IL programs, integrating IL into the curriculum, and emphasizing the importance of IL

in campus policies and practices. At the same time, partnerships should be established with other departments and organizations to leverage resources and expertise and to promote a shared vision for IL education. Collaboration among stakeholders can help ensure that the IL program meets the needs of students and aligns with the goals of the institution. It can also promote a shared understanding of and commitment to the importance of ILE and foster a culture of collaboration and continuous improvement.

The SPWF framework emphasizes the importance of active and experiential learning, where students engage in hands-on activities that allow them to apply and practice IL skills. It also provides a framework for continuous improvement and updating over time. It can help institutions create effective and sustainable ILE programs that meet the needs and interests of students and promote lifelong learning.

The SPDM and SPWF are two interrelated frameworks for improving IL effectiveness from a student-centered perspective. The SPDM is a comprehensive framework with five components that represent different stages of a student's ILE journey, from initial awareness to active engagement, sustained learning, and advocacy. This model emphasizes the importance of understanding students' perspectives and needs at each stage and tailoring IL programs and services accordingly. In contrast, the SPWF is a practical implementation of the SPDM, outlining specific steps and strategies for librarians and educators to design and deliver effective ILE programs. The process consists of three stages. Each step is designed to ensure that the ILE program remains student-centered and outcome-oriented, consistent with the goals of the SPDM. By applying these concepts, educators can create a more engaging and successful ILE experience for students.

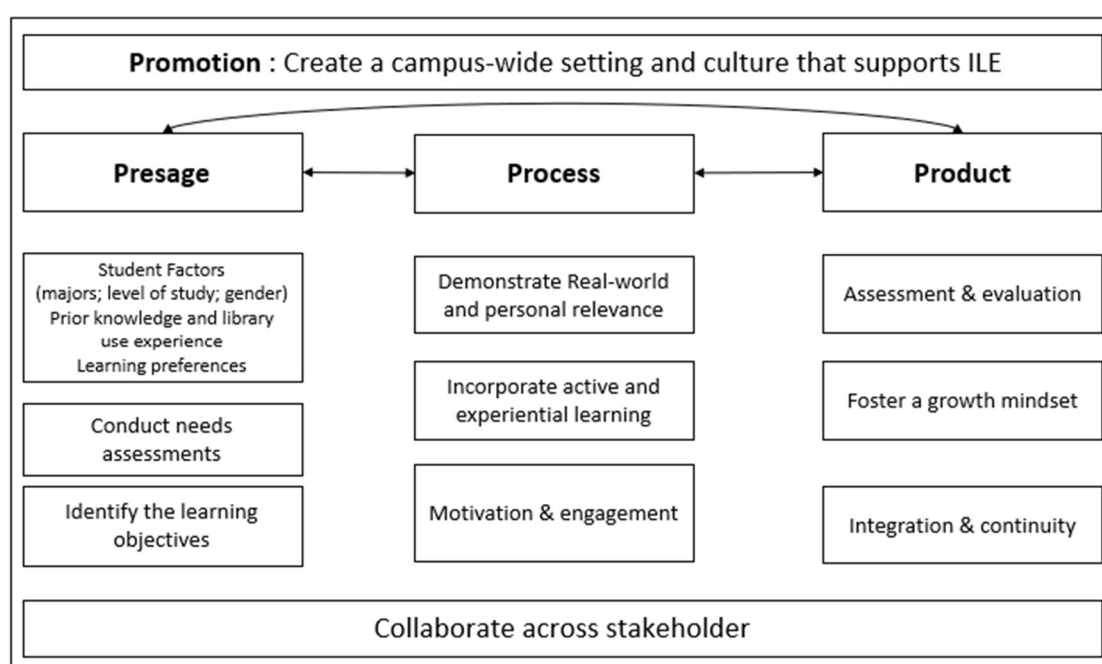


Figure 6-7 Student Perspective-Oriented Working Flow (SPWF) for ILE

Overall, the SPDM and SPWF are valuable frameworks for increasing the impact and effectiveness of IL by focusing on students' perspectives and needs. By adopting a student-centered approach and tailoring programs and services accordingly, librarians and educators can help students develop the critical thinking, research, and IL skills they need to succeed in their academic and professional lives.

6.7 Implications for Practice

Considering the reform of higher education and the changes in the academic environment, libraries must establish an incentive and systematic ILE system that conforms to the characteristics of universities according to students' views.

Before the ILE project is designed, the project's learning outcomes must be determined. They should be consistent with the program's overall goals and reflect specific IL skills and knowledge that students should develop. Therefore, it is essential to understand the student's educational background, prior knowledge, and academic prerequisites. Diverse techniques such as surveys, focus groups, or interviews can be utilized to achieve this objective. Comprehending the requirements and inclinations of students can facilitate the development of a curriculum that is captivating, pertinent, and customized to their necessities. Drawing from the results of a needs assessment, libraries have the capacity to establish educational goals that are congruent with the perceptions and IL requirements of students. It is imperative that the learning objectives are formulated with specificity, measurability, and achievability in mind, while also considering the varying levels of IL skills that students may possess. The plan ought to possess a well-defined scope and sequence, delineating the subject matters and competencies to be addressed, along with their respective arrangement. This measure will facilitate the coherence of the syllabus and enhance students' pre-existing knowledge and competencies. Faculty play a crucial role in promoting IL skills in their courses. Collaborating with faculty to integrate IL skills into their courses can provide more opportunities for students to practice and apply their IL skills in meaningful contexts.

Once learning objectives are established, libraries can design a curriculum that is tailored to the students' perceptions and IL needs. The structure and sequence of courses should build on students' existing knowledge and address their gaps in IL. To align courses with the perspectives of students, libraries have the option to implement pedagogical approaches that prioritize the needs and interests of learners. Such approaches may include active learning, problem-based learning, and inquiry-based learning, all of which are centered on the student. The methodologies foster active

participation of students and facilitate the cultivation of analytical reasoning and proficiency in addressing complex issues. An educational approach that prioritizes the needs and preferences of students acknowledges the existence of diverse learning styles, preferences, and interests among them. Consequently, it is imperative for the educational system to offer a tailored learning encounter that is contingent upon the individual requirements and incentives of every learner. Adaptive learning techniques, self-paced modules, and personalized tutoring are viable methods for achieving this objective. Simultaneously, learners exhibit higher levels of motivation towards acquiring knowledge when they perceive it to be pertinent to their individual and vocational aspirations. Hence, it is imperative to underscore the significance of imparting IL competencies in authentic settings, such as professional environments or routine activities, during the pedagogical process. Various methods such as case studies, simulations, or guest speakers can be employed to achieve this objective. Furthermore, students exhibit greater levels of motivation towards learning when they experience a sense of belongingness to a community of fellow learners for instance, an approach to fostering student development involves facilitating opportunities for collaborative work, enabling students to engage in dialogue with a peer, and exchanging personal experiences. This can be achieved through online discussion forums, group projects, or peer mentoring. Feedback is crucial for students' motivation and learning outcomes.

Libraries should develop assessments that measure student learning outcomes and evaluate the effectiveness of the IL program. Assessment methods should be aligned with program learning outcomes and reflect the specific IL skills and knowledge that students are expected to develop. Both formative and summative assessments should be used to provide ongoing feedback to students and to evaluate program effectiveness. Involving students in the assessment process, such as through self-assessment or peer assessment, can promote active learning and help students develop their own IL skills. A motivational system should provide students with frequent and constructive feedback on their progress and performance. This can be achieved through automated feedback systems, personalized coaching, or peer evaluation. Based on assessment results, libraries should continually evaluate and improve the IL program. This may include revising the curriculum, instructional approaches, or assessment strategies to better align with student perceptions and IL needs.

6.8 Implications for Policy

China has made progress in promoting IL in recent years, but it currently does not have a national-level IL framework. According to the PKU librarian, there are several reasons, for this: the responsibility for promoting IL in China is fragmented among different government agencies, educational institutions, and professional associations. This

makes it challenging to develop a coordinated and comprehensive national-level framework. It is possible that a national-level IL framework may be developed in the future as awareness and resources increase and as the need for IL becomes more widely recognized. China needs to establish an IL assessment system to specify the requirements for students' information needs, information acquisition, and information analysis and utilization, so that students' IL skills can be more standardized, subdivided, and well-defined.

Here are some policy and strategy recommendations for academic libraries and universities to consider regarding ILE. First, a well-written IL policy and strategic plan is an essential foundation for developing an ILE program. The policy should specify the plan's aims and objectives as well as the target audience and distribution channels. Additionally, this policy needs to align with the institution's overarching mission and objectives. Leaders of ILE should have a thorough awareness of the function that IL performs in both personal and societal contexts. To make sure that a policy serves the needs of all parties involved, including instructors, students, and librarians, this requires being done simultaneously. ILE should prioritize the development of critical thinking skills. This means encouraging students to evaluate the credibility and relevance of information, as well as to critically analyze the arguments and perspectives presented in various sources. ILE should emphasize the importance of lifelong learning and encourage students to continuously build their IL skills. Policymakers should work to foster a culture of IL by promoting the importance of these skills to the broader public and by encouraging individuals to continuously build their IL skills throughout their lives. They should promote the importance of IL to the broader public and encourage individuals to continuously build their IL skills throughout their lives. ILE requires specialist training for teachers, librarians, and other educators. Thus, professionals need to receive the training and resources they need to effectively teach IL skills.

At the same time, policymakers should encourage cooperation among educators, librarian, technical experts, and other stakeholders to ensure that ILE is comprehensive, effective, and well-integrated into the broader curriculum. In addition, they should ensure that students have access to the technology and digital resources needed to develop IL skills. High-speed internet, computers, and instructional software are all provided as part of this. Finally, to make sure that students are gaining the skills necessary to flourish in the 21st century, policymakers should constantly assess the performance of ILE projects. These recommendations can assist policymakers in developing efficient and thorough ILE regulations, supporting students' learning and growth, and ensuring that people have the skills required to prosper in the digital age.

6.9 Limitations and Further Study

As pointed out by Liu et al. (2019), there are many ways to study individuals' perceptions and attitudes toward the services provided by an academic library: the response sample may be considered too small to be representative of all universities; the method of identifying the field of study may be questionable; the question of whether the universities are comparable may be raised. The students' perceptions were based mainly on quantitative questionnaire data. Despite all its benefits, quantitative research of this kind can only disclose broad insights into student behavior and attitudes; it cannot explain the underlying motivations behind specific students' perceptions of the services provided by their university library. The conclusions of this study cannot be applied to students from other institutions in Asia because its scope is restricted to four universities in China and one university in Japan.

Even though the scope of this study is limited to students from five distinct East Asian colleges, it aims to compare their diverse attitudes and perspectives on international education based on their different learning techniques, information demands, and library usage patterns. The results of this study provide new insights into how to measure and achieve high-quality ILE in similar universities in other regions of the world. The results of this study can also serve as valuable references for course design and student recruitment in future ILE projects. The findings of this study have the potential to close current research gaps while also pointing the way toward fresh lines of inquiry in higher education's worldwide projects.

The following criteria should be investigated further to see if there is a favorable link, given the limits of the existing research.

- How professors evaluate students' IL proficiency and its relationship to students' ILE participation rates.
- How ILE is formally integrated into the curriculum and whether this results in students having more positive attitudes toward ILE programs and ILE librarians.
- Whether increased participation in ILE would result in students having more positive attitudes toward ILE programs and ILE librarians.
- Whether making ILE a formal part of the curriculum or making ILE mandatory would lead to students having more positive attitudes toward ILE programs and ILE librarians.

For future studies, it would also be interesting to determine the extent to which ILE is integrated into students' formal learning, for example:

- How often does the faculty invite ILE librarians into the classroom to present library

workshops as part of formal lectures to students?

- To what extent does the faculty use reference services and ILE librarians to serve as adjunct faculty or adjunct professors?

Chapter 7 Conclusion

7.1 Summary of Major Findings

This study emphasizes the significance of several factors that influence students' perceptions of ILE. The researcher identified four important factors that influence students' perceptions of ILE: (1) student demographics (i.e., students at different levels of study may have varying information requirements and library use patterns; students' majors; gender). For instance, it is known that undergraduate and graduate students have distinct library usage patterns and information requirements. Therefore, graduate students may consult librarians more frequently than their undergraduate counterparts, reflecting their distinct attitudes toward ILE programs. (2) Students' satisfaction with librarians' level of service and professionalism; students' recognition of librarians' instructional role. (3) Students' favorable library experiences; the degree to which ILE is integrated into students' learning and research; students' learning styles. (4) Student promotion strategy preference. (5) Variety of ILE programs available—suggests that these students have diverse learning practices, learning needs, and curricular (assignment) requirements, etc. ILE and IL skills instruction (face-to-face or online); (6) the psychological distance between students, librarians, and faculty; and (7) ILE experiences outside the library. Each of these variables could have a substantial effect on the experiences and perspectives of ILE among students. In addition, the variety and format of ILE programs offered by each university library may impact student participation in ILE and library use patterns. A combination of these factors may have also influenced the level of participation in ILE and library use patterns of these students. This underscores the necessity for further research to explore the interconnections among these variables and to enhance our comprehension of ILE. To sum up, the results of this investigation suggest that multiple variables contribute to shaping students' attitudes towards ILE. Further inquiry is necessary to fully grasp the influence of these variables on students' encounters and viewpoints.

The impetus for this study was the issue of a disconnect between the service providers, namely librarians, and the service recipients, specifically students, in the provision of ILE as a constituent of library services. Despite the fact that universities offer comprehensive and structured ILE programs, the results of the survey indicate that students and librarians take different approaches to ILE. These gaps include the perceived significance of ILE, students' comprehension of their own IL skills, librarians' role in leading ILE activities, familiarity with ILE methods and approaches, and the extent to which ILE activities are promoted.

Even if a library prioritizes patron acquisition, it is essential to provide a positive

experience with ILE services, according to these survey results. If library patrons have a negative experience with ILE services, they are less likely to continue using them, recommend them to others, or contribute to the library's financial success. In contrast, if there are gaps in patron awareness, comprehension, and activation of the service, a diverse selection of ILE services will not necessarily result in expansion or target achievement.

To address this issue, libraries should prioritize providing ILE services that meet the requirements and expectations of their patrons. The researcher devised an SPDM and an SPWF for ILE based on the findings. This includes offering pertinent and engaging content and user-friendly tools and resources, as well as creating a welcoming and supportive environment. Additionally, libraries should prioritize the promotion of ILE services to raise patron awareness and comprehension. This can be accomplished via targeted marketing campaigns, social media outreach, and faculty collaboration to integrate ILE into the curriculum.

A cross-national and cross-cultural comparative study was conducted to investigate the perceptions of ILE among students at five East Asian universities. The findings indicate that the divergent perceptions among the student groups were a direct consequence of the unique learning practices and curricular requirements implemented at these universities. Genuine inquiry-based education and proficient library use go hand in hand. The conclusion of the study was that both active library use, and ILE are necessary for authentic inquiry-based learning. The fact that students were more active, more frequent, and more satisfied end-users was directly attributable to the librarians' success in customizing a variety of ILE programs to satisfy the diverse educational needs of students at all levels. Faculty and librarians unquestionably play a crucial role in establishing an environment where the university library is central to student-centered and research-based learning.

7.2 Recommendations for Future Research

In this study, the questionnaire did not include items asking students in what situations they would use the library, whether they had any difficulties or successes in using the library, and whether such experiences were actually directly related to learning or assignments. Thus, it was not possible to determine to what extent or in what forms inquiry-based learning practices were related to library use. The researcher hopes that this study, despite its limitations, will inspire further research on the interrelationships between collaborative or inquiry-based learning and library use at different academic levels and from the perspectives of different academic disciplines on a cross-national and cross-cultural scale.

More qualitative interview studies might also reveal other underlying factors and motivations for participation patterns or valued services related to ILE. Further studies in these directions are valuable to help us better understand how ILE programs might be developed to meet the learning needs and practices of these students.

7.3 Closing Statements

This study aims to investigate students' perceptions of ILE in various contexts, such as mainland China, Taiwan, and Japan. The objective is to acquire a deeper understanding of how ILE can effectively meet the needs and expectations of students in these various cultural and academic settings. This study compared ILE programs and user experiences in various regions or communities using a mixed-methods approach. The findings of this study will enable librarians and educators to make more informed judgments regarding how to design, teach, and implement programs, and will help library scholars and policymakers comprehend how to teach and support ILE.

The findings of the study emphasize the significance of understanding the needs of various student groups and adapting ILE programs accordingly. This is crucial for attracting and retaining students and establishing a positive customer experience. Incorporating elements of inquiry-based and collaborative learning among students can also contribute to the creation of an active and engaging learning environment, resulting in improved outcomes and increased student engagement. Moreover, encouraging direct interactions between students and ILE librarians can improve the overall experience and contribute to increased self-efficacy, a key driver of customer satisfaction and loyalty. By enhancing students' attitudes and experiences with ILE programs, libraries can create a positive feedback loop that drives development and promotes the success of the library's services.

This paper concludes that the future of ILE in university libraries should be centered on three essential factors: 1) employing a student-participatory approach, 2) designing ILE in collaboration with students, and 3) fostering engagement between librarians and students. First, a student-participatory approach to ILE encourages students to be active learners and to improve their IL based on their interests and objectives. This strategy encourages the development of critical thinking and decision-making as students analyze information and make well-informed judgments. Additionally, it encourages communication and collaboration among students, allowing them to acquire new perspectives and enhance their IL. Second, collaborative IL design allows librarians and students to tailor instructional content to students' needs, resulting in more effective learning experiences. Librarians have expertise and experience, while students are aware of the issues and challenges, they face in their studies. Collaboration between

these parties can lead to the development and improvement of educational programs, ultimately enhancing the quality of ILE. Finally, building engagement between librarians and students is critical to the success of ILE. Engagement refers to a broad concept that represents the strength of the connection between university librarians and students and includes their understanding, interest, and satisfaction with ILE. Fostering engagement is instrumental in cultivating trust and cooperation among librarians and students. Consequently, it is more probable for students to solicit guidance and assistance from librarians, thereby enhancing their ILE. Librarians have the ability to offer customized services that cater to the unique needs and preferences of students, which can lead to heightened levels of satisfaction and improved academic performance. Through the implementation of these strategies, academic libraries affiliated with universities can enhance their position as central locations for IL and provide improved assistance to students.

The importance of ILE programs in academic libraries is underscored by the need for students to develop essential information skills and knowledge in today's digital world. Close collaboration between librarians and faculty is one of the most effective ways to ensure high participation rates in ILE programs. Librarians should act as IL specialists, instructors, and curriculum leaders by working with faculty members from different academic disciplines to understand their expectations for students' research and study needs. Librarians can then tailor user instructions to meet these expectations, further facilitating student interest and engagement. Participation in ILE programs can also be increased through positive word-of-mouth, offering ILE programs in a variety of formats and modes, monitoring interactions with students, and always putting their needs first, and providing quality ILE programs.

This study provides a unique evaluation of library users from CHC backgrounds and their perceptions of ILE. This study seeks to address a research gap in the field by examining the learning practices and information behaviors of students in CHC regions, including mainland China, Taiwan, and Japan. The outcomes of this research will be of significance to academic librarians, educationalists, scholars in librarianship, and policymakers, as it will provide insights into the development, delivery, and execution of ILE initiatives that cater to the requirements and anticipations of CHC learners. Furthermore, the research will aid in identifying the diverse hindrances that impede the thorough integration of ILE programs into students' holistic learning and the fundamental curriculum of the university. This study will provide valuable insights into the impact of academic libraries and their ILE programs on students' learning preferences and requirements by investigating the students' perceptions of ILE and their information-seeking behaviors. The findings will benefit the LIS community by helping

to determine the relevance of ILE programs in academic libraries.

In summary, the value of this study lies in the fact that it is unique due to the disciplinary orientation of the population studied, as few studies have been conducted to examine students' attitudes and perspectives toward the ILE, especially in East Asia. Undoubtedly, such a survey could help library staff identify areas of need and best practices in ILE. At the same time, enabling libraries to identify areas of services that need improvement to better meet user expectations. The research demonstrates that studies of this kind can be used to understand the role of information-seeking and gathering in the processes of people practicing or studying in different academic fields, and at various levels of IL literacy, especially in this era of mobile computing. Findings of this study may also help LIS professionals to gain a better understanding of the unique and changing nature of the students' information needs and their information-seeking behaviors. Undoubtedly, the input gathered could have implications for other library services worthy of further research. Furthermore, the findings of this study could facilitate building connections with the students. Such insights are useful for developing new approaches and can help strengthen arguments for changes and improvements in services.

Acknowledgement

My time at the University of Tsukuba has been immensely significant in my life. The decision to study abroad was a major transition that broadened my horizons and revealed new possibilities. I am grateful for the immense support and care provided by the faculty and friends here at the University of Tsukuba. Despite being a foreigner, I have always felt comfortable and welcomed by this community. When I encountered obstacles in my research, the flexible learning environment enabled me to receive immediate feedback, while study sessions with my colleagues facilitated our mutual growth and development. I always consider myself fortunate to have found such a supportive network, and I am grateful for their constant help and encouragement.

Here, I would like to express my deep gratitude to all those who have supported me throughout my doctoral journey.

First and foremost, I would like to thank my former advisor, Professor Itsumura Hiroshi, for his guidance, support, and encouragement throughout the research and writing process. His expertise, insights, and patience have been invaluable to me. Professor Itsumura was always amiable, friendly, and scholarly, and I perceived in him the ideal role model of a university professor. He is one who not only accomplished in his research but also personable, supportive, and dedicated to his students. His demeanor and attitude toward teaching and scholarship left a lasting impression on me.

Secondly, I would like to thank Professor Uda Norihiko, even if it was a sudden request, for agreeing to be the main supervisor of my dissertation. Professor Uda provided me with a lot of advice on the general direction and clarified the confusion I encountered in my research. I would also like to thank my thesis committee members, Professor Shirai Tetsuya, Professor Ikeuchi Atsushi, Professor Watanuki Toyoaki, Professor Takaku Masao, and Professor Koyama Kenji from Chuo University, for their valuable feedback and suggestions. Their expertise and support helped to shape the final version of my thesis.

Thirdly, I would like to thank all the participants and colleagues who have contributed to this research. A special thanks goes to the librarians in the five universities for helping to collect data and dedicating their time to join this research. I would also like to express my sincere gratitude to all the participants of this research, without their passionate participation and input, the survey could not have been successfully conducted. Furthermore, I would like to thank all those who provided valuable comments on this thesis. And thanks to all my lab members for their support given throughout my research.

My sincere thanks also go to the Graduate School of Library Information and Media

Studies and the College of Knowledge and Library Science offering a library and information science overseas training grant, with support from Tachibana Alumni Association, who provided me an opportunity to go to these universities to finish my research.

Last but not least, words cannot express the depth of my gratitude to my dear family and lovely friends for their unwavering support and continuous encouragement throughout my years of study. Their belief in my abilities and their constant presence in my life has provided me with the strength and motivation to pursue my academic dreams, and I could not have come this far without them. I consider myself incredibly lucky to have the best parents in the world, whose love and support have been invaluable to my personal and academic growth. Additionally, my adorable niece Qingqing, with her big eyes and infectious smile, never fails to brighten my day. I will always cherish the memories of their love, care, and unwavering support, which has been instrumental in shaping my academic and personal growth.

Thank you to all those who have played a role in my doctoral thesis. Your contributions have been instrumental in helping me achieve this milestone.

The conclusion of a journey often indicates the beginning of a new chapter. Since I started graduate school, I have been contemplating the nature of education. As I delved into researching information literacy education, which is offered by university learning centers such as the library, I noticed a desire within the academic community to evolve. As an international student, I recognized differences in approaches and awareness of information literacy education across various cultural, disciplinary, and educational contexts. This sparked my interest in exploring information literacy education from a cross-border, interdisciplinary perspective in a comparative context. I also hope to continue exploring this related topic in the future.

Let me conclude with one of my favorite quotes, and one that has always inspired me.

“The development of general ability for independent thinking and judgement should always be placed foremost, not the acquisition of special knowledge. If a person masters the fundamentals of his subject and has learned to think and work independently, he will surely find his way and besides will better be able to adapt himself to progress and changes than the person whose training principally consists in the acquiring the detailed knowledge.” On Education: Einstein, 1931—an address at the State University of New York.

References List

- Agnes, E., & Popescu, C. (2010). The impact of information literacy in the academic education environment. *Library & Information Science Research*, 14, 150–161.
- Aharony, N., & Gazit, T. (2019). Factors affecting students' information literacy self-efficacy. *Library Hi Tech*, 37(2), 183–196.
- Alkindi, S. S., & Al-Suqri, M. N. (2013). Social networking sites as marketing and outreach tools of library and information services. *Global Journal of Human Social Science Arts, Humanities & Psychology*, 13(2), 1–14.
- Allard, B., Lo, P., Liu, Q., Ho, K. K., Chiu, D. K., Chen, J. C., Zhou, Q., & Jiang, T. (2020). LIS pre-professionals' perspectives towards library user education: A comparative study between three universities in Greater China. *Journal of Librarianship and Information Science*, 52(3), 832–852.
- Allen, G. (2000). The art of learning with difficulty. In A. H. Bahr (Ed.), *Future teaching roles for academic librarians*. Haworth.
- Allen, M. (2008). Promoting critical thinking skills in online information literacy instruction using a constructivist approach. *College & Undergraduate Libraries*, 15(1-2), 21–38.
- Altbach, P. G. (1998). *Comparative higher education: Knowledge, the university, and development*. Greenwood Publishing Group.
- American Library Association. (1989). *Presidential committee on information literacy: Final report*. <http://www.ala.org/acrl/publications/whitepapers/presidential>
- American Society for Horticultural Science. (2007). *Teamwork improves learning and career success*. <https://www.sciencedaily.com/releases/2007/11/071105095721.htm>.
- Andrews, C., Wright, S. E., & Raskin, H. (2016). Library learning spaces: Investigating libraries and investing in student feedback. *Journal of Library Administration*, 56(6), 647-672.
- Association of College and Research Libraries. (2015). Academic library contributions to student success: Documented practices from the field. Prepared by Brown, K., & Malenfant, K. J. Malenfant. Chicago: Association of College and Research Libraries. <https://alair.ala.org/handle/11213/17185>
- Association of College and Research Libraries. (2016). *Documented library*

contributions to student learning and success: building evidence with team-based assessment in Action Campus Projects.
https://www.ala.org/acrl/sites/ala.org.acrl/files/content/issues/value/contributions_y2.pdf.

Association of College, Research Libraries and American Library Association. (2000). *Information literacy competency standards for higher education.* <https://alair.ala.org/bitstream/handle/11213/7668/ACRL%20Information%20Literacy%20Competency%20Standards%20for%20Higher%20Education.pdf?sequence=1>.

Association of College, Research Libraries and American Library Association. (2015). *Framework for information literacy in higher education.* <https://www.ala.org/acrl/standards/ilframework>.

Awidi, I. T., Paynter, M., & Vujosevic, T. (2019). Facebook group in the learning design of a higher education course: An analysis of factors influencing positive learning experience for students. *Computers & Education, 129*, 106–121.

Bahr, A. H. (2000). *Future teaching roles for academic librarians.* Haworth Press.

Bakharia, A., & Dawson, S. (2011). SNAPP: A bird's-eye view of temporal participant interaction. In *Proceedings of the 1st international conference on learning analytics and knowledge*, 168–173.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Prentice Hall.

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology, 52*(1), 1–26.

Bassi, M. D., & Camble, E. (2011). Gender differences in use of electronic resources in university libraries of Adamawa State, Nigeria. *Library Philosophy and Practice (e-journal)*. Paper 549. <http://digitalcommons.unl.edu/libphilprac/549>.

Bean, T. M., and Sabrina N. T. (2010). Being like both: Library instruction methods that outshine the one-shot. *Public Services Quarterly 6* (2-3): 237–49.

Beetham, H., & White, D. (2014). *Students' experiences and expectations of the digital environment.* International Association of University Libraries. <https://www.iatul.org/about/news/students-expectations-and-experiences-digital-environment>.

Bem-Bura, M. D. (2015). Students' perception of library orientation program in

Benue State University, Makurdi. *International Journal of Innovative Research and Development*, 4(3), 78–83.

Bent, M., & Stubbings, R. (2011). *The SCONUL seven pillars of information literacy: Core model*. SCONUL Working Group on Information Literacy. https://eprints.ncl.ac.uk/file_store/production/192827/156279C4-30EE-4356-A2ED-A48D9D474286.pdf

Biggs, J. (1993). What do inventories of students' learning processes really measure? A theoretical review and clarification. *British Journal of Educational Psychology*, 63, 3–19.

Biggs, J. (1999). *Teaching for quality learning at university*. Open University Press.

Biggs, J., & Tang, C. (2007). *Teaching for quality learning at university* (3rd ed.). Open University Press.

Boucher, C., Davies, M., Glen, S., Dalziel, K., Chandler, J., & Hall, K. (2009). Are postgraduates ready for research? [Poster presentation]. Librarians Information Literacy Annual Conference (LILAC), Cardiff, UK.

Bovill, C. (2020). Co-creation in learning and teaching: the case for a whole-class approach in higher education. *Higher Education*, 79(6), 1023–1037.

Breivik, P. S. (1999). Take II—Information literacy: Revolution in education. *Reference Services Review*, 27(3): 271–276.

Bruce, C., Edwards, S., & Lupton, M. (2006). Six frames for information literacy education: a conceptual framework for interpreting the relationships between theory and practice. *Innovation in Teaching and Learning in Information and Computer Sciences*, 5(1), 1–18.

Brunsdale, M. (2000). From mild to wild: Strategies for promoting academic libraries to undergraduates. *References & User Services Quarterly*, 39(4), 331–335.

Catts, R., & Lau, J. (2008). *Towards information literacy indicators*. UNESCO.

Catalano, A. J. (2010). Using ACRL standards to assess the information literacy of graduate students in an education program. *Evidence Based Library and Information Practice*, 5(4): 21–38.

Chan, S. (1999). The Chinese learner - a question of style. *Education & Training*, 41(6/7): 294–304.

Chang, N. C., & Chen, H. H. (2015). A motivational analysis of the ARCS model for

information literacy courses in a blended learning environment. *Libri*, 65(2), 129–142.

Chen, K. N. & Huang, I. T. (2012). Library use by medical students engaging in problem-based learning: A Taiwanese case study. *Libri*, 62, 248–258.

Chen, K. N., & Lin, P. C. (2011). Information literacy in university library user education. *Aslib Proceedings*, 63(4), 399–418.

Chen, L. H. (2011). Enhancement of student learning performance using personalized diagnosis and remedial learning system. *Computers & Education*, 56(1), 289–299.

Chen, W., Yao, F., & Jiang, W. (2016) Technology innovation in academic libraries in China. In L. Ruan, Q. Zhu, Y. Ye (Eds.), *Academic library development and administration in China* (pp. 196–216). IGI Global.

Chiu, T. K., Sun, J. C. Y., & Ismailov, M. (2022). Investigating the relationship of technology learning support to digital literacy from the perspective of self-determination theory. *Educational Psychology*, 42(10), 1263–1282.

Chu, J. T. (2004). University library user education in digital age. [Master's thesis, Tianjin Normal University]. (Article in Chinese).

Clark, J. C., & Johnstone, J. (2018). Exploring the research mindset and information-seeking behaviors of undergraduate music students. *College & Research Libraries*, 79(4), 499–516.

Cohen, N., Holdsworth, L., Prechtel, J. M., Newby, J., Mery, Y., Pfander, J., & Eagleson, L. (2016). A survey of information literacy credit courses in US academic libraries. *Reference Services Review*, 44(4), 564–582.

Collins, E., & Stone, G. (2014). Understanding patterns of library use among undergraduate students from different disciplines. *Evidence Based Library and Information Practice*, 9(3), 51–65.

Conway, K. (2011). How prepared are students for postgraduate study? A comparison of the information literacy skills of commencing undergraduate and postgraduate studies students at Curtin University. *Australian Academic & Research Libraries*, 42(2), 121–135.

Cook, L., Heath, F., & Thompson, B. (2003). “Zones of tolerance” in perceptions of library service quality: A LibQUAL+TM study. *Portal*, 3(1), 113–123.

- Cox, C., & Tzoc, E. (2023). ChatGPT: Implications for academic libraries. *College & Research Libraries News*, 84(3), 99.
- Creswell, J. W., & Plano Clark, V. L. (2017). *Designing and conducting mixed methods research*. Sage Publications.
- Critz, L., Axford, M., Baer, W. M., Doty C., Heidi, L., & Renfro, C. (2012). Development of the graduate library user education series. *Reference Services Review*, 40(4), 530–542.
- Crosetto, A., Wilkenfeld, P., & Runnestrand, D. (2007). Responding to the needs of our graduate students: A pilot information literacy course in graduate education. *Information Literacy Collaborations That Work*, 41–56.
- Cullen, R. (2001). Perspectives on user satisfaction surveys. *Library Trends*, 49, 662–3.
- Cunningham, V. (2019). Information literacy (IL) “without borders”: The future of IL education. In Ranger, K.L. (Ed.) *Informed learning applications: Insights from research and practice* (pp. 95–114). Emerald Publishing Limited.
- Cunningham, H. V., & Tabur, S. (2012). Learning space attributes: Reflections on academic library design and its use. *Journal of learning spaces*, 1(2), 2–7.
- Danton, J. P. (1977). Definitions of comparative and international library science. In J F. Harvey & N. J. Metuchen (Eds.), *Comparative and International Library Science* (pp. 3–14). Scarecrow Press.
- Dawkins, A. M., & Gavigan, K. W. (2017). The school librarian’s role in writing instruction: research, perceptions, and practice. *Libri*, 67(4), 299–312.
- Deci, E. L., Koestner, R., & Ryan, R. M. (2001). Extrinsic rewards and intrinsic motivation in education: Reconsidered once again. *Review of Educational Research*, 71(1), 1–27.
- Detlor, B., Booker, L., Serenko, A., & Julien, H. (2012). Student perceptions of information literacy instruction: The importance of active learning. *Education for Information*, 29(2), 147–161.
- Dickson, T. E. (2002). Looking at the male librarian stereotype. *Reference Librarian*, 37(78), 97–110.
- Diekema, A. R., Holliday, W., & Leary, H. (2011). Re-framing information literacy: Problem-based learning as informed learning. *Library & Information Science*

Research, 33(4), 261–268.

Ding, K. J. (1995). A study on the planning of library user education. [Master's thesis, Taiwan Jiaotong University Library].

Divaharan, S. & Atputhasamy, L. (2009): An attempt to enhance the quality of cooperative learning through assessment. *Journal of Educational Enquiry*, 3(2): 72–83.

Donkai, S. (2004). Possibility and potential for a change in academic libraries. *Information Science and Technology Association*. 54(4), 190–197.

Donnelly, K. M. (2000). Building the learning library: Where do we start?. *College & Undergraduate Libraries*, 6(2), 59-75.

Dorvlo, S. S. (2016). Information literacy among postgraduate students of the University of Ghana. *Library Philosophy and Practice*. 1392. <https://digitalcommons.unl.edu/libphilprac/1392/>.

Duke, L. M., & Tucker, T. (2007). How to develop a marketing plan for an academic library. *Technical Services Quarterly*, 25(1), 51–68.

Dupuis, E. A. 1999. The creative evolution of library instruction. *Reference Services Review*, 27(3), 287–291.

Edgar, Q. W. (2006). Questioning LibQUAL+TM: Expanding its assessment if academic library effectiveness. *Libraries and the Academy*, 6(4), 445–465.

Eisenberg, M. B., & Lowe, C. A. (2006). Information literacy: Essential skills for the information age. *Journal of the American Society for Information Science and Technology*, 57(3), 479–483.

Elliott, K. M., & Shin, D. (2002). Student satisfaction: An alternative approach to assessing this important concept. *Journal of Higher Education Policy and Management*, 24(2), 197–209.

Eng, K. H. (2000). Can Asians do PBL? *Center for Development of Teaching and Learning Newsletter*, 3(3), 3–4.

Fan, H. Y. (1991). A survey on the current situation of library user education. *The Library Society of China (Taiwan)*, 48, 57–64.

Fang, C. (2005). Statistical evaluation of university libraries in China. *The Journal of Information & Knowledge Management Systems*, 35(4), 221–229.

- Fleming-May, R., & Yuro, L. (2009). From student to scholar: The academic library and social sciences PhD students' transformation. *Portal: Libraries and the Academy*, 9(2), 199–221.
- Fister, B. (2013). The library's role in learning: Information literacy revisited. *Library Issues*, 33(4). <http://homepages.gac.edu/~fister/LI-IL.pdf>.
- Fong, B. L., Wang, M., White, K., & Tipton, R. (2016). Assessing and serving the workshop needs of graduate students. *The Journal of Academic Librarianship*, 42(5), 569–580.
- Fosnot, C. T., & Perry, R. S. (2005). Constructivism: A psychological theory of learning. In C. T. Fosnot (Ed.), *Constructivism: Theory, perspectives, and practice* (2nd ed., pp. 8–38). Teachers College Press, Columbia University.
- Frailon, J., Ainley, J., Schulz, W., Friedman, T., & Gebhardt, E. (2014). *Preparing for life in a digital age: The IEA International Computer and Information Literacy Study international report*. Springer Nature.
- Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School Engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, 74(1), 59–109.
- Funmilayo, D. C. (2013). Gender differences in the use of academic resources: The case of FUTA library. *International Journal of Library and Information Science*, 5(8), 256–261.
- Gibson, J. J. (1979). *The ecological approach to visual perception*. Houghton Mifflin Harcourt.
- Gonda, D., Ďuriš, V., Pavlovičová, G., & Tirpáková, A. (2020). Analysis of factors influencing students' access to mathematics education in the form of MOOC. *Mathematics*, 8(8), 1229.
- Grassian, E., & Kaplowitz, J. R. (2009). *Information literacy instruction: Theory and practice* (2nd ed.). Neal-Schuman Publishers.
- Gregory, P., Boettge, B., Crown, R., Deeljore, S., Harms, J., Joseph, M., Lowe, J., Penningto, A., Tao, D. (2014) *Subject librarian contributions to student learning and success*. Project of Pius/Medical Center Libraries Assessment Committee, 1-41. https://www.slu.edu/library/about/_pdf/subject-librarian-contributions-to-student-learning-and-success.pdf.
- Gremmels, G., & Lehmann, K. (2007). Assessment of student learning from

- reference service. *College and Research Libraries*, 68(6), 488–501.
- Guo J. (2015) Survey and analyses of project 985 universities in China based on WeChat public platform. *Librarianship Studies*, 4, 71–76, 81.
- Guo, J., & Huang, J. (2021). Information literacy education during the pandemic: The cases of academic libraries in Chinese top universities. *The Journal of Academic Librarianship*, 47(4), 102363.
- Haase, J. E. (1995). Research design: Qualitative & quantitative approaches. *Nursing Research*, 44(6), 381.
- Haklev, S. (2010). *The Chinese national top level courses project: Using open educational resources to promote quality in undergraduate teaching*. [Doctoral thesis, University of Toronto].
- Harkins, M. J., Rodrigues, D. B., & Orlov, S. (2011). “Where to start?”: Considerations for faculty and librarians in delivering information literacy instruction for graduate students. *Practical Academic Librarianship: The International Journal of the SLA*, 1(1), 28–50.
- Hall, I. P. (1998). *Cartels of the mind: Japan’s intellectual closed shop*. W. W. Norton.
- Harland, T. (2002). Zoology students’ experiences of collaborative enquiry in problem-based learning. *Teaching in Higher Education*, 7(1), 3–15.
- Hashi, Y. (2000). Practice of information literacy education using technical college libraries: Directions and issues. <http://www.geocities.co.jp/CollegeLife-Club/4479/index.html>.
- Hashimoto, H. & Yamagishi, T. (2015). Preference-expectation reversal in the ratings of independent and interdependent individuals: A USA-Japan comparison. *Asian Journal of Social Psychology*, 18, 115–123.
- Harris, S. Y. (2017). Undergraduates’ assessment of science, technology, engineering and mathematics (STEM) information literacy instruction. *IFLA Journal*, 43(2), 171–186.
- Harrington, M. R. (2009). Information literacy and research-intensive graduate students: Enhancing the role of research librarians. *Western Libraries Publications*, 15, 179–201.
- Harvey, J.F. (1977). *Comparative and international library science*. Scarecrow Press.
- Heath, F., Svensson, L., Champion, N., & Read, J. (2004). An evaluation of online

- information access by students within an academic library. *Information Research*, 9(2), 1–15.
- Hendricks, Y. (1991). The Japanese as library patrons. *College and Research Libraries News*, 52(4), 221–225.
- Hernon, P., Nutecki, D., & Altman, E. (1999). Service quality and customer satisfaction: An assessment and future directions. *The Journal of Academic Librarianship*, 25(1), 9–17.
- Head, A. J., & Eisenberg, M. B. (2009). *Lessons Learned: How college students seek information in the digital age*. SSRN. <https://ssrn.com/abstract=2281478>.
- Hebert, A. (2018). Information literacy skills of first-year library and information science graduate students: an exploratory study. *Evidence Based Library and Information Practice*, 13(3), 32–52.
- Hirota, T., & Ueda, S. (1996). The user education for OPAC, CD-ROM, online data services in Japanese University Libraries. *Library and Information Science Paper*, 33, 83–98.
- Hinchliffe, L. J., Rand, A., & Collier, J. (2018). Predictable information literacy misconceptions of first-year college students. *Communications in Information Literacy*, 12(1), 4–18.
- Huang, Y. P., & Pu D. Y. (2017). Research on the information literacy education of university in the "Internet +" era-based on the perspective of MOOC. *Journal of Library and Information Science in Agriculture*, 29(6), 108–110.
- Huang, R., Li, B., & Zhou, L. (2016). Information literacy instruction in Chinese universities: MOOCs versus the traditional approach. *Library Hi Tech*, 34(2), 286–300.
- Ho, S. (2020). Culture and learning: Confucian heritage learners, social-oriented achievement, and innovative pedagogies. In Sanger, C. S. & Gleason, N. W. (Eds.), *Diversity and inclusion in global higher education: Lessons from across Asia* (pp. 117–159). Palgrave Macmillan.
- Hoffmann, K., Antwi-Nsiah, F., Feng, V. & Stanley, M. (2008). Library research skills: a needs assessment for graduate student workshops. *Issues in Science and Technology Librarianship*, 53(1), 1–15.
- Hong, J. (2009). A contrastive study of cultural diversity of learning styles between China and the United States. *International Education Studies*, 2(1), 163.

Hooks, J., Rahkonen, C., Clouser, C., Heider, K., & Fowler, R. (2007). Information literacy for branch campuses and branch libraries. *Library Philosophy & Practice*, paper 147, 1–17.

Hope, C. B., Kajiwar, S., & Liu, M. X. (2001). The impact of the internet. *Reference Librarian*, 35(74), 13–36.

Hrastinski, S. (2008). Asynchronous and synchronous e-learning. *Educause Quarterly*, 31(4), 51–55.

Hsu, M. K., Cummings, R. G., & Wang, S. W. (2014). Business students' perception of university library service quality and satisfaction. *Contemporary Issues in Education Research (CIER)*, 7(2), 137–144.

Ichikawa, H., Saito, Y., Toyoda, Y., and Homma, M., (2014). Proposal of the educational program for information literacy in the university. *International Journal of Human Culture Studies*, 24, 131–135.

Ince, S., Hoadley, C., Kirschner, A. P. (2019). The role of libraries in teaching doctoral students to become information-literate researchers: A review of existing practices and recommendations for the future. *Information and Learning Science*, 120(3/4), 158–172.

Iwata, K., & Doi, A. (2017). Can hybrid educational activities of team and problem-based learning program be effective for Japanese medical students? *International Journal of Medical Education*, 8, 176–178.

Jabeen, M., Yun, L., Rafiq, M., & Tahir, M. A. (2016). Information literacy in academic and research libraries of Beijing, China: Practices, methods and problems. *Information Development*, 32(3), 579–591.

Jacoby, J., & O'Brien, N. P. (2005). Assessing the impact of reference services provided to undergraduate students. *College and Research Libraries*, 66(4), 324–340.

Jankowska, M. A., Karen H., & Nancy J. Y. (2006). Improving library service quality to graduate students: LibQUAL+ survey results in a practical setting. *Portal: Libraries and the Academy*, 6(1), 59–77.

Jang, M., Aavakare, M., Kim, S., & Nikou, S. (2020). The effects of digital literacy and information literacy on the intention to use digital technologies for learning—A comparative study in Korea and Finland [Paper presentation]. International Telecommunications Society Online Event, 14–17. <https://www.econstor.eu/handle/10419/224858>

Japan Library Association Committee on User Education. (1998). *Library use education guideline for university library*. Japan Library Association Committee on User Education. <https://www.jla.or.jp/portals/0/html/cue/gl-u.pdf>.

Japan Society of Library and Information Science. (2013). *Dictionary of library and information science terminology version 4*. Tokyo Maruzen Publishing Co. Ltd

Japanese Council for Science and Technology. (1996). Improvement and strengthening of electronic library functions in university libraries. <http://www.janul.jp/j/documents/mext/kengi.html>.

Japanese Ministry of Education, Culture, Sports, Science and Technology. (2010). *Development of university libraries (summary of deliberations) - The desired image of university libraries in transforming universities*. http://www.mext.go.jp/b_menu/shingi/gijyutu/gijyutu4/toushin/1301602.htm.

Japanese Ministry of Education, Culture, Sports, Science and Technology. (2020). *Academic infrastructure survey*. <https://www.e-stat.go.jp/stat-search/files?tclass=000001139822>.

Jenkins, H. (2006). *Confronting the challenges of participatory culture: Media education for the 21st century*. The MIT Press.

Jerrett, A., Bothma, T. J., & de Beer, K. (2017). Exercising library and information literacies through alternate reality gaming. *Aslib Journal of Information Management*, 69(2), 230–254.

Johnston, B., & Webber, S. (2004) The role of LIS faculty in the information literate university: taking over the academy? *New Library World*, 105(1/2), 12–20.

Julien, H., & Barker, S. (2009). How high-school students find and evaluate scientific information: A basis for information literacy skills development. *Library & Information Science Research*, 31(1), 12–17.

Julien, H., Barker, S., & Makri, S. (2010). Modeling information-seeking behavior of graduate students: An exploratory study. *Journal of the American Society for Information Science and Technology*, 61(11), 2185–2205.

Julien, H., & Genuis, S. K. (2009). Emotional labour in librarians' instructional work. *Journal of Documentation*, 65(6), 926–937.

Julien, H., & Genuis, S. K. (2011). Librarians' experiences of the teaching role: A national survey of librarians. *Library & Information Science Research*, 33(2), 103–111.

Julien, H., & Pecoskie, J. J. (2009). Librarians' experiences of the teaching role: grounded in campus relationships. *Library & Information Science Research*, 31(3), 149-154.

Kanazawa, M. (2016). *Information literacy education in Japanese libraries for lifelong learning*. Nova Science Pub Inc.

Karpova, E., Jacobs, B., Lee, J. Y., & Andrew, A. (2011). Preparing students for careers in the global apparel industry: Experiential learning in a virtual multinational team-based collaborative project. *Clothing and Textiles Research Journal*, 29(4), 298-313.

Kasowitz-Scheer, A., & Pasqualoni, M. (2002). Information literacy instruction in higher education: Trends and issues. *Libraries' and Librarians' Publications*, 34. *ERIC Digest*, 1-9. <https://surface.syr.edu/sul/34>

Keller, J. M. (1987). Development and use of the ARCS model of instructional design. *Journal of Instructional Development*, 10(3), 2-10.

Kelly, K. B., & Orr, G. (2003). Trends in distant student use of electronic resources: A survey. *College and Research Libraries*, 64(3), 176-191.

Kennedy, P. (2002). Learning cultures and learning styles: Myth-understandings about adult (Hong Kong) Chinese learners. *International Journal of Lifelong Education*, 21(5), 430-445.

Kenny, S. S. (2002). *Characteristics of excellence in higher education: Eligibility requirements and standards for accreditation*. Middle States Commission on Higher Education. <https://eric.ed.gov/?id=ED466721>

Kiilu, P. W., & Otike, J. (2016). Non use of academic library services: A literature review, *International Journal of Library Science*, 5(1), 7-13.

Kim, J. A. (2017). User perception and use of the academic library: A correlation analysis. *The Journal of Academic Librarianship*, 43(3), 209-215.

Kim, S. U., & Shumaker, D. (2015). Student, librarian, and instructor perceptions of information literacy instruction and skills in a first-year experience program: A case study. *The Journal of Academic Librarianship*, 41(4), 449-456.

Ko, E. H., Chiu, D. K., Lo, P., & Ho, K. K. (2015). Comparative study on m-learning usage among LIS students from Hong Kong, Japan and Taiwan. *The Journal of Academic Librarianship*, 41(5), 567-577.

- Laal, M., & Ghodsi, S. M. (2012). Benefits of collaborative learning. *Procedia - Social and Behavioral Sciences*, 31, 486–490.
- Lamb, A. (2017). Debunking the librarian ‘gene’: Designing online information literacy instruction for incoming library science students. *Journal of Education for Library and Information Science*, 58(1), 15–26.
- Latham, D., & Gross, M. (2013). Instructional preferences of first-year college students with below-proficient information literacy skills: A focus group study. *College & Research Libraries*, 74(5), 430–449.
- Lau, J., Elliott, C., & IFLA Information Literacy Section. (2006). *Guidelines on information literacy for lifelong learning*. International Federation of Library Associations and Institutions. <https://www.ifla.org/wp-content/uploads/2019/05/assets/information-literacy/publications/ifla-guidelines-en.pdf>
- Leachman, C., & Leachman, J. W. (2015). If the engineering literature fits, use it! student application of grey literature and engineering standards [Paper presentation. 2015 ASEE Annual Conference & Exposition, Seattle, Washington. <https://doi.org/10.18260/p.24218>
- Levy, P. & Petruilis, R. (2012). How do first-year university students experience inquiry and research, and what are the implications for the practice of inquiry-based learning? *Studies in Higher Education*, 37(1), 85–101.
- Li, M. L. (2018). The re-innovation of information literacy education. *Knowledge, Learning & Management*, 183(3), 113–118.
- Liao, J. Q. (2019). Research on MOOC of information literacy in China. *Research on Library Science*, 14(7), 21–26.
- Lin, Z., & Gao, C. M. (2021). Research on acquisition on authors sources of Sci-Tech journals based on AARRR Model. In *Proceedings of the 2021 1st International Conference on Control and Intelligent Robotics* (pp. 193–196). Association for Computing Machinery. <https://dl.acm.org/doi/abs/10.1145/3473714.3473746>
- Liu, E. F. (1991). User education in Chinese academic libraries: A study of current problems in Taiwan. *Bulletin of the Library Association of China*, 48, 57–64.
- Liu, Q., Allard, B., Lo, P., Zhou, Q., Jiang, T., & Itsumura, H. (2019). Library user education as a window to understand inquiry-based learning in the context of higher education in Asia: a comparative study between Peking University and the University

of Tsukuba. *College & Research Libraries*, 80(1), 8–32.

Liu, Q., Lo, P., & Itsumura, H. (2016). Measuring the importance of library user education: A comparative study between Fudan University and the National Taiwan Normal University. *Journal of Academic Librarianship*, 42(6), 644–654.

Liu, Y. Q. (2008). Introducing an international cooperative research method employed in cross-country studies in information and library science. In Y. Q. Liu & X. Cheng (Eds.), *International and Comparative Studies in Information and Library Science: A Focus on the United States and Asian Countries* (pp. 31–36). Scarecrow Press.

Liu, Y. Q., & Cheng, X. (2008). *International and comparative studies in Information and Library Science: A focus on the United States and Asian Countries* (Vol. 3). Scarecrow Press.

Lloyd, A. (2010). *Information literacy landscapes: Information literacy in education, workplace and everyday contexts*. Chandos Publishing.

Liyana, S., & Noorhidawati, A. (2014). How graduate students seek for information: convenience or guaranteed result? *Malaysian Journal of Library & Information Science*, 19(2), 1–15.

Lubans, J. (1974). *Educating the library user*. R. R. Bowker Co.

Lupton, B. (2006). Explaining men's entry into female-concentrated occupations: Issues of masculinity and social class. *Gender, Work and Organization*, 13(2), 103–128.

Lombardo, S. V., & Miree, C. E. (2003). Caught in the web: The impact of library instruction on business students' perceptions and use of print and online resources. *College & Research Libraries*, 64(1), 6–21.

Looi, C., Chen, W., & Ng, F. (2010). Collaborative activities enabled by group scribbles (GS): an exploratory study of learning effectiveness. *Computers & Education*, 54, 14–26.

Lor, P. J. (2017). International and comparative librarianship. In J. D. McDonald & M. Levine-Clark (Eds.), *Encyclopedia of library and information sciences* (pp. 2404–2412). CRC Press.

Mackey, T. P., & Jacobson, T. E. (2011). Reframing information literacy as a metaliteracy. *College & Research Libraries*, 72(1), 62–78.

- Marcum, J. W. (2002). Rethinking information literacy. *The Library Quarterly*, 72(1), 1–26.
- Marcum, J. W. (2009). The library as inquiry learning system: Defining the issues. *College & Undergraduate Libraries*, 16(4), 358–362.
- Martzoukou, K. (2021). Academic libraries in COVID-19: A renewed mission for digital literacy. *Library Management*, 42(4/5), 266–276.
- Matthews, J. R. (2014). *Library assessment in higher education*. ABC-CLIO.
- Matthews, K. E, Andrews, V. & Adams, P. (2011) Social learning spaces and student engagement. *Higher Education Research and Development*, 30(2): 105–120.
- Marshall, J. G., Fitzgerald, D., Busby, L., & Heaton, G. (1993). A study of library use in problem-based and traditional medical curricula. *Bulletin of the Medical Library Association*, 81(3), 299–305.
- Mayer, R. E. (2004). Should there be a three-strikes rule against pure discovery learning? The case for guided methods of instruction. *American Psychologist*, 59(1), 14–19.
- Magliaro, J. (2011). *Comparing information literacy needs of graduate students in selected graduate programs through the technology acceptance model and affordance theory* [Doctoral dissertation, University of Windsor]. <https://scholar.uwindsor.ca/etd/424/>.
- Markless, S., & Streatfield, D. (2007). Three decades of information literacy: Redefining the parameters. In S. Andretta (Ed.), *Change and challenge: Information literacy for the 21st century* (pp.15–36). Auslib Press.
- Melton, C. (1990). Bridging the cultural gap: a study of Chinese students' learning style preferences. *RELC Journal*, 21(1): 29–58.
- McClure, D. (2007). *Startup metrics for pirates: AARRR*. Master of 500 Hats. <https://500hats.typepad.com/500blogs/2007/06/internet-market.html>
- McKinney, P. (2018). Facets of inquiry-based learning: The role of information literacy, collaboration and reflection in the support and development of inquiry-based pedagogies in higher education [Doctoral dissertation, University of Sheffield].
- McKinney, P. & Levy P. (2006). Inquiring-based learning and information literacy development: A CETL approach, *Innovation in Teaching and Learning in information and Computer Sciences*, 5(2), 1–13.

Mohammadi, M., Moghaddam, A. I. & Yeganeh, M. E. (2008). Students' perception of the impact of user education on the use of reference resources: an Iranian experience. *Library Philosophy and Practice (e-journal)*, Paper 199. <http://digitalcommons.unl.edu/libphilprac/199>.

Mukuvi, M. (2014). *Using the gap model to assess users' perception of service quality levels in academic libraries a case of postmodern library, Kenyatta University and USIU Library*. [Doctoral dissertation, Kenyatta University]. Kenyatta University Institutional Repository. <https://ir-library.ku.ac.ke/handle/123456789/10945>.

Munoz, C., & Huser, A. (2008). Experiential and cooperative learning: using a situation analysis project in principles of marketing. *Journal of Education for Business*, 83, 214–233.

Michalak, R., & Rysavy, M. D. (2016). Information literacy in 2015: International graduate business students' perceptions of information literacy skills compared to test-assessed skills. *Journal of Business & Finance Librarianship*, 21(2), 152–174.

Michalak, R., Rysavy, M. D., & Wessel, A. (2017). Students' perceptions of their information literacy skills: the confidence gap between male and female international graduate students. *The Journal of Academic Librarianship*, 43(2), 100–104.

Middleton, L., Hall, H., & Raeside, R. (2019). Applications and applicability of social cognitive theory in information science research. *Journal of Librarianship and Information Science*, 51(4), 927–937.

Ministry of Education of the People's Republic of China. (1992). *Basic requirements for literature retrieval courses*. <http://edu.lib.tsinghua.edu.cn/ToolBox/WenJian/jiaowei44.htm>.

Ministry of Education of the People's Republic of China. (1984). *Opinions on the developing of the literature retrieval and utilization courses in colleges and universities*. <http://edu.lib.tsinghua.edu.cn/ToolBox/WenJian/jiaoyubu.htm>.

Ministry of Education of the People's Republic of China. (1985). *Opinions on improving and developing the teaching of literature courses*. <http://edu.lib.tsinghua.edu.cn/ToolBox/WenJian/jiaowei65.htm>.

Ministry of Education of the People's Republic of China. (2015). *Regulations for libraries of colleges and universities*. http://www.moe.gov.cn/srcsite/A08/moe_736/s3886/201601/t20160120_228487.html.

- Ministry of Education of the People's Republic of China. (2019). *The Chinese national top level courses project*. http://www.moe.gov.cn/srcsite/A08/s5664/moe_1623/s3843/.
- Nackerud, S., Fransen, J., Peterson, K., & Mastel, K. (2013). Analyzing demographics: Assessing library use across the institution. *Retrieved from the University of Minnesota Digital Conservancy*. <http://purl.umn.edu/143309>.
- Nagata, H., Toda, S., Itsumura, H., Koyama, K., Saito, Y., Suzuki, M., & Takahashi, N. (2006). *Body of professional knowledge required for the academic librarians in Japan* [Paper presentation]. Asia-Pacific Conference on Library Information Education and Practice, Singapore. <http://hdl.handle.net/10150/106139>.
- Napier, T., Parrott, J. M., Presley, E., & Valley, L. A. (2018). A collaborative, trilateral approach to bridging the information literacy gap in student writing. *College & Research Libraries*, 79(1), 120–146.
- Nejati, M. & Nejati, M. (2008). Service quality at University of Tehran Central Library. *Library Management*, 29(6/7), 571–582.
- Nitecki, D. A. (1996). Changing the concept and measure of service quality in academic libraries. *Journal of Academic Librarianship*, 22, 181–190.
- Nicholson, K. P. (2018). On the space/time of information literacy, higher education, and the global knowledge economy. *Journal of Critical Library and Information Studies*, 2(1), 1–31.
- Nozue, T. (2003). User Education - Focusing on the relationship with "information literacy." *Current Awareness* (278). <http://current.ndl.go.jp/ca1514>. (Article in Japanese)
- Nozue, T. (2010). Theories of information literacy education. In Japan Library Association (Ed.), *Practice of Information Literacy Education - User Education in All Libraries* (pp. 15–16). Japan Library Association.
- Nzivo, C. N., & Chen, C.F. (2013). International students' perception of library services and information resources in Chinese academic libraries. *Journal of Academic Librarianship*, 39(2), 129–137.
- Obasuyi, L., & Idiodi, E. O. (2015). Influence of library value on university education: Students' perception survey. *Advances in Social Sciences Research Journal*, 2(7), 120–136.
- OCLC Online Computer Library Center. (2005). Perceptions of libraries and

information resources: A report to the OCLC membership, Dublin, Ohio. <http://www.oclc.org/reports/2005perceptions.htm>.

OCLC Online Computer Library Center. (2006). College students' perceptions of libraries and information resources: A report to the OCLC membership, Dublin, Ohio. <http://www.oclc.org/reports/perceptionscollege.htm>.

O'Farrell, M., & Bates, J. (2009). Student information behaviours during group projects: A study of LIS students in University College Dublin, Ireland. *In Aslib proceedings*, 61(3), 302-315. Emerald Group Publishing Limited.

Ogunmodede, T. A., & Emeahare, E. N. (2010). The effect of library use education as a course on library patronage: A case study of LAUTECH Library, Ogbomoso, Nigeria. *Library Philosophy and Practice (e-journal)*, Paper 426. <http://digitalcommons.unl.edu/libphilprac/426>.

Otis, B., & Whang, L. (2007). Effect of library instruction on undergraduate electrical engineering design projects [Paper presentation]. ASEE Annual Conference and Exposition, Honolulu, HI. <https://peer.asee.org/2620>.

Ono, N. (2017). Information literacy education connected and integrated with general information education in universities: Challenges for consistent information literacy education in elementary, secondary, high school, and university. *Information Science and Technology*, 67(10), 539–545.

Parramore, S. (2019). Online active learning: Information literacy instruction for graduate students. *Reference Services Review*, 47(4), 476–486.

Phuong-Mai, N., Terlouw, C., & Pilot, A. (2005). Cooperative learning vs Confucian heritage culture's collectivism: Confrontation to reveal some cultural conflicts and mismatch. *Asia Europe Journal*, 3(3), 403–419.

Phillips, M., Fosmire, M., Turner, L., Petersheim, K., & Lu, J. (2019). Comparing the information needs and experiences of undergraduate students and practicing engineers. *The Journal of Academic Librarianship*, 45(1), 39–49.

Piaget, J. (1985). *The equilibration of cognitive structures: The central problem of intellectual development*. University of Chicago Press.

Pinto, M., Caballero Mariscal, D., & Segura, A. (2022). Experiences of information literacy and mobile technologies amongst undergraduates in times of COVID. A qualitative approach. *Aslib Journal of Information Management*, 74(2), 181–201.

Pinto, M., Fernández-Ramos, A., Sánchez, G., & Meneses, G. (2013). Information

competence of doctoral students in information science in Spain and Latin America: A self-assessment. *The Journal of Academic Librarianship*, 39(2), 144–154.

Pinto, M., Fernández-Pascual, R., Lopes, C., Antunes, M. L., & Sanches, T. (2021). Perceptions of information literacy competencies among future psychology professionals: A comparative study in Spain and Portugal. *Aslib Journal of Information Management*, 73(3), 345–366.

Plano Clark, V. L., Foote, L. A., & Walton, J. B. (2018). Intersecting mixed methods and case study research: Design possibilities and challenges. *International Journal of Multiple Research Approaches*, 10(1), 14–29.

Posey, J. (2009). *Student perceptions and expectations of library services quality and user satisfaction at Walters State Community College* [Doctoral dissertation, East Tennessee State University]. <http://dc.etsu.edu/etd/1836>.

Powell, E. F. (1995). Information seeking behaviors of studio artists [Master's thesis, University of North Carolina at Chapel Hill].

Pritchard, J.A. (2001). Planning for improved customer service at the state level. *Public Libraries*, 40(2), 86–87.

Priyadarshini, V., Nair, K., & Kumar, A. G. (2017). Optimising e-learning activities for enhancing learning and engagement in gen Z. *Seventeenth AIMS International Conference on Management*, 327–331. <http://www.aims-international.org/aims17/17ACD/PDF/A336-Final.pdf>.

Ramsay, G. (2005). Computer-mediated communication and culture: A comparison of “Confucian-heritage” and “Western” learner attitudes to asynchronous e-discussions undertaken in an Australian higher educational setting. *E-learning*, 2(3), 263–275.

Rankin, J. A. (1992). Problem-based medical education: effect on library use. *Bulletin of the Medical Library Association*, 80(1), 36–43.

Reeve, J., Jang, H., Carrell, D., Jeon, S., & Barch, J. (2004). Enhancing students’ engagement by increasing teachers’ autonomy support. *Motivation and Emotion*, 28(2), 147–169.

Ren, W. (2000). Library instruction and college student self-efficacy in electronic information searching. *The Journal of Academic Librarianship*, 26(5), 323–328.

Restoum, M., & Wade, S. (2013). The impact of library performance on students’ satisfaction. In Katsirikou, A. (Ed.) *5th International Conference on Qualitative and*

Quantitative Methods in Libraries QQML 2013, 4-7 June 2013, Rome, Italy. *ISAST: International Society for the Advancement of Science and Technology*.
<http://eprints.hud.ac.uk/20238/>

Rempel, H. G. (2010). A longitudinal assessment of graduate student research behavior and the impact of attending a library literature review workshop. *College & Research Libraries*, 71(6), 532–547.

Rogers, R. (1994). *Teaching information skills: A review of the research and its impact on education*. Bowker-Saur.

Robertson, V. (2003). The impact of electronic journals on academic libraries: the changing relationship between journals, acquisitions and interlibrary loans department roles and functions. *Interlending & Document Supply*, 31(3), 174–179.

Rockman, I. F. (Ed.). (2004). *Integrating information literacy into the higher education curriculum: Practical models for transformation*. Jossey-Bass.

Rudner, M. L., Miller-Whitehead, M., Gellmann, S. J. (2002). Who is reading online education journals? Why? And what are they reading? *D-Lib Magazine*, 8(12).
<http://www.dlib.org/dlib/december02/rudner/12rudner.html>.

Ryan, J., & Louie, K. (2007). False dichotomy? “Western” and “Confucian” concepts of scholarship and learning. *Educational Philosophy and Theory*, 39(4), 404-417.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.

Sadeh, T. (2007). User expectation in the library: A case study. *New Library World*, 108(7/8), 307–316.

Sadler, E., & Given, L. M. (2007). Affordance theory: A framework for graduate students' information behavior. *Journal of Documentation*, 63(1), 115–141.

Saunders, L., Kurbanoglu, S., Boustany, J. Dogan, G. Becker, P., Blumer, E., Chowdhury, A., Dobрева, M., Gendina, N., Grgic, I. H., Haddow, G., Koltay, T., Kortelainen, T., Krakowska, M., Majid, S., Mezhova, M., Repanovici, A., Rudžioniene, J., Schneider, R., Terra, A. L., & Todorova, T. Y. (2015). Information behaviors and information literacy skills of LIS students: An international perspective. *Journal of Education for Library and Information Science* 56(1), 80–99.

Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies*, 3, 71–92.

- Schunk, D. H., Pintrich, P. R., & Meece, J. L. (2008). *Motivation in education: Theory, research, and applications*. Prentice Hall.
- Schwartz, M., & Albers-Smith, J. (2015). Bridging the librarian-faculty gap in the academic library. *Library Research Journal*. Joint Study by Library Journal and Cengage Learning.
- Seo, S., & Koro-Ljungberg, M. (2005). A hermeneutical study of older Korean graduate students' experiences in American higher education: From Confucianism to Western educational values. *Journal of Studies in International Education*, 9(2), 164–187.
- Shrestha, N. (2008). *A study on students use of library resources and self-efficacy* [Master thesis, Tribhuvan University]. Tribhuvan University Research Repository. <http://eprints.rclis.org/22623/>
- Simmonds, P. L., & Andaleeb, S. (2001). Usage of academic libraries: the role of service quality, resources, and use characteristics. *Library Trends*, 49(4), 626–634.
- Sit, H. H. W. (2013). Characteristics of Chinese students' learning styles. *International Proceedings of Economics Development and Research*, 62(8), 36–39.
- Siegel, G. (2009). *Libraries and graduate students: Building connections*. Routledge.
- Small, R., Zakaria, N., & El-Figuigui, H. (2004). Motivational aspects of information literacy skills instruction in community college libraries. *College & Research Libraries*, 65(2), 96–121.
- Smith, C., & Bath, D. (2006). The role of learning community in the development of discipline knowledge and generic graduate outcomes. *Higher Education*, 51, 259–286.
- Soderdahl, P. A. (2011) Library classroom renovated as an active learning classroom. *Library Hi Tech*, 29(1), 83–90.
- Stamatoplos, A., & Mackoy, R. (1998). Effects of library instruction on university students' satisfaction with the library: A longitudinal approach. *College & Research Libraries*, 59(4), 323–334.
- Stahley, M., & Platt, J. (2002). Knowledge management and technology in a multi-campus system: Enhancing collaborative alliances and information access. *Journal of Educational Media & Library Services*, 39(4), 351–361.
- Subramaniam, G. (2008). Confronting Asian concerns in engaging learners to online

- education. *International Education Studies*, 1(4), 10–18.
- Sugimoto, Y. (2014). *An introduction to Japanese Society*. (4th ed.). Cambridge University Press.
- Sugimura, K., & Shimizu, N. (2010). Identity development in the learning sphere among Japanese first-year university students. *Child Youth Care Forum*, 40(1), 25–41.
- Sullivan, R. M. (2010). Common knowledge: Learning spaces in academic libraries. *College & Undergraduate Libraries*, 17(2-3), 130–148.
- Sun, P., & Rader, H. B. (1999). Academic library user education in China. *Reference Services Review*, 27(1), 69–72.
- Sun, P. (2002). Information literacy in Chinese higher education. *Library Trends*, 51(2), 210–217.
- Sweeney, J. C., Soutar, G. N., & Mazzarol, T. (2014). Factors enhancing word-of-mouth influence: Positive and negative service-related messages. *European Journal of Marketing*, 48(1/2), 336–359.
- Tang, Y., & Xia, Z. (2010). A study of subject service in Chinese academic libraries. *CALA Occasional Paper Series*, 7, 1–6.
- Tashakkori, A., & Creswell, J. W. (2007). The new era of mixed methods. *Journal of Mixed Methods Research*, 1(1), 3–7.
- Tavakol, M., & Dennick R. (2010). Are Asian international medical students just rote learners? *Advances in Health Sciences Education*, 15, 369–377.
- Tejedor, S., Cervi, L., Pérez-Escoda, A., & Jumbo, S. T. (2020). Digital literacy and higher education during COVID-19 lockdown: Spain, Italy, and Ecuador. *Publications*, 8(4), 1–17.
- Tewell, E. (2018). The practice and promise of critical information literacy: Academic librarians' involvement in critical library instruction. *College & Research Libraries*, 79(1), 10–34.
- Thompson, B., Kyrillidou, M., & Cook, C. (2007). On-premises library versus Google-like information gateway usage patterns: A LibQUAL+tm study. *Portal*, 7(4), 463–480.
- Tiefel, V. M. (1995). Library user education: Examining its past, projecting its future. *Library Trends*, 44(2), 318–338.

- Times Higher Education. (2017). *World university rankings*. https://www.timeshighereducation.com/world-university-rankings/2017/reputation-ranking#!/page/0/length/25/sort_by/rank/sort_order/asc/cols/stats.
- Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research*, 45(1), 89–125.
- Tinkham, T. (1989). Rote learning, attitudes and abilities: A comparison of Japanese and American students. *TESOL Quarterly*, 23(4), 695–698.
- Tracy, D. G., & Searing, S. E. (2014). LIS graduate students as library users: A survey study. *Journal of Academic Librarianship*, 40(3/4): 367–378.
- Tran, T. T. (2013). Is the learning approach of students from the Confucian heritage culture problematic? *Educational Research for Policy and Practice*, 12(1), 57–65.
- Torres, C. A., Armove, R. F., & Misiaszek, L. I. (Eds.). (2022). *Comparative education: The dialectic of the global and the local*. Rowman & Littlefield.
- Tuominen, K., Savolainen, R., & Talja, S. (2005). Information literacy as a sociotechnical practice. *The Library Quarterly*, 75(3), 329–345.
- Turner, A., Welch, B., & Reynolds, S. (2013). Learning spaces in academic libraries—a review of the evolving trends. *Australian Academic & Research Libraries*, 44(4), 226–234.
- Ujigou, T. (2008). Exploring libraries in Taiwan: Focusing on the National Library and Taipei City Library. *Doshisha University Library Annual Report*, 34, 157–184.
- University of California Television. (2015) Back to the future with the brave new library featuring Sarah Thomas VP for the Harvard Library [Video]. <https://www.youtube.com/watch?v=at3PSQqd94k>.
- Virkus, S., & Metsar, S. (2004). General introduction to the role of the library for university education. *LIBER Quarterly: The Journal of the Association of European Research Libraries*, 14(3/4): 290–305.
- Vivek, R., & Nanthagopan, Y. (2021). Review and comparison of multi-method and mixed method application in research studies. *European Journal of Management Issues*, 29(4), 200–208.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.
- Wang, H. R., Niu, G. L., & Hubbard, W. J. (2004). Current status of reference

services in academic libraries in Mainland China: a web analysis. *The International Information & Library Review*, 36(2), 105–110.

Wang, L. (2011). An information literacy integration model and its application in higher education. *Reference Services Review*, 39, 703–720.

Washington-Hoagland, C., & Clougherty, L. (2002). Identifying the resource and service needs of graduate and professional students: The University of Iowa user needs of graduate professional series. *Portal: Libraries and the Academy*, 2(1), 125–143.

Wenger, K. (2014). Problem-based learning and information literacy: A natural partnership. *Pennsylvania Libraries: Research & Practice*, 2(2), 142–154.

Whitlatch, J. B. (1990). Reference service effectiveness. *Reference & User Services Quarterly*, 30(2), 205–220.

Wijayasundara, N. D. (2008). Faculty-library collaboration: A model for University of Colombo. *The International Information & Library Review*, 40(3), 188–198.

Wiorogórska, Z. (2014). Information literacy and doctoral students in France and Poland. A comparative study. *Zagadnienia Informatyki Naukowej–Studia Informacyjne*, 52(103), 52–66.

Wu, L. L. (1983) Investigation and Research on the implementation status of University Libraries in Taiwan. *The Journal of Social Education*, 11(6), 71–76.

Wu, Y. D. (2012). Information literacy in the workplace: A cross-cultural perspective. *Librarianship and Information Science*, 38(1), 84–104.

Xie, J. Z., & Sun, L. L. (2015). Exploring Chinese students' perspective on reference services at Chinese academic libraries: A case study approach. *The Journal of Academic Librarianship*, 41(3), 228–235.

Yvelson-Shorsher, A., & Bronstein, J. (2018). Three perspectives on information literacy in academia: Talking to librarians, faculty, and students. *College & Research Libraries*, 79(4), 535.

Yi, Z. X. (2016). Effective techniques for the promotion of library services and resources. *Information Research: An International Electronic Journal*, 21(1), paper 702. <http://InformationR.net/ir/21-1/paper702.html>

Ying, Y. (2019). Research on college students' information literacy based on big data. *Cluster Computing*, 22(2), 3463–3470.

- Yu, M. L. (1998). The library and information user education in Taiwan. *Library Information Work*, 4, 58–61.
- Yu, T. (2003). A Taiwan college and technical institution library user education survey. *New Library World*, 104(9), 335–343.
- Zakharov, W., & Maybee, C. (2019). Bridging the gap: Information literacy and learning in online undergraduate courses. *Journal of Library & Information Services in Distance Learning*, 13(1-2), 215–225.
- Zeithaml, V. A., Parasuraman, A., & Berry, L. L. (1990). *Delivering quality service: Balancing customer perceptions and expectations*. The Free Press.
- Zhang, L. (2006). Communication in academic libraries: An East Asian perspective. *Reference Services Review*, 34(1), 164–176.
- Zhang, L. (2021, December). Research on multi-user growth strategy of Pinduoduo based on AARRR model. In *7th Annual International Conference on Social Science and Contemporary Humanity Development (SSCHD 2021)* (pp. 271–276). Atlantis Press. <https://www.atlantis-press.com/proceedings/sschd-21/125966406>
- Zhao, S. (2019). *A study of graduate students' information literacy needs in the electronic resource environment* [Doctoral dissertation, University of Windsor], University of Windsor Research Repository. <https://scholar.uwindsor.ca/etd/7747>.
- Zhou, J. F., Liu, G. F., & Sha, Y. P. (2016). Study on information literacy education innovation based on micro-video in the perspective of “Internet Plus.” *Library & Information Science*, 60(1), 19–25.
- Zhu, T. H. (2009). Library user education under the circumstance of network. *US-China Education Review*, 6(12), 81–84.
- Zurkowski, P. G. (1974). *The information service environment relationships and priorities. Related paper no.5*. Washington DC: National Commission on Libraries and Information Science.

List of Research Achievements

Journal articles (peer-reviewed)

1. Qianxiu Liu. Information literacy and recent graduates: motivation, self-efficacy, and perception of credit-based information literacy courses. *The Journal of Academic Librarianship*. In press. 2023.
2. Zhong Qinghong; Zha Ying; Luo Jingling; Liu Qianxiu. Research on the construction of the data literacy cultivation system for university librarians. *Journal of Academic Libraries*. In press. 2023. (Article in Chinese)
3. Patrick Lo, Qianxiu Liu, Bradley Allard, and Andrew J. Stark. A comparative study of attitudes and perceptions of LIS and non-LIS Students toward library user education at Sun Yat-Sen University. *Library Quarterly: Information, Community, Policy*. 91(2), pp. 1–25. 2021.
4. Qianxiu Liu, Bradley Allard, Patrick Lo, Qingshan Zhou, Tianji Jiang, Hiroshi Itsumura. Library user education as a window to understand inquiry-based learning in the context of higher education in Asia: A Comparative Study between Peking University and the University of Tsukuba. *College and Research Libraries*. 80(1), pp. 8-31.2019.
5. Qianxiu Liu, Patrick Lo, Hiroshi Itsumura. Students' attitudes and perceptions toward the values and importance of library user education: a comparative study between the Fudan University and National Taiwan Normal University. *The Journal of Academic Librarianship*, 42 (6), pp. 644-654. 2016.
6. Patrick Lo, Stuart So, Qianxiu Liu, Bradley Allard, Dickson Chiu. Chinese Students' Choice of Overseas versus Domestic MLIS. Education: A Comparative Study between University of Tsukuba and Shanghai University. *College & Research Libraries*. 80 (7), pp. 1013-1035. 2019.
7. Bradley Allard, Patrick Lo, Qianxiu Liu, Kevin K.W. Ho, Dickson K.W. Chiu, Joyce C.C. Chen, Qingshan Zhou, and Tianjin Jiang. LIS Pre-Professionals' Perspectives towards Library User Education: A Comparative Study between Three Universities in Greater China. *Journal of Librarianship & Information Science*, 52(3), pp. 832–852. 2019.

Journal articles

1. Qianxiu Liu, Jiawen Wang, Jian Zhou, and Dickson Chiu. Interview with Mr. Billy Tak Hoi Leung, Functional Head of the Public Access and Reference Unit, University of Macau (China). *CILIP International Library and Information journal Focus*.52 (1),17-30. 2021.
2. Victoria Caplan, Qianxiu Liu, Patrick Lo & Dickson Chiu. Witnessing the Evolution of Higher Education in Hong Kong Through the Eyes of an American Academic Librarian. *CILIP International Library and Information journal Focus*.51(1),25-31. 2020.
3. Qianxiu Liu. Evolution of One-on-one Research Consultations in the Age of the Internet Informational: Interview with Lewis Li Information Instruction Librarian Hong Kong

University of Science & Technology. CILIP International Library and Information journal Focus.50 (1),16-26. 2019.

4. Qianxiu Liu, Patrick Lo, and Dickson Chiu. Do You Know Your Music Students' Information Needs and Library Usage Behaviors? Interview with the Music Librarian of the Hong Kong Baptist University. Music Reference Services Quarterly, 22(3),150-163,2019.

International conference papers

1. Qianxiu Liu, Hiroshi Itsumura. Information Literacy Education as a Lens to Understand Inquiry-based Learning amongst Universities in East Asia. The European Conference on Information Literacy, Sep 24-27, 2018, Oulu, Finland.
2. Qianxiu Liu, Hiroshi Itsumura, Patrick Lo. Measuring the Importance of Information Literacy Education in Academic Libraries from Students' Perspective a Comparative Study among the University of Tsukuba, Fudan University, and the National Taiwan Normal University. The European Conference on Information Literacy, Sep 24-27, 2017, Saint-Malo, France.
3. Qianxiu Liu, Hiroshi Itsumura. Investigation of user expectations and user experience to identify students' perceptions towards library user education: a case study of the University of Tsukuba. Paper presented at the 7th Asia-Pacific Conference on Library & Information Education and Practice, November 3-4, 2016, Nanjing, China.
4. Qianxiu Liu, Hiroshi Itsumura, Patrick Lo. Students' attitudes and perceptions towards the values and importance of library user education: a comparative study between the Fudan University and National Taiwan Normal University. The 8th Qualitative and Quantitative Methods in Libraries International Conference, May 24-27, 2016, London, UK.
5. Qianxiu Liu. Understanding librarians: developing the teaching role of Chinese librarians. The 15th Qualitative and Quantitative Methods in Libraries International Conference. May 30-June 3, 2023, Crete, Greece. (Paper accepted)
6. Qianxiu Liu, Hongshen Pang, Jingdong Tian, Xinghua Wei, Danhui Song. Chinese Patent Analysis for Foreign Object Detection in Wireless Charging. Proceedings of BEIT 2023. In press.
7. Hongshen Pang, Qianxiu Liu, Xinxing Zhang, and Haiyun Xu. Multidimensional Data Analysis on Urban Science and Technology Innovation Capabilities in Guangzhou, IEEE International Electron Devices Meeting (IEDME) 2022, 3.1437-1446.
8. Hongshen Pang, Qianxiu Liu, Danhui Song, Jingdong Tian. Global patent analysis of foreign object detection in wireless charging. 2022 3rd International conference on big data economy and information management. (BDEIM).2022. In press.
9. Qianxiu Liu. Why the Library? The Role of Librarians in the Higher Education Systems of Greater China. China and Higher Education 2021 Conference (ChinaHE21), Hongkong, 2021.12.6.
10. Qianxiu Liu. Graduate students in information literacy courses: Motivation, self-efficacy, and perception. The 11th Qualitative and Quantitative Methods in Libraries International Conference. May 28-31, 2019, Florence, Italy.
11. Chiranthi Wijesundara, Patrick Lo, Qianxiu Liu. University students' awareness towards online access tools: a case study of the University of Tsukuba. Paper presented at the 5th Asian Conference on Literature & Librarianship, April 2-5, 2015, Osaka, Japan.

Conference papers in Japan

1. 劉倩秀. 米中大学図書館における情報リテラシー教育に関する比較研究—ウェブサイト調査をもとに—. 三田図書館情報学会 2020 年度研究大会.2020 年 11 月 3 日.慶応

義塾大学.

2. 劉倩秀. 中国の大学図書館における情報リテラシー教育の今. 日本図書館情報学会 第 67 回研究大会. 2019 年 10 月 19 日 龍谷大学.
3. 劉倩秀、池田潤、森本行人. 多様性に着目した学術誌の評価指標: J-STAGE メタデータ活用の試み. 日本図書館情報学会 第 66 回研究大会. 2018 年 11 月 3 日 琉球大学.
4. 劉倩秀. 大学図書館における利用者教育の重要性に関する意識調査: 筑波大学と国立台湾師範大学を対象に 三田図書館・情報学会 2016 年度研究大会. 慶応義塾大学.

Book Publication

1. Qianxiu, Liu, Patrick Lo, Chiu, D.K.W., Zhou, Q. Why the Library? The Role of Librarians in the Higher Education Systems of Greater China. City University of Hong Kong Press, 426p. (2022.1.) ISBN : 9789629376130
2. 甘友斌, 彭玲玲, 张弛. 《大学特許出願のための出願前評価計画の調査と実践》 Wuhan University of Technology Press, 第 3 章を担当.(2022).
3. Jiang, T., Lo, P., Cheuk, M.K., Chiu, D.K.W., Chu, M.Y., Zhang, X., Zhou, Q., Liu, Q., Tang, J., Zhang, X., Sun, X., Ye, Z., Yang, M., Lam, S.K. New Cultural Dialogues: Conversations with Outstanding Librarians, Archivists, and Museum Curators in Greater China. / 文化新語: 兩岸四地傑出圖書館、檔案館及博物館傑出工作者訪談. Hong Kong: Systech Publications. 第 23 章を担当.(2019).

Invited Lecture

1. Qianxiu Liu, The Status and Enlightenment of Japan's Intellectual Property Public Service in the Post-epidemic Era. The 3rd Junior Researchers Forum on Library Information and Archive Management, School of Information Management, Sun Yat-sen University 2021,10,23.

Awards & Grants

1. 2022.05. Winner of the first prize for the “Data Resource Value-Added Service Research Project” in the Digital Resource Acquisition Alliance of Chinese Academic Libraries (CALIS). (中国高等教育文献保障系統「データリソース付加価値サービス研究プロジェクト」で最優秀賞).
2. 2020. Research Grant of Japanese Society of Library and Information Science (日本図書館情報学会研究助成)
3. 2019.10.19. Received the Best Presentation Encouragement Award at the 67th Annual Conference of the Japanese Society of Library and Information Science. (日本図書館情報学会 第 67 回研究大会最優秀発表奨励賞).
4. 2015. Library and Information Science Overseas Training Grant. Graduate School of Library Information and Media Studies and the College of Knowledge and Library Science with sponsored by the Tachibana Alumni Association. (図書館情報学海外研修助成).

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Appendix 1 Questionnaire (in English)

Questionnaire on students' perceptions towards to the academic library user education programs

Dear Participant,

This is international joint research about the university students' perceptions towards to the library user education programs.

Your participation is extremely valuable for completing the research and facilitating the overall development of the library user education programs in Asia. The questionnaire is to be answered anonymously. The data is collected and analyzed for the research only.

Thank you for your participation.

*For enquiries: Qianxiu LIU

Graduate School of Library, Information & Media Science

University of Tsukuba, Japan

Email: s1521661@u.tsukuba.ac.jp

Q1. In your opinion, how IMPORTANT do you consider the following activities part of library user education provided by the University Library?

(1 =not important at all, 2 =not so important, 3 =neutral, 4 =a little important, 5 = very important)

Library Activities	Not at all ⇔ Very important				
General library tour	1	2	3	4	5
Library orientation tour (for freshmen)	1	2	3	4	5
Library instruction workshop (catered for E-books & E-learning)	1	2	3	4	5
Database instruction workshop (e.g., database retrieval through face-to-face with a hands-on practice)	1	2	3	4	5

Research (thesis/dissertation/final year project) consultation	1	2	3	4	5
Subject-specific library courses (e.g., writing skills)	1	2	3	4	5
Online Information literacy instruction	1	2	3	4	5
Course assignments consultation	1	2	3	4	5
Virtual reference services (Ask a Librarian)	1	2	3	4	5
Others (please specify):	1	2	3	4	5

Q2. When was the last time that you took part in the library user education program provided by the University Library?

- A) Last week
- B) Last month
- C) Over 6 months ago
- D) Last year
- E) Two years ago
- F) Three years ago
- G) More than three years ago
- H) Never
- I) Cannot remember

Q3. If you have never taken part in any of the user education programs provided by the University Library, please rate the following reasons that are applicable to you. (1 = strongly disagree, 2 = somewhat disagree, 3 = neutral, 4 = agree, 5 strongly agree)

Reasons	Disagree ⇔ Agree				
I don't think they are useful for me at all.	1	2	3	4	5
I am interested in, but I don't know when these user education programs are conducted.	1	2	3	4	5
I want to go, but they always clash with my class schedule.	1	2	3	4	5

The topics/format of the user education programs look boring. 1 2 3 4 5

I don't know why. 1 2 3 4 5

I am not well informed by the details of the user education programs that are provided by the University Library (except the library orientation tour). 1 2 3 4 5

I can find information by myself

Others (please specify): 1 2 3 4 5

Q4. Please rate the following questions about the effectiveness of library promotion of the user education services to the university students.

(1= not effective at all, 2= not so effective, 3= neutral, 4= a little effective, 5= very effective)

Library Promotion Not at all ⇔ Very well

Making announcements on the homepage of the University Library website 1 2 3 4 5

University Library sends a batch of emails to all students/ Email Announcements 1 2 3 4 5

University Library puts up posters throughout the entire campus 1 2 3 4 5

University Library sends messages via online social media tools (e.g., LINE, Wechat, WhatsApps, etc.) to notify the students 1 2 3 4 5

University Library asks the professors to encourage the students to attend 1 2 3 4 5

Others (please specify): 1 2 3 4 5

Q5. Please rate the effectiveness of the following ways for attracting more students to

attend the user education programs provided by the University Library. (1= not effective at all, 2= not so effective, 3= neutral, 4= a little effective, 5= very effective)

Not at all ⇔ Very well

Students will be given Cash coupons after attending the library workshops.	1	2	3	4	5
Students can take voluntary tests after attending the library workshops. Students who get the highest scores will be awarded with gifts (e.g., iPod or iPad).	1	2	3	4	5
Students can earn credits (like other academic courses) after attending the workshops.	1	2	3	4	5
Professors invite the reference librarians to teach library workshops, on the classrooms in person instead of waiting for the students to join.	1	2	3	4	5
Professors compel the students to attend to the workshops.	1	2	3	4	5
Others (please specify):	1	2	3	4	5

Q6. If you are unable to find materials (e.g., a book or a research article) to finish your research/assignments, what is the first thing that comes to your mind?

1. I will ask my classmates for help
2. I will ask my tutors for help
3. I will ask my professors for help
4. I will go to the University Library and ask the Reference Librarian for help
5. I will go to the nearby public library and ask for help
6. I will try to find it via Google or Google Scholar
7. I will give up completely, and try to find other materials instead
8. I don't know. I have not met it before.
9. Others (please specify): _____

Q7. Please rate the reference / user education librarians at your University Library. (1= not at all, 2= not so well, 3= neutral, 4= a little good, 5= very well)

Librarians are

Not at all ⇔ Very well

Friendly	1	2	3	4	5
Creative	1	2	3	4	5
Interesting	1	2	3	4	5
Engaging	1	2	3	4	5
Helpful	1	2	3	4	5
Professional	1	2	3	4	5
Service-oriented	1	2	3	4	5
Intellectual	1	2	3	4	5
Efficient at work	1	2	3	4	5
Outgoing	1	2	3	4	5
Patient with listening to my needs & giving supportive guidance	1	2	3	4	5

Q8. How would you describe the overall contents of the library user education programs? (1=strongly disagree, 2=strongly disagree, 3=Neutral, 4=Agree, 5=strongly agree)

I personally think that	Strongly disagree	Somewhat disagree	Neutral	Agree	Strongly agree
The overall contents are very clear and easy to follow	1	2	3	4	5
The overall contents are very useful and relevant to my current research/assignments	1	2	3	4	5
library user education is one of the important parts of students' overall learning in	1	2	3	4	5

the university					
The user education workshops should be mandatory for students by the faculty	1	2	3	4	5
all students should understand what library user education is before the graduation	1	2	3	4	5
students still can make good use of the library collection and other resources, even they do NOT take part actively in the library user education programs actively	1	2	3	4	5

I personally think that	Strongly disagree	Somewhat disagree	Neutral	Agree	Strongly agree
The overall quality of the user education programs provided by the University Library is satisfied	1	2	3	4	5
The library orientation is helpful in terms of building a positive image of about the University Library and its services amongst the student.	1	2	3	4	5

Q10. Any other comments about your University Library

Q11. Gender

- A) Male
- B) Female

Q12. Country of origin:

- A) China
- B) Japan
- C) Taiwan
- D) Others (please specify):

Q13. Academic qualification:

- A) Bachelor's degree student
- B) Master's degree student
- C) Doctoral/PhD student
- D) Others (please specify): _____

Q14. Field of Study/Major: _____

The End! Thank you very much!

Appendix 2 Questionnaire (in Japanese)

大学生の図書館における利用者教育に対する意識調査

本調査は、大学生の図書館における利用者教育への参加意識についての調査です。本調査を通し、大学生が大学図書館における利用者教育に対し、どのような意識を持っているかを理解し、大学図書館における利用者教育を改善することを目的とします。

質問紙は 14 問からなり、回答時間は 5-10 分程度です。

以下の注意事項をよくお読みになってください。

- 回答を途中でやめた場合でも、回答者にはいかなる不利益も生じません。
- 回答の処理及びデータの保管と処分まで、回答は厳重に保管されます。
- 結果の公表につきましては、研究及び図書館からの発表のみに使用し、他に使用することはありません。

上記内容を十分に理解した上で、ご協力頂ける場合は次の頁の回答用紙か下記の URL から Web アンケートにお答えください。

URL: <http://goo.gl/forms/rhIA7qLQJy>

<お問い合わせ先>

筑波大学大学院 図書館情報メディア研究科

博士前期課程 1 年 逸村研究室

劉 倩秀

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図書館利用教育とは図書館の利用者を対象に、図書館サービス、施設、設備、資料などの活用に関わる知識や技能の習得を目的とした図書館の活動のことを指します。

例：

図書館ツアー： 利用者に図書館のことをより知っていただくために、見学を行う。

図書館オリエンテーション：利用者に図書館におけるサービスの種類や概要、開館日と時間、文献探索や貸出の方法、利用規則などの案内ならびに説明を行う。

文献探索講習会：利用者に情報をより効果的に入手し利用する方法を修得させることを意図した計画的活動。

科目関連の情報利用指導：特定の教科目や主題領域の教育目標達成のために、図書館員が授業に参加し、学習過程において必要となる図書館利用や情報利用にかかわる知識や技能を指導するものである。

1. 以下の筑波大学附属図書館活動のうち、図書館利用教育プログラムに対する重要性を1から5で評価し、○をつけてください。[5 非常に重要 4 重要 3 どちらとも言えない 2 重要ではない 1 全く重要ではない]

	全く重要ではない⇔非常に重要				
	1	2	3	4	5
図書館ツアー	1	2	3	4	5
図書館オリエンテーション	1	2	3	4	5
文献探索講習会（電子資料を中心）	1	2	3	4	5
データベース講習会（Refwork など）	1	2	3	4	5
論文に関する講習会	1	2	3	4	5
科目関連の情報利用指導	1	2	3	4	5
図書館ホームページ上の利用案内	1	2	3	4	5

プレゼンテーションに関する講習会 1 2 3 4 5

レファレンスサービス（メールお問い合わせを含む）	1	2	3	4	5
--------------------------	---	---	---	---	---

その他（具体的に） [] 1 2 3 4 5

2. あなたが最後に図書館利用教育に参加したのはいつですか？○をつけてください。

1. 1週間前
2. 1ヶ月前
3. 半年前
4. 去年
5. 2年前
6. 3年前
7. 3年以上前
8. 参加したことがない
9. 覚えていない

3. 図書館利用者教育プログラムに参加したことの無い方は、その理由について以下の項目を1から5で評価し、○をつけてください。当てはまるものがない場合は、その他に記入してください。[5 あてはまる 4 ややあてはまる 3 どちらとも言えない 2 あまりあてはまらない 1 あてはまらない]

あてはまらない ⇔ あて

はまる

自分に役に立つと思わない	1	2	3	4	5
--------------	---	---	---	---	---

興味があるが、具体的な開催時間などの情報を知

1 2 3 4 5

らない

開催時間が自分の予定と重なり、参加したくても

1 2 3 4 5

参加できない

プログラムのテーマがつまらなさそう

1 2 3 4 5

特に理由はない

1 2 3 4 5

図書館オリエンテーション以外に、他の図書館利

1 2 3 4 5

用教育プログラムを知らない

図書館員の助けがなくても、ほしい情報は自分で

1 2 3 4 5

なんとか探し出せる

その他（具体的に） [

] 1 2 3 4 5

4. 図書館利用者教育を宣伝するための方法について、以下の項目の有効性を1から5で評価し、○をつけてください。[5 非常に良い 4 良い 3 どちらとも言えない 2 良くない 1 全く良くない]

良くない⇔非常に

良い

図書館のホームページでお知らせする	1	2	3	4	5
図書館のメールサービスでお知らせする	1	2	3	4	5
学校の各掲示板にポスターなどでお知らせする	1	2	3	4	5
図書館の SNS アカウント (Facebook, Twitter など) で お知らせする	1	2	3	4	5
指導教員から学生に声をかける	1	2	3	4	5
その他: ()	1	2	3	4	5

5. 学生の図書館利用者教育への積極的な参加を促す試みとして、以下の項目の有効性を 1 から 5 で評価し、○をつけてください。[5 非常に良い 4 良い 3 どちらとも言えない 2 良くない 1 全く良くない]

良くない ⇔ 非常に

良い

プログラムに参加すると校内のショップのクーポン がもらえる	1	2	3	4	5
プログラムの後の小テストでの成績が 3 位以内の人 は賞品がもらえる	1	2	3	4	5

プログラムに参加する人は単位がもらえる	1	2	3	4	5
---------------------	---	---	---	---	---

担任の先生が図書館員を授業に招き、授業でデータベースの利用方法等を説明する

1 2 3 4 5

授業の担任の先生が、プログラムに学生を強制的に参加させる	1	2	3	4	5
------------------------------	---	---	---	---	---

その他: () 1 2 3 4 5

6. 課題や研究のための資料（本や研究論文など）が見つからない場合、最初に思いつく解決方法は以下のどれですか？

1. 同級生に助けを求める
2. 指導教員に助けを求める
3. 大学図書館員に助けを求める
4. 近くの公共図書館館員に助けを求める
5. Google や Google Scholar を使って自分で探す
6. あきらめて他の資料を探す
7. 分からない
8. その他

7. レファレンス図書館員について、以下の選択肢を 1 から 5 で評価し、○をつけてください。[5 あてはまる 4 ややあてはまる 3 どちらとも言えない 2 あまり当てはまらない 1 あてはまらない]

良くない ⇔ 非常に良

い

フレンドリー	1	2	3	4	5
クリエイティブ(創造的)	1	2	3	4	5
面白い	1	2	3	4	5
魅力的	1	2	3	4	5
役に立つ	1	2	3	4	5
非常に専門的	1	2	3	4	5
サービス精神がある	1	2	3	4	5
知性的	1	2	3	4	5
効率的	1	2	3	4	5
外向的	1	2	3	4	5
丁寧に要望を聞く	1	2	3	4	5

8. 筑波大学附属図書館における利用教育に対し、最もあてはまる数字に○をつけてください。

	強く反対	やや反対	どちらとも言えない	やや賛成	強く賛成
--	------	------	-----------	------	------

内容がわかりやすい	1	2	3	4	5
内容が研究・学習に関わりがあり、役に立つ	1	2	3	4	5

9. 以下の意見について、最もあてはまる数字に○をつけてください。

	強く反 対	やや 反対	どちら とも言 えない	やや 賛成	強く賛 成
図書館利用教育への参加は学生にとって重要である	1	2	3	4	5
教員が学生に図書館利用教育の参加を強制すべきである	1	2	3	4	5
学生は図書館利用教育に対する理解を深めるべきである	1	2	3	4	5
学生は図書館利用教育に参加しなくても図書館を十分に利用できる	1	2	3	4	5
附属図書館の図書館利用者教育にしとても満足である	1	2	3	4	5
図書館オリエンテーションは学生の中で図書館のイメージを持たせながら、サービスの宣伝にもなる	1	2	3	4	5

10. 筑波大学附属図書館についてご意見やコメントがあれば、ご自由にお書き

ください。

11. 性別

1. 男
2. 女

12. 出身国・地域

1. 日本
2. 中国
3. 台湾
4. その他： _____

13. 身分

1. 学部生
2. 修士
3. 博士
4. その他： _____

14. 研究分野/専攻： _____

以上となります。ご協力ありがとうございました。

Appendix 3 Questionnaire (in Traditional Chinese)

關於大學生對大學圖書館讀者利用教育的意識調查

親愛的同學：

您好！您現在正在參與的是一個國際共同研究項目，關於大學生對大學圖書館讀者利用教育的意識調查，您的參與有助於推動亞洲大學圖書館的發展。本次問卷共有 14 個問題，需佔用您約 5 分鐘的時間。此次調查問卷完全匿名，數據僅供研究參考。

非常感謝您的參與！

*如有任何問題請諮詢：

劉倩秀

日本筑波大學大學院

圖書館信息多媒體研究科

郵件:s1521661@u.tsukuba.ac.jp

《讀者服務工作指南》麥群忠主編中，讀者利用教育被定義為：

由圖書館進行的有目的、有計劃地幫助讀者樹立情報意識，最佳地利用圖書館以獲取對文獻信息情報的尋找、選擇、吸收和綜合能力的基礎教育。

1. 請用數字 1-5 評價下列大學圖書館讀者利用教育活動的重要性，畫○表示。

(1=非常不重要 2=有點不重要 3=中立 4=有點重要 5=非常重要)

不重要⇔重要

圖書館導覽	1	2	3	4	5
圖書館新生之旅	1	2	3	4	5
電子資源教育訓練	1	2	3	4	5
資料庫培訓講習（上機操作）	1	2	3	4	5
科研諮詢服務（畢業論文）	1	2	3	4	5
學科主題講座（論文寫作 文獻管理相關）	1	2	3	4	5
線上資訊素養講習	1	2	3	4	5
配合課程教育訓練	1	2	3	4	5
參考諮詢服務	1	2	3	4	5
其他(請詳述)：	1	2	3	4	5

2. 您上次參加貴校圖書館的讀者利用教育活動是什麼時候？

- A) 上週
- B) 上個月
- C) 半年前
- D) 去年
- E) 兩年前
- F) 三年前
- G) 三年以上
- H) 從未參加過

I) 記不清了

3. 如果您從未參加過貴校的圖書館讀者教育活動，請將以下理由用數字 1-5 評價符合您的意見，畫○表示。

(1 非常不符合 2 有點不符合 3 中立 4 有點符合 5 非常符合)

	不符合⇔ 符合				
我覺得它對我沒有幫助	1	2	3	4	5
我很感興趣但是我不知道讀者利用教育活動開始的具體時間	1	2	3	4	5
我想參加，但是它和我的課程安排衝突了	1	2	3	4	5
讀者利用教育活動的主題看起來很無趣	1	2	3	4	5
我不知道為什麼	1	2	3	4	5
除了圖書館說明會之外，我不知道還有其他讀者利用教育活動	1	2	3	4	5
我可以找到所有我想要的資訊，不需要圖書館員的幫助	1	2	3	4	5
其他（請詳述）	1	2	3	4	5

4. 請用數字 1-5 評價下列活動對推廣圖書館讀者教育活動的效果，畫○表示。

(1 完全無效 2 無效 3 中立 4 有效 5 非常有效)

	無效⇔ 有效				
圖書館網頁上發佈公告通知宣傳	1	2	3	4	5
圖書館由系統發送群組郵件通知宣傳	1	2	3	4	5
在學校各公告欄張貼宣傳海報	1	2	3	4	5
圖書館發 SNS 信息通知宣傳 (Facebook 等)	1	2	3	4	5
任課老師宣傳鼓勵學生參加	1	2	3	4	5
其他 (請詳述)	1	2	3	4	5

5. 請用數字 1-5 評價下列方式對吸引學生參與圖書館讀者利用教育的效果，畫○表示。(1 完全無效 2 無效 3 中立 4 有效 5 非常有效)

	無效⇔ 有效				
參與活動的學生可以獲得校內外商店的優惠券	1	2	3	4	5
參與活動的學生自願參與活動後的小測試，最高分前三名給予獎品	1	2	3	4	5

參與活動的學生可得到課程學分	1	2	3	4	5
任課老師邀請圖書館員在課堂上講解資料庫的利用方法等，而不僅僅在圖書館等待學生的前來	1	2	3	4	5
任課老師強制要求學生參與讀者利用教育活動	1	2	3	4	5
其他 (請詳述)	1	2	3	4	5

6. 當您在做研究或寫課題報告，找不到您想要的資料（論文或書）時，您首先想到的是以下哪種情況？

- A) 找同學尋求幫助
- B) 找老師尋求幫助
- C) 找大學圖書館員尋求幫助
- D) 找鄰近的公共圖書館館員尋求幫助
- E) 繼續努力在各學術網尋找
- F) 我會放棄，轉而尋找其他資料
- G) 我也不懂，因為這類情況還未發生過
- H) 其他 (請詳述): _____

7. 請用數字 1-5 評價貴校圖書館的參考服務部的圖書館員，畫○表示。

(1 完全不符 2 不符 3 中立 4 符合 5 非常符合)

圖書館員是	不符合 ⇔ 符合				
友善的	1	2	3	4	5
有創新能力的	1	2	3	4	5

有趣的	1	2	3	4	5
有個人魅力的	1	2	3	4	5
有幫助的	1	2	3	4	5
專業的	1	2	3	4	5
有服務精神的	1	2	3	4	5
理解能力強的	1	2	3	4	5
高效率的	1	2	3	4	5
外向的	1	2	3	4	5
耐心聽我的需求並給我建議	1	2	3	4	5

8. 您如何評價貴校圖書館的讀者利用教育活動？

您是否同意	完全不 同意	不同 意	中立	同意	完全同 意
內容清晰易懂	1	2	3	4	5
內容很有幫助且與我的學習研究 息息相關	1	2	3	4	5

9. 您是否同意以下意見，請選擇最能代表您意見的數字，畫○表示。

您是否同意	完全不 同意	不同 意	中立	同意	完全同 意
參與圖書館讀者利用教育活動對學生很重要	1	2	3	4	5
老師應強制學生參加圖書館讀者教育活動	1	2	3	4	5
學生在畢業之前應對圖書館讀者利用教育活動有一個理解	1	2	3	4	5
學生可以很好的利用圖書館資源即使他們不參加任何讀者利用教育活動	1	2	3	4	5
整體對貴校圖書館的讀者利用教育活動很滿意	1	2	3	4	5
圖書館講習或教育訓練能為圖書館在學生中建立一個積極形象，並對宣傳圖書館的服務很有幫助	1	2	3	4	5

10. 對貴校圖書館讀者教育的意見或建議

个人信息

1. 性別

- A) 男
- B) 女

2. 國籍或地區

- A) 中國
- B) 日本
- C) 台灣
- D) 其他 (請詳述) _____

3. 您現在是:

- A) 大學本科生
- B) 碩士
- C) 博士
- D) 其他 (請詳述) _____

4. 系所: _____

問卷到此結束！再次感謝您的參與！

Appendix 4 Questionnaire (in Simplified Chinese)

关于大学生对大学图书馆读者利用教育的意识调查

亲爱的同学：

您好！您现在正在参与的是一个国际共同研究项目，关于大学生对大学图书馆读者利用教育的意识调查，您的参与将有助于推动亚洲大学图书馆的发展。本次问卷一共有 14 个问题，占用您约 5 分钟的时间。此次调查问卷完全匿名，数据仅供研究参考。

非常感谢您的参与！

*如有任何问题请咨询：

刘倩秀

日本筑波大学大学院

图书馆信息多媒体研究科

邮件: s1521661@u.tsukuba.ac.jp.

《读者服务工作指南》麦群忠主编中，读者利用教育被定义为：

由图书馆进行的有目的，有计划地帮助读者树立情报意识，最佳地利用图书馆，以获取对文献信息情报的寻找，选择，吸收和综合能力的基础教育。

1. 请用数字 1-5 评价下列大学图书馆读者利用教育活动的重要性，画○表示。

(1=非常不满意 2=有点不满意 3=中立 4=有点满意 5=非常满意)

	不重要 ⇔ 重要				
参观图书馆	1	2	3	4	5
新生图书馆说明会	1	2	3	4	5
文献检索讲座 (有关电子资源)	1	2	3	4	5
数据库培训讲座 (上机实践培训)	1	2	3	4	5
科研咨询 (毕业论文)	1	2	3	4	5
学科主题讲座(写作技巧, 文献管理)	1	2	3	4	5
线上资讯素养培训讲座	1	2	3	4	5
配合课程的教育训练	1	2	3	4	5
参考咨询	1	2	3	4	5
其他 (请详述)	1	2	3	4	5

2. 您上次参加贵校图书馆读者利用教育活动是什么时候？

- A) 上周
- B) 上个月

- C) 四个月之前
- D) 去年
- E) 两年前
- F) 三年前
- G) 三年以上
- H) 从未参加过
- I) 记不清了

3. 如果您从未参加过贵校的图书馆读者利用教育, 请将以下理由用数字 1-5 评价符合您的意见, 画○表示。(1 非常不符合 2 有点不符合 3 中立 4 有点符合 5 非常符合)

	不符合 ⇔ 符合				
我觉得它对我没有帮助	1	2	3	4	5
我很感兴趣但我不知道读者教育活动开展的具体时间	1	2	3	4	5
我想参加, 但是它和我的课程安排冲突了	1	2	3	4	5
读者利用教育活动的主题看起来很无趣	1	2	3	4	5
我不知道为什么	1	2	3	4	5
除了图书馆说明会以外, 我不知道还有其他读者利用 教育活动	1	2	3	4	5
我可以找到所有我想要的资讯, 不需要图书馆员的帮 助	1	2	3	4	5

其他（请详述） 1 2 3 4 5

4. 请用数字 1-5 评价下列活动对推广图书馆读者利用教育活动的有效性，画○表示。（1 完全無效 2 無效 3 中立 4 有效 5 非常有效）

無效⇔ 有效

图书馆主页上发布通知公告	1	2	3	4	5
--------------	---	---	---	---	---

图书馆群发系统邮件通知宣传	1	2	3	4	5
---------------	---	---	---	---	---

在学校各布告栏张贴海报					
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图书馆发 SNS 信息（微博，微信，BBS 等）	1	2	3	4	5
--------------------------	---	---	---	---	---

任课老师鼓励学生参加	1	2	3	4	5
------------	---	---	---	---	---

其他（请详述）	1	2	3	4	5
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5. 请用数字 1-5 评价下列方式对吸引学生参加图书馆读者利用教育的有效性，画○表示。（1 完全無效 2 無效 3 中立 4 有效 5 非常有效）

無效⇔ 有效

参与活动的学生可以获得校内外商店的优惠券	1	2	3	4	5
----------------------	---	---	---	---	---

参与活动的学生自愿参与活动后的小测试，最高分者

1 2 3 4 5

给予奖品

参与活动的学生可得到课程学分

1 2 3 4 5

任课老师邀请图书馆员在课堂上讲解数据库的利用方

1 2 3 4 5

法等，而不仅仅是在图书馆等待学生的前来

任课老师强制要求学生参与读者教育活动

1 2 3 4 5

其他（请详述）

1 2 3 4 5

6. 当您在做研究或写课题报告，找不到您想要的资料（例如书或论文）时，您首先想到的是以下哪种情况？（只选其一，画○表示）

- A) 找同学寻求帮助
- B) 找老师寻求帮助
- C) 找大学的图书馆员寻求帮助
- D) 找邻近的公共图书馆馆员寻求帮助
- E) 继续努力在各学术网寻找
- F) 我会放弃，转而寻找其他资料
- G) 我也不懂，因为这类情况还未发生过
- H) 其他（请详述）：_____

7. 请用数字 1-5 评价贵校图书馆的参考服务部的图书馆员，画○表示。

(1 完全不符 2 不符 3 中立 4 符合 5 非常符合)

不符合 ⇔ 符合

友善的	1	2	3	4	5
有创新能力的	1	2	3	4	5
有趣的	1	2	3	4	5
有个人魅力的	1	2	3	4	5
有帮助的	1	2	3	4	5
专业的	1	2	3	4	5
有服务精神的	1	2	3	4	5
理解能力强的	1	2	3	4	5
高效率的	1	2	3	4	5
外向的	1	2	3	4	5
耐心听我的需求并给我建议	1	2	3	4	5

8. 您如何评价贵校图书馆的读者利用教育活动？

读者利用教育活动	完全不符合	不符合	中立	符合	完全符合
内容清晰易懂	1	2	3	4	5

内容很有帮助且和我的学习研究息息相关	1	2	3	4	5
--------------------	---	---	---	---	---

9. 您是否同意以下意见，请选择最能代表您意见的数字，画○表示。

您是否同意	完全不 同意	不同 意	中立	同意	完全同 意
参与图书馆读者利用教育对学生很重要	1	2	3	4	5
老师应该强制学生参加图书馆读者利用教育活动	1	2	3	4	5
学生在毕业之前应该对图书馆读者利用教育有一个很好的理解	1	2	3	4	5
学生可以很好地利用图书馆资源即使他们不参加任何读者利用教育活动	1	2	3	4	5
整体对贵校图书馆的读者利用教育活动很满意	1	2	3	4	5
图书馆说明会能为图书馆在学生中建立一个积极形象, 并对宣传图书馆的服务很有帮助	1	2	3	4	5

10. 对贵校图书馆读者利用教育的意见或建议

个人信息

11. 性别

- A) 男
- B) 女

12. 国籍或地区

- A) 中国
- B) 日本
- C) 台湾
- D) 其他 (请详述)

13. 您现在是:

- A) 大学本科生
- B) 硕士
- C) 博士
- D) 其他 (请详述)

14. 专业: _____

问卷到此结束，再次感谢您的参与！

Appendix 5 Questionnaire for the credit-based course students

Survey on the experience of “ Literature Management and Information Analysis”
course

Dear students:

Hello! You are now participating in a survey about your experience in the course “ Literature Management and Information Analysis”. We would like to know your overall learning experience in this course, and your honest completion will help to promote the improvement and development of this course. This questionnaire consists of 14 questions and will take about 5-10 minutes of your time. This questionnaire is completely anonymous, and the data is for research purposes only and is not relevant to the course grade. Thank you very much for your participation!

*If you have any questions, please ask:

Qianxiu Liu

Tsukuba University Library Information Research Institute

Email: liuqianxiu2018@163.com

Q1. Please rate your motivation for the IL course

Because I think this course would be very useful in the future.

Because learning about academic work is very important to me.

Because gaining all kinds of knowledge is very important to me.

Because I am interested in the content of this course.

Because the content of this course is necessary for my study and life.

Because this class gets a high rating.

I have a strong purpose to choose this course.

Because if I didn't choose this course, I would feel sorry.

Because of the recommendation of senior students.

Because I am fascinated by the instructor's personality.

Because the course timetable suits my schedule well.

Because it is easy to get the credits.

I do not know why.

Q2. Please rate your self-efficacy of IL skills

In the future study and research, I will make effective use of library resources.

Compared with other students who have not attended this course, I believe that my IL is higher.

I know how to apply what I have learned in this course in my future career.

I know how to apply what I have learned in this course into other courses.

I believe that I will succeed in information management.

I believe that I will succeed in information analysis.

Q3. Please rate your perception of the IL course

The IL course should not be limited to the practice course but should guide students to learn how to learn.

This course helps me in lifelong learning.

Participating in such courses is very important for graduate students.

All students should improve their IL before graduation.

The knowledge gained in this course will help my future learning experience.

The instructor made me realize the importance of this course.

My anxiety will decrease when I use library resources in the future.

The class assignment design of this course is very valuable.

This course changed my view of the library.

Undergraduate students should study such courses.

University library is the student's learning center.

This course helped me reduce my anxiety about the information society.

I will ask librarians for help in the future.

University should make this course a compulsory course.

Librarians play an important role in my study and research.

Students can make full use of the library without participating in IL education.

Students can use the web resources to complete the project well without library resources.

Q4. Please rate the necessity of the overall contents of the IL course

Introduction and use of electronic resources in foreign literature

Literature research method

Improve problem solving skills

Efficient learning strategy

Endnote, HitsCite, SPSS and other software tools

Innovation trends and research topics

How to follow up on the latest news

Facts and data retrieval

Academic paper submission

How to use a search engine

Academic paper writing specification

Introduction and use of electronic resources in Chinese literature

Understanding the challenges of the information society

Introduction to library resources and services

Personal knowledge management tools such as notes, Mind map

Q5. Please rate your perception of the most appropriate person for teaching this IL course

Teachers proficient in information retrieval and analysis

Faculty who is proficient in IL and is in the same field as himself.

Librarians who is proficient in information retrieval and analysis

My research supervisor

Faculty who majors in library information science

Academic librarians

Others

Q6. When you meet some problems in information seeking, you . . .

Seek help from classmates.

Seek help from supervisor.

Ask librarians from the near university libraries for help.

Ask librarians from the near public libraries for help.

Give up and look for other information.

Continue to search in various database.

I don't know what to do.

Others

Q7. Please rate your perception of the most suitable approach to teach this IL course.

Lecture with group actives

Lecture with hands-on practice

Lecture only

E-learning only

Flipped classroom.

Others

Q8. Please write down any comments for the course

Q9. Academic level

Q10. Major

Q11. Gender

Q12. Which class are you join?