Comparison and Reflection on Online Information Literacy Education in Chinese and American Academic Libraries (Postprint)

Authors: *Victoria amazonica*

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Abstract

[目的/意义] Through comparative analysis of the theory and practice of Online Information Literacy Instruction (OILI) in university libraries of China and the United States, this study explores relevant issues concerning China's online information literacy education. [方法/过程] Through literature review, website investigation, and other methods, the differences in OILI between the two countries were examined and analyzed. [结果/结论] The main content of OILI in university libraries of China and the US is relatively consistent, though there remains room for improvement in the domestic handling of certain content. Both Chinese and American university libraries employ multiple forms to deliver OILI, yet the differences are quite pronounced. Following comparative analysis of these various forms, online tutorials are identified as one of the most effective OILI modalities. For China, developing OILI requires both pragmatic awareness and a commitment to excellence; online tutorials should be advocated to embody content completeness and form diversity; higher-order skill development should be emphasized to integrate information, research, and academia into a cohesive whole.

Full Text

Abstract

[**Purpose/Significance**] This paper discusses relevant issues in China's online information literacy instruction (OILI) through a comparative analysis of the theory and practice of OILI in Chinese and American university libraries. [**Method/Process**] Through literature review, website investigation, and other methods, this study examines and analyzes the differences in OILI between China and the United States. [**Result/Conclusion**] The main content of OILI in Chinese and American university libraries is relatively consistent, though

there remains room for improvement in how certain content is handled domestically. Both countries employ multiple forms of OILI, but notable differences exist. After comparative analysis of these various forms, online tutorials emerge as one of the most effective OILI formats. For China, developing OILI requires both pragmatic and quality consciousness; online tutorials should be promoted to demonstrate content completeness and format diversity; and emphasis should be placed on cultivating higher-order skills while integrating information, research, and scholarship.

Keywords: information literacy; online information literacy instruction; OILI; university libraries

Information literacy education constitutes one of the essential functions of university libraries. Overall, while face-to-face instruction remains dominant in China, online education has flourished considerably. As students' digital literacy and educational technology proficiency continue to improve, online education will undoubtedly gain broader development space in the future. Scholars have predicted [1] that from 2021 to 2029, online education will usher in its fifth wave, reaching maturity and becoming regarded as a conventional approach, with students expecting online components in every course. Consequently, university libraries must vigorously develop online information literacy education to adapt to this evolving landscape. This paper investigates and compares the content and formats of OILI in domestic and foreign university libraries, providing references for future domestic practice.

1. The Connotation of OILI

1.1 From the Perspective of Teaching Content

The concept of information literacy has continuously evolved. The definition proposed by the American Library Association (ALA) in 1989 has gained particularly widespread recognition: information literacy requires individuals to "recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" [2]. The Association of College and Research Libraries (ACRL) *Information Literacy Competency Standards for Higher Education* (hereinafter referred to as the *Standards*), released in 2000, was developed based on this definition. According to the *Standards*, the main threads of information literacy education content can generally be divided into several components: topic analysis, source selection, search strategies, information evaluation, and ethical use [3]. In 2015, ACRL released the *Framework for Information Literacy for Higher Education* (hereinafter referred to as the *Framework*), which provides the latest definition: "Information literacy is the set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning" [4-5]. This definition expands and elevates the connotation and extension of information literacy, clarifying the future direction of information

literacy education, though corresponding practice remains in the exploratory stage. Currently, teaching practices in many countries are in a transitional phase, based on the *Standards* while gradually moving toward the goals of the *Framework*.

The OILI discussed in this paper specifically refers to information literacy education conducted online by university libraries based on principles of openness and sharing, targeting both internal and external users. Compared to education activities targeting only internal library users, open OILI better reflects the social value of libraries.

1.2 From the Perspective of Form

OILI content is manifested through specific formats. Based on the completeness of content, OILI can be categorized into complete and scattered types.

1.2.1 Forms Reflecting Complete Content (Complete-Type OILI) Complete-type OILI features a comprehensive system with substantial content, suitable for both zero-based learners to study complete courses and for advanced learners to selectively study specific modules. This type of OILI mainly includes three formats: (1) **Online Tutorial/Web Tutorial**: Complete web-based courses that can be understood as online learning materials where students control their learning process [6]. Most online tutorials are presented on static web pages but emphasize interactivity, multimedia, and gamification features [7]. Domestic scholars have not unified their terminology, with representative terms including "online tutorial" [8-9] and "online guide" [10]. Since "online guide" aims to disseminate library resources and services [6] rather than systematically explain knowledge and skills in depth, this paper adopts the term "online tutorial." (2) **MOOC (Massive Open Online Course)**: A course model that emerged around 2010. Although imported from abroad, both the Chinese translation and conceptual understanding have reached a high degree of consensus in China's education sector. (3) **Video Open Course**: A form of online education where instructors teach in natural classroom settings, interacting with real students, with complete teaching processes recorded through video and subtitles and widely disseminated via the internet to meet the needs of social learners [11].

1.2.2 Forms Reflecting Partial Content (Scattered-Type OILI) Scattered-type OILI selects only specific knowledge points from the complete content system for explanation. These knowledge points may be important components of OILI or may constitute a substantial series in themselves. They play a unique and even irreplaceable role in OILI by providing short, efficient, and fast knowledge services. However, they cannot cover the entire knowledge chain in content, making it difficult to implement complete information literacy education. Their specific manifestations may exist independently or are often embedded in online tutorials or MOOCs. This type of OILI mainly

includes: (1) **Online Platform**: A term unique to China, referring to website sections that integrate library teaching and training resources, facilitating users' one-stop search and access to various OILI-related resources. (2) **Audio/Video/Animation/Games**: Using dynamic audio/video, animation, or games to explain specific knowledge points or test learning outcomes. (3) **PPT/PDF Lecture Slides**: Uploading PPT/PDF lecture slides to library websites for browsing or downloading.

2. Literature Review

2.1 Foreign Literature Review

Rapid development of modern educational technology continuously drives transformation in OILI. To understand the research status of OILI abroad, the author conducted a literature review using the SSCI database on the Web of Science platform for the past decade (2010-2020). The search query "TI=(online or mooc* or massiveopenonlinecour* or tutorial* or websit* or platform) and TS='information literacy' " retrieved 120 records (search date: September 10, 2020). After removing irrelevant records and book reviews, 68 relevant articles remained, including 4 by Chinese scholars (2 by Taiwanese scholars) on topics such as MOOCs and evaluation of online information literacy materials, which were excluded from foreign literature statistics. Ultimately, 64 highly relevant articles by foreign scholars were identified. The main topics and their proportions are shown in .

** Research Topics in Foreign OILI Literature**

The research content mainly includes the following aspects:

(1) **Effectiveness Evaluation**: Online instruction is as effective as face-to-face teaching [12-13]; well-designed library tutorials are highly effective [14]. Success factors for online tutorials include conciseness, ease of use, provision of learning activities, and collaboration between librarians and faculty [6].

(2) **Content of OILI [15]**:

- Academic tools: search strategies, academic databases, citation formats, library catalogs, high-quality web resources, journal articles, call numbers, classification systems, etc.
- Information literacy concepts: information ethics, intellectual property, research topic identification, information organization, and media literacy.
- Library resources and services: only a few online tutorials include this content.

(3) **Deficiencies in Existing Online Tutorial Content and Training Objectives**: Current online tutorials focus more on search-related topics than higher-order thinking skills. It is recommended that librarians

pay attention to developing students' higher-order thinking skills when creating online tutorials [14].

(4) **Embedding and Collaboration**: Collaboration between librarians and faculty to embed information literacy instruction into disciplinary online tutorials or courses is particularly necessary and effective [16-17].

(5) **MOOCs**: For librarians, MOOCs represent both challenges and opportunities. Librarians can play important roles in developing and supporting MOOCs, including copyright licensing, content licensing, reminding MOOC developers about open content, helping ensure MOOC accessibility for all users, and conducting information literacy education [18-19].

2.2 Domestic Literature Review

Using CNKI's journal database, the author conducted a literature review on OILI research in China over the past decade. Search queries using title and keyword fields with terms "(online OR online OR MOOC OR 慕课 OR platform OR Tutorial OR website) AND (information literacy OR information quality)" for core journals published since 2010 yielded 139 relevant records (search date: May 2, 2020) after deduplication and screening. The distribution is shown in .

** Research Topics in Domestic OILI Literature**

The research content and viewpoints can be summarized as follows:

(1) **MOOCs**: Research on MOOCs is nearly comprehensive, covering origins, definitions, characteristics, elements, creation models, platform tools, teaching objectives, course content, curriculum systems, teaching evaluation, quality control, course certification, credit recognition, development status, case analysis, existing obstacles, and improvement strategies. Main viewpoints include: librarians should actively participate in MOOC development, integrating into MOOCs through course support, information literacy education, resource navigation, textbook construction, and copyright services [20-22]; information literacy MOOCs can be created through self-built, collaborative, or embedded models [22].

(2) **OILI Platforms**: Beyond referring to sections integrating various teaching resources, some also refer to specific media such as WeChat platforms. OILI platforms that integrate learning materials, proficiency testing, and user management are effective ways to conduct information literacy education [24-25].

(3) **Online Tutorials**: Due to their significant advantages, online tutorials have attracted attention, mostly through introducing foreign tutorials for domestic reference [3,10,26].

(4) **Others**: Blended teaching models that integrate MOOCs, flipped classrooms, and SPOCs can effectively improve students' comprehensive literacy [27-28]. Collecting and building high-quality educational resources

while fully revealing and providing convenient services are key focuses of online information literacy education resource construction [29].

3. Practice of OILI in Chinese and American University Libraries

3.1 Practice in American University Libraries

3.1.1 Content of American University Libraries' OILI A survey of 52 libraries that received ACRL's Excellence in Academic Libraries Award (53 total award-winning libraries, though one tutorial required password and campus ID for access) examined online tutorials from these institutions. The results showed that these online tutorials cover extensive content, which can be divided into 34 topics, including 12 main topics and 22 sub-topics. Among the 12 main topics, ranked by frequency of inclusion, are: searching, locating and retrieving, information evaluation, citing sources, library or website guides (including physical or virtual space tours), plagiarism, topic identification, reading citations, intellectual property, peer review, and information cycles.

3.1.2 Forms of American University Libraries' OILI American university libraries employ multiple forms for information literacy education. A 2018 survey of over 600 librarians from more than 180 U.S. universities [30] showed that for online education specifically, main forms include online tutorials (Web Tutorials) (52%), web-based library guides (Library Guides/Handouts Web Format) (51%), social media (14%), and courseware (14%). Additionally, across all methods (face-to-face and online), video recordings (such as YouTube videos) are used by 53% of institutions.

3.2 Practice in Chinese University Libraries

3.2.1 Content of Chinese University Libraries' OILI Chinese university libraries' OILI with complete content systems includes three forms: MOOCs, video open courses, and online tutorials. To ensure balanced representation, in June 2020, the author selected four exemplary cases from university library websites with directly accessible OILI content: Tsinghua University Library's MOOC "Information Literacy—A Required Course for Academic Research (General Education)" [31], Sichuan Normal University Library's MOOC "Information Literacy: A New Engine for Efficiency Improvement and Lifelong Learning" [32], Peking University Library's video open course "Digital Library Resources Retrieval and Utilization" [33], and East China Normal University Library's online tutorial "Information Literacy" [34]. The analysis reveals that Chinese university libraries' OILI primarily covers: basic knowledge of literature information retrieval, selection and utilization of various information sources, retrieval and acquisition of databases/literature information, retrieval and utilization of web information resources/search engine usage, intellectual property and academic norms, knowledge and literature management, infor-

mation evaluation, analysis and utilization of information, management and communication, and academic publishing.

3.2.2 Forms of Chinese University Libraries' OILI To understand the current state of OILI practice in China, in July 2020, the author conducted a web survey of 42 "Double First-Class" university libraries. Since one library's relevant section was inaccessible, 41 libraries were actually surveyed. Note that only OILI with substantive knowledge output was counted; simple informational announcements were excluded. Additionally, OILI exclusively for internal students was not included due to public service considerations.

The survey results show that 80.5% of "Double First-Class" university libraries conduct OILI on their websites to varying degrees, with diverse forms: (1) **Complete-type OILI**: Five libraries (12.2%) provide complete OILI in forms such as self-produced MOOCs, classroom recordings, video open courses, and online tutorials with corresponding links on library websites. Three libraries (7.3%) recommend information literacy MOOCs or websites from other universities. (2) **Scattered-type OILI**: The most common form is open PPT/PDF lecture slides, provided by 29 libraries (70.7%). Ranking second is OILI platforms, offered by 22 libraries (53.7%). Other forms include video/microfilm/games (13 libraries, 31.7%).

Notable examples include Tsinghua University, Peking University, Beijing Normal University, Shanghai Jiao Tong University, East China Normal University, and Jilin University libraries, which represent domestic OILI benchmarks. Tsinghua, Peking, Fudan, and Shanghai Jiao Tong universities employ all types of domestic OILI formats, such as MOOCs/classroom recordings/video open courses, online platforms, PPT/PDF lecture slides, and video/games/animation, characterized by complete systems, rich content, and diverse forms. East China Normal University's OILI platform's "Online Learning Center" section features an information literacy tutorial that is currently one of the few domestically accessible, systematically complete online tutorials. Regarding micro-courses specifically, Shanghai Jiao Tong University Library's Siyuan Micro-courses and Beijing Normal University Library's Xiaotu Micro-courses are numerous, comprehensive, highly accessible, and distinctive. Jilin University Library's "Yunzhi Classroom" and extensive collection of PPT/PDF lecture slides demonstrate the library's soft power. These library websites effectively illustrate that "the library is a treasure trove of knowledge," allowing all visitors to gain knowledge immersion and comprehensively improve information literacy rather than just superficially understanding library resources and services.

Overall, each OILI format has its own advantages: video is suitable for demonstrating actions, images for displaying spatial relationships, and text for providing precise details, with different media solving different problems [35]. Therefore, Chinese university libraries strive to explore multiple OILI forms to create 叠加 effects (synergistic effects) that significantly benefit overall OILI effective-

ness.

3.3 Re-investigation of Online Tutorials in Chinese and American University Libraries

The author previously conducted in-depth research on selected Chinese and American information literacy education websites in 2014 [3], including eight American university library online tutorials and four Chinese university library online tutorials. To verify the above literature review findings, in July 2020, the author revisited these websites to clarify the current development status of Chinese and American online tutorials.

The recent survey shows that among the eight American university library online tutorials, six remain accessible and most continue to be updated. Although the original version of Texas State University's TILT is no longer retrievable, authorized modified versions remain in use [36]. Stanford University's SKIL was operational in June 2019 but is currently inaccessible. Among the six accessible tutorials, three have undergone significant changes in three aspects: (1) **Micro-tutorials have emerged**: CORE Tutorial [37] added discipline-specific tutorials and changed from modular to multiple micro-video formats; IRIS [38] originally had six modules but has now been decomposed into numerous micro-videos. (2) **Video plays a greater role than before, with pure video tutorials emerging**: CORE Tutorial presents multiple micro-tutorials in micro-video format, and ISM [39] also adopts audio/video for much of its content. (3) **A shift toward academic literacy education is evident**: ISM changed its original name from "Information Skills Modules" to "Getting Started with Academic Research"; IRIS originally included "Research Overview" as just one module but has now renamed the entire tutorial "Research Tutorial."

In contrast, among the four representative Chinese web-based online tutorials (Open Information Literacy Education Service Platform of the National Science Library, Online Information Literacy Education Center of Jiangnan University Library, Online Learning Center of East China Normal University Library, and Information Literacy Tutorial of Beijing University of Technology), except for East China Normal University's Online Learning Center, the others are either for internal use only or have become inaccessible due to various reasons.

It can be said that American university libraries have consistently emphasized online tutorials for OILI, with most tutorials continuously updated and expanding with new knowledge content, while this format has almost stagnated in China.

4. Comparison and Analysis of OILI in Chinese and American University Libraries

4.1 Content Comparison and Analysis

4.1.1 Commonalities Overall, the main content of OILI in Chinese and American university libraries is relatively consistent, with topic analysis, source selection, search strategies, information evaluation, and ethical use being common skill focuses. Both prioritize search strategies and methods as the most important content while continuously attempting to expand new content to elevate OILI to new heights.

4.1.2 Differences

(1) **Differences in Explanation Depth**: The most significant difference lies in the depth of explanation for information evaluation and academic integrity. These components are indispensable in the OILI content system, and the consensus is that they represent higher-order skills related to critical thinking in information literacy [40-41]—skills students most need to improve. A Stanford University survey indicates that American students' ability to evaluate online information can be described as "dismal" [14]. Consequently, American university libraries provide more extensive explanations, often with independent modules or even separate tutorials. For information evaluation, they provide specific criteria with detailed explanations for each standard. For academic integrity issues, they offer concrete, detailed explanations of related knowledge points such as intellectual property, fair use, and citation methods, typically providing constructive and actionable suggestions to avoid plagiarism.

In contrast, among the corresponding Chinese tutorials/open courses/MOOCs, only half demonstrate emphasis on information evaluation in their content framework, and the explanations appear relatively thin. Regarding academic norms, again only half reflect this in their content framework, often stopping at conceptual introductions without in-depth explanations or actionable guidance, making it difficult to achieve intended outcomes.

(2) **Different Starting Points for Teaching Threads**: Chinese and American university libraries' OILI also differ in their teaching thread starting points. American online tutorials typically begin with identifying research topics and guide students to gradually develop appropriate topics, thereby permeating research processes and methods. For example, the University of Wyoming Library's tutorial [42] begins with a module on investigating, providing steps: analyzing tasks, identifying topics, describing theses, and retrieving information. All steps include detailed explanations with the fundamental goal of establishing an appropriate research question. This training significantly enhances course value. Chinese courses, however, often start with basic knowledge of literature information retrieval, which allows quick entry into search skill training but lacks guidance on topic se-

lection methods, potentially weakening course value to some extent. This situation has improved in recent information literacy MOOCs, such as Wuhan University's MOOC "Information Literacy and Practice—Giving You an Academic Perspective," which explicitly includes topic guidance in its chapter titles [43].

(3) **Different Explanation Perspectives**: The same content produces different effects when explained from different perspectives. Chinese approaches tend to emphasize knowledge itself, while foreign approaches focus more on guiding students to discover the essence of problems through dynamic changes. Taking the explanation of literature types as an example, Chinese approaches typically categorize literature into different forms based on publication type and processing level, introducing concepts and characteristics of each category in parallel structures that seem unconnected. American university libraries, however, often explain from the perspective of information cycles, examining information and documentation changes at time nodes from "an event occurs-minutes-hours-days-weeks-months-years," essentially guiding students to understand information generation and dissemination mechanisms. The latter approach obviously facilitates deeper and more holistic understanding of literature characteristics and utilization, aligning more closely with the *Framework*'s training objectives.

In summary, while the main content of Chinese and American OILI is relatively consistent, there remains room for improvement in handling certain content domestically. The content system and detailed treatment of American OILI warrant reference.

4.2 Form Comparison and Analysis

4.2.1 Form Differences in Chinese and American University Libraries' OILI Both Chinese and American university libraries employ multiple OILI forms, but differences in focus and format are evident. The primary difference is that online tutorials hold important positions in both theoretical and practical aspects of American OILI. Numerous university libraries have created online tutorials tailored to their students' needs, continuously updated to maintain vitality. In China, MOOCs dominate theoretical discussions, while practice tends to be scattered, allowing students and other users to study only partial knowledge points from the information literacy content system.

Which OILI format is more effective? What unique advantages do online tutorials, the mainstream format in American university libraries, possess? Answering these questions requires examining the characteristics of various OILI formats.

4.2.2 Main Characteristics of Various Online Education Formats To understand why American university libraries widely adopt online tutorials, the characteristics of different online education formats are summarized in .

** Main Characteristics of Various Online Education Formats**

Among these formats, complete types are most effective, allowing students or other users to systematically complete relevant knowledge learning and skill development through a single format. Scattered types offer flexible content selection but relatively loose connections between content points, making them more suitable for auxiliary roles.

4.2.3 Characteristics of Complete-Type OILI Formats Scattered-type formats cannot support systematic and in-depth information literacy education and thus require no further discussion. Regarding complete-type formats, online tutorials are common in the United States while MOOCs are highly esteemed in China. Only these two formats are compared below.

(1) Characteristics of Online Tutorials

Advantages: First, online tutorials excel in content organization. Text-based online tutorials often adopt fine-grained content organization, using hyperlinks or Thinglink to create close associations between knowledge points, forming a network structure that enables more detailed and in-depth explanations and facilitates comprehensive, systematic improvement of users' information literacy. For example, American university library tutorials [45] display Thinglink-enriched media tags for important concepts or phrases on text-based pages, represented by dots. When users want to understand a concept, hovering over the dot reveals detailed explanations. This fine-grained network organization adds depth to tutorials, while hyperlinks and Thinglink technology provide flexibility in content selection to meet diverse user needs.

Second, online tutorials feature diverse forms and emphasize interaction. Generally presented as web text with occasional micro-videos and animations to enhance vividness, the University of Iowa's online tutorial UICORE exemplifies effective animation integration through its use of brainstorming and concept mapping for topic expansion, with clear layers and vivid visualization [46]. The careful combination of "dynamic" and "static" elements ensures better tutorial effectiveness.

Moreover, online tutorials highly value interaction to enhance user experience. TILT positions itself as an interactive library tutorial [47], while IRIS defines itself as interactive self-paced tutorials [40]. Interaction is achieved through various means: embedding test questions during explanations (allowing continuation after correct answers with detailed explanations for incorrect ones), series tests after each module to check learning outcomes, simulating actual operation processes for users to complete searches, and designing mysterious atmospheres where users click mystery boxes to reveal answers [48]. Timely feedback and full participation enhance tutorial stickiness and largely guarantee learning effectiveness.

Finally, online tutorials offer greater user freedom. They remain open year-

round, unaffected by holidays, truly enabling learning freedom in time and space. With clear directory structures and specific chapter content, users can control their learning pace without adhering to set schedules. Beginners can read intensively while advanced learners can skim or skip, facilitating efficient learning according to individual needs.

Additionally, online tutorials have low maintenance costs. Designed primarily for self-study, they incorporate understanding and testing within the tutorial itself. After completion, except for periodic updates, no additional human support is needed.

Disadvantages: The main drawback is that all learning activities occur online without personalized Q&A support. Research shows mixed results, but most studies find online tutorials as effective as or more effective than face-to-face teaching [49]. Online tutorials can be considered one of the most effective OILI formats.

(2) Characteristics of MOOCs

Advantages: MOOCs' primary strengths lie in sharing quality resources and simulating classroom teaching. First, MOOCs enable more people to access high-quality teaching from prestigious universities and renowned teachers. Since China systematically implements information literacy education primarily at the university level—unlike countries that begin in primary school—students and other users have substantial demand for information literacy knowledge and skills, and university libraries' information literacy education has considerable room for improvement. Well-produced MOOCs by prestigious institutions significantly promote the popularization and enhancement of information literacy knowledge and capabilities. Second, MOOCs simulate physical classroom teaching, providing immersive learning experiences. Post-class interaction and Q&A through various social media match physical classroom effectiveness.

Disadvantages: MOOCs' overall learning effects may fall short of expectations. Teaching processes are generally didactic, making immediate guided teaching difficult and increasing the challenge of cultivating thinking skills. MOOCs demand high teaching proficiency; imperfect expression, facial expressions, or voice quality make it difficult for users to maintain motivation. Additionally, learning freedom is restricted. While MOOCs have no enrollment or location limits, they may only open during normal school terms due to credit calculation factors, limiting student learning freedom.

Although American university libraries continue to lead the industry with constant innovation, no abrupt changes occur. It is foreseeable that American university libraries' OILI will maintain steady development in the coming years, with online tutorials remaining the dominant format but potentially becoming more expressive. In China, MOOCs are still burgeoning, with more information literacy MOOCs expected to emerge.

4.2.4 Development and Decline of Online Tutorials in China Tracing back, online tutorials emerged in the United States around 2000. Texas State University Digital Library's TILT (Texas Information Literacy Tutorial), created in 1999, received ACRL's Instruction Innovation Award in 2000. Subsequently, online courses became one of the mainstream formats for information literacy education in American university libraries. Around 2005, China began developing online courses, few in number but including quality examples from the National Science Library, Beijing University of Technology Library, East China Normal University Library, and Jiangnan University Library. These tutorials adopted American modular structures, systematically and deeply introducing information literacy knowledge and skills, and were all open to the public. Although some have completed their missions, they represent milestone explorations of OILI in early 21st-century China.

Unfortunately, this format has not been widely adopted in China. The reasons include significant creation difficulty and limited influence. Creating quality online tutorials requires not only producing electronic textbooks and using hyperlinks to form network-structured knowledge systems but also incorporating expressive videos, animations, and graphics, plus designing 闯关答题 (progressive quizzes) and testing segments. Both overall planning and specific production demand substantial time and effort. While MOOC production is also challenging, this format receives strong support from China's education departments with relatively adequate funding. Uploading MOOCs to well-known platforms often generates widespread attention in the field, helping enhance university reputation. Online courses, conversely, often yield influence disproportionate to creation efforts. Consequently, libraries with insufficient staffing and heavy workloads may have limited energy to focus on this format.

China's library community has maintained high attention to new developments in the United States, quickly identifying and introducing American library innovations. As the MOOC wave swept in, this emerging teaching model naturally attracted domestic attention. Although online tutorials are practical and efficient and widely used in American libraries, their long existence makes them less "new," and their relatively low-profile nature explains their lukewarm reception.

5. Reflections and Recommendations for Chinese University Libraries' OILI

5.1 Developing OILI with Pragmatic and Quality Consciousness

Chinese university libraries generally possess strong innovation awareness, actively drawing on foreign 实践经验 (practical experience) by introducing microcourses, games, animations, and MOOCs/SPOCs into OILI. While expanding OILI formats and better meeting users' diverse needs for educational forms, borrowing advanced teaching concepts and practical experience should emphasize not only "pursuing novelty" but also "seeking practicality," with the latter outweighing the former to prevent education from becoming superficial or even en-

tertaining. Effectiveness must always be prioritized, with education conducted solidly. Formats that enable systematic and in-depth teaching deserve priority consideration.

Regardless of format, only quality consciousness yields significant results. What ultimately enables users to persist and succeed must be excellent content in excellent form. For MOOCs, if the teaching content is comprehensive and rich, knowledge points connect naturally, students can select specific content as needed, instructors possess profound professional expertise with content closely aligned to user needs, expression is fluent, voice is pleasant, facial expressions are natural, and features like playback speed control and video bookmarking are available, more users will persist and completion rates will improve. For text-based online tutorials, comprehensive content with clear hierarchy and sufficient explanation, combined with pictures, animations, and videos to enhance aesthetics and dynamism, appropriate use of situational teaching, timely Q&A insertion, and post-class testing for feedback can produce better results, maximizing the advantages of complete systems and in-depth explanations.

5.2 Advocating Online Tutorials to Demonstrate Content Completeness and Format Diversity

Based on existing educational formats, Chinese university libraries should vigorously advocate creating online tutorials. As information literacy concepts continue developing, course content requires constant expansion or updating, and formats should not remain static. Online tutorials are more inclusive and extensible for content updates or format changes, making them more competent for OILI.

The advantages of online tutorials include:

(1) **Content Completeness**: Information literacy education 致力于 (is committed to) cultivating integrated abilities including information discovery, evaluation, and utilization, as well as critical thinking, knowledge creation, and collaborative learning. OILI with complete content better meets the needs of users at all levels, especially zero-based learners. Quality online tutorials emphasize systematic completeness and logical connections between content points, providing comprehensive and in-depth guidance that proves highly effective for users. Web content is relatively easy to update, making timely updates more feasible. Although each OILI format has its advantages, the value of complete-type OILI with comprehensive knowledge systems is incomparable to scattered formats. The shared advantage of online tutorials, MOOCs, and video open courses is their facilitation of users mastering complete information literacy knowledge systems and comprehensively improving information literacy capabilities.

(2) **Fine-Grained and Associated Content Organization**: Current domestic OILI exhibits clear system structures but tends toward planar organization, spreading all knowledge points on the surface with weak con-

nections between points, resulting in relatively thin overall content that doesn't help users grasp knowledge deeply. Online tutorials facilitate fine-grained content organization. Using hyperlinks or Thinglink creates close associations between knowledge points, forming network structures that help users holistically understand knowledge frameworks.

(3) **Diverse Presentation Forms**: Text, images, video, and animation are common forms or components, each serving different functions: video suffices to explain behavior, text suffices to explore topics in depth—this seems the optimal format for every tutorial [2]. Learners can be categorized into four types: visual, auditory, reading, and kinesthetic [50]. Therefore, more diverse forms benefit larger populations. Online courses often combine multiple forms, with 图文并茂 (pictures and text) ensuring in-depth content explanation while video and animation make teaching more vivid, often yielding better results. This explains why "multiple studies have found that online tutorials are usually as effective as or more effective than face-to-face teaching" [46].

5.3 Emphasizing Higher-Order Skill Cultivation, Integrating Information, Research, and Scholarship

The six frame elements of the *Framework for Information Literacy for Higher Education* promote the integration of information, research, and scholarship, advocating cultivation of higher-order information literacy skills such as critical thinking, comprehensive information analysis, respect for intellectual property, and plagiarism identification, clarifying the direction for future information literacy education in various formats.

First, critical thinking training must be strengthened. The element "Authority Is Constructed and Contextual" emphasizes cultivating students' critical thinking. It guides beginners to critically examine all evidence, maintain skepticism toward systems that produce authority and information created by authority, and encourages students to develop and maintain open minds, questioning traditional authority-revering concepts. These concepts transcend existing information evaluation standards and effectively promote critical thinking cultivation.

In fact, relevant theoretical research has consistently advocated cultivating higher-order information literacy skills, though practical implementation has progressed slowly. The *Framework*'s guiding interpretation of the authority concept will strengthen critical thinking cultivation to some extent.

Second, content systems should be oriented toward improving academic literacy. The frame elements "Research as Inquiry" and "Scholarship as Conversation" explicitly integrate information literacy into academic research activities. "Information Has Value" emphasizes intellectual property concepts, also constituting elements of academic literacy. This trend is evident in Chinese and American OILI practice, though American online tutorials reflect this earlier. As mentioned, American online tutorials have directly renamed themselves

"Getting Started with Academic Research" or "Research Tutorial," while domestic MOOCs such as Tsinghua University's "Information Literacy—A Required Course for Academic Research (General Education)" and Wuhan University's "Information Literacy and Practice—Giving You an Academic Perspective" also reflect this integration. Content has gradually expanded to include academic research knowledge and skills: literature review and synthesis, academic paper topic selection, writing, submission, fair use, and open access. The organic integration of information literacy and academic research activities fundamentally changes the low-level status of information literacy, representing a substantive improvement in information literacy levels. Future information literacy education, whether online, face-to-face, or blended, should focus on cultivating students' critical thinking and academic literacy, maximizing the value of information literacy education.

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Note: Figure translations are in progress. See original paper for figures.