

Research on the Reform of Information Literacy Education Based on the OBE Concept

Yi Xing*

Library of Inner Mongolia University of Science and Technology, Baotou, Inner Mongolia, China

**Corresponding Author.*

Abstract: This paper elucidates the necessity of integrating the Outcome-Based Education (OBE) concept into information literacy education within university libraries. It begins with a clear definition of the OBE concept and proceeds to analyze its relevance to information literacy education. Based on a thorough review of related research, the paper proposes strategies for developing an OBE-aligned information literacy curriculum in university libraries. These strategies encompass offering tiered, differentiated courses tailored to various educational stages, designing diverse instructional activities, and enhancing continuous assessment to comprehensively evaluate educational outcomes. By embedding the OBE concept throughout the entire information literacy curriculum, the paper emphasizes the importance of assessing students' practical skills, aiming to provide innovative approaches to the reform of information literacy education in university libraries.

Keywords: OBE; Outcome-based Education; University Libraries; Information Literacy

1. Introduction

With the release of the "Education Informatization 2.0 Action Plan" and the "Action Plan for Improving National Digital Literacy and Skills", information literacy education has gained significant attention in universities. As a cornerstone of higher education in the information age, it not only cultivates talent but also supports lifelong learning. Information literacy training has become integral to developing high-quality, innovative graduates. For over 30 years, Chinese university libraries, the main entities responsible for this education, have been engaged in its research and practice. This journey has seen a transition from traditional

literature search courses to information retrieval courses, and now to MOOCs focused on information literacy. It has evolved from centralized freshman library orientations to the use of library orientation systems, and now to interactive online orientation games. Similarly, it has progressed from conventional face-to-face training to online lectures, and currently to micro-lessons in information literacy. [1] As information technology advances and reader needs change, the methods and approaches for delivering information literacy education have become more flexible and diverse. The primary goals of universities in this area are to foster students "self-directed learning abilities and lifelong learning capabilities". The introduction of the Outcome-Based Education (OBE) concept provides new methodological approaches to enhancing information literacy education.

2. The Concept of OBE and Current Research

All Outcome-Based Education (OBE), also known as goal-oriented or needs-oriented education, centers on setting educational objectives based on the expected outcomes that learners should achieve. The entire educational process is designed around these objectives to ensure that learners attain the desired results. Furthermore, the degree to which these goals are achieved is used as an evaluation standard, creating a continuous improvement loop for educational quality. American scholar William G. Spady elaborated on the concept of outcome orientation, its application areas, research trends, and its impact on schools and students in his book *Outcome-Based Education: Critical Issues and Answers*[2]. OBE has since been widely adopted in educational reforms in countries like the United States and Australia. In 2000, the Accreditation Board for Engineering and

Technology (ABET) in the United States began implementing an accreditation model based on outcome-oriented principles, promoting OBE within the field of engineering accreditation. International research on OBE has primarily focused on its concepts, development processes, curriculum reform, and the construction of outcome models. The extensive theoretical and practical insights from this research provide valuable experience for exploring localized OBE practices in China.

Research on the OBE concept in China started relatively late. Using “OBE” and “outcome orientation” as keywords to search in the CNKI China Academic Journals Full-text Database, a bibliometric visualization analysis (Figure 1) reveals that Chinese scholars have been increasingly contributing to OBE research since 2015. Over the past five years, the number of research publications on this topic has exceeded 1,000 annually, showing a clear upward trend.

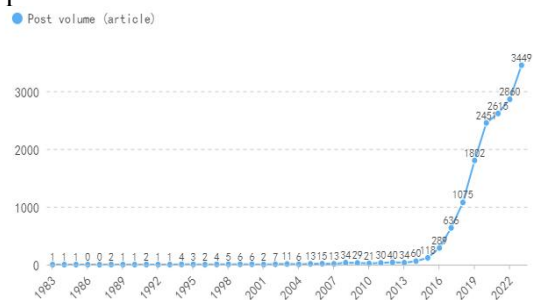


Figure 1. Trend Analysis of OBE Research Publications in CNKI

The study of OBE in China primarily focuses on its connotations, applicability, curriculum reform, and outcomes evaluation. In practice, the criteria for engineering program accreditation include cultivating students' lifelong learning abilities. This necessitates fostering college students' awareness of autonomous learning and lifelong learning, their capacity for proactive learning, and their adaptability to change, aligning with the goals and direction of information literacy education[3]. With the extensive application of OBE principles in the field of engineering education accreditation in recent years, more universities are paying attention to its implementation in other academic disciplines.

3. Necessity of Introducing OBE Concepts into Information Literacy Education

Article 31 of the Regulations for Libraries in General Higher Education Institutions, issued by the Ministry of Education, emphasizes the importance of information literacy education. It states that libraries should adopt modern educational technologies to enhance the construction of information literacy curricula, and should improve and innovate the formats and content of freshman training and special lectures[4]. Currently, information literacy education in Chinese university libraries primarily revolves around information literacy courses, freshman orientation, and specialized lectures on information literacy. Among these, the most significant method is offering credit-bearing courses related to information literacy, including compulsory courses, elective professional courses, and general elective courses. The goal of these courses is to impart basic knowledge and skills in information retrieval, fostering students' information awareness. This helps students learn to independently and systematically acquire, analyze, evaluate, and utilize information, thereby enhancing their self-learning and research capabilities to effectively address issues encountered in their studies, work, and daily life. The teaching methods mainly involve classroom lectures combined with practical computer sessions, and the course assessments primarily include final exams and retrieval reports. In recent years, the increasing prominence of issues such as the homogenization of teaching goals and content, as well as the relative monotony of teaching methods and assessment forms within the information literacy curriculum, has made teaching reform a significant research focus in the field of information literacy education.

Traditional information literacy teaching centers on “teacher-led knowledge delivery”. Despite incorporating methods like flipped classrooms, group discussions, and project-based learning in practice, it has not fundamentally changed the passive reception of knowledge by students. OBE, adhering to the principle of “backward design and forward implementation”, shifts the focus from delivering traditional textbook knowledge to a student-centered approach. It emphasizes the ability to learn knowledge[5], utilizing abundant teaching resources, designing diverse

teaching activities, and adopting differentiated teaching methods. This approach is oriented towards the outcomes of student learning, meeting their individualized information needs, and forming a more scientific information literacy education system.

4. Current Research on Information Literacy Education Based on OBE Concepts

Literature research indicates that many Chinese and international scholars have focused on OBE-related studies, primarily targeting professional teaching classroom activities and exploring teaching reforms. However, there is a scarcity of research addressing the guidance of teaching content by the OBE model, and its application in information literacy teaching is even more limited. Though some scholars have conducted preliminary studies, such as exploring information literacy cultivation models driven by goals and milestones[6] and the entire process embedded teaching model[7], and examining the application of OBE in literature retrieval courses in specific disciplines like medicine, chemical engineering, and computer science, the overall results remain scattered, lacking a cohesive system, and require further deepening.

Current research on OBE is predominantly focused on teaching reform studies within specific courses guided by this concept, centering mainly on three aspects: course model reform, teaching design reform, and course implementation reform. This focus remains within the realm of course-specific teaching reform and has not evolved into broader curriculum system research. The outcome goals of various information literacy teachings have not been effectively synthesized, resulting in information literacy courses remaining at the level of general education that disseminates information knowledge and retrieval skills. They have not been effectively integrated into professional talent development programs or higher education systems, with reforms failing to penetrate to a substantive level. Furthermore, the information literacy education provided by university libraries currently faces several issues: course content fails to promptly reflect the latest information technologies and academic trends; there is a lack of a scientific and systematic evaluation system, making it

difficult to comprehensively assess educational outcomes; and there is insufficient student engagement.

5. Strategies for Constructing an Information Literacy Curriculum System in University Libraries Based on OBE Concepts

Essentially, the OBE education model revolves around the core process of “defining expected learning outcomes - achieving expected learning outcomes - assessing learning outcomes”. [8] To construct an information literacy curriculum system based on OBE, reforms are needed in several areas: expected teaching goals, teaching methods and approaches, and the evaluation of teaching outcomes. The principles of “student-centered” and “learning-oriented” should be applied throughout the entire process of information literacy teaching.

5.1 Enriching and Expanding Course Objectives: Offering Multi-Level, Differentiated Information Literacy Courses

Defining learning outcomes primarily involves presetting learning objectives to clarify the abilities or results students should achieve through their studies. The learning outcomes for information literacy education include the academic information literacy students should possess, the professional information literacy required for potential future job roles, and the value goals they should uphold throughout this process. [9] For students at different educational stages, differentiated information literacy course objectives can be established, categorized into levels of guidance, enhancement, and personalization. These objectives should extend beyond the traditional scope of information literacy—information awareness, information skills, information knowledge, and information ethics—to enrich the overall teaching goals. The syllabus should incorporate value-oriented goals such as fostering research integrity, adhering to academic standards, and building cultural confidence as a value goal of the information literacy curriculum. Ultimately, the overarching goal is to cultivate students’ progressive, autonomous, and lifelong learning capabilities.

At the introductory stage, information literacy

courses are primarily aimed at lower-year undergraduates, focusing mainly on general education electives. The expected objectives are to emphasize cultivating students' information awareness and proficiency in using library resources. Additionally, these courses aim to guide students in breaking free from the "information bubble" and enhancing their ability to apply information retrieval knowledge to solve specific problems related to life, study, and employment.

At the enhancing stage, information literacy education targets upper-year undergraduates and graduate students. The required or elective information literacy courses should closely align with students' professional disciplines, emphasizing the integration of information literacy with specialized knowledge. The anticipated objectives are to inspire a shift in their information awareness within academic contexts, cultivate their abilities to analyze, evaluate, and utilize information, and enhance their skills in communication, information sharing, and collaborative innovation. Furthermore, these courses should focus on developing students' proficiency in using professional search tools to solve specialized problems, equipping them with the professional competencies required for their careers.

Information literacy education permeates the entire process of talent cultivation in universities, acknowledging the unique learning styles, academic levels, and life experiences of each student. For instance, embedding information literacy education within undergraduate thesis projects and dissertation writing can address their needs in literature retrieval, data analysis, knowledge management, and adherence to academic standards in research. Graduate students, in comparison, require a more advanced level of information literacy. It is crucial to develop their skills based on the entire research process. This involves offering courses focused on the retrieval and selection of professional literature resources, the acquisition and management of full-text documents in both foreign and native languages, the selection and use of research tools, adherence to academic standards and formats, and the review and submission processes for academic papers. The anticipated goal is to enable students to accurately grasp research directions, efficiently acquire

professional information, and utilize the most appropriate research methods and tools for data analysis, evaluation, and application. Additionally, it aims to foster a high level of research integrity, ensuring strict adherence to various academic standards.

In summary, addressing the varying levels of educational subjects and the nature of different courses requires distinguishing course objectives to enhance the specificity, effectiveness, and comprehensiveness of information literacy education. University libraries need to take an active role in conducting research to fully understand students' individual needs. This approach integrates information literacy skills with research and innovation capabilities, promoting the alignment of information literacy with specific needs, tasks, and contexts. Consequently, it provides practical, research-oriented, and innovative information literacy education tailored to actual situations. [10]

5.2 Flexible Teaching Methods: Designing Diverse Information Literacy Activities

Achieving learning outcomes means reaching certain competency levels post-learning. To achieve this, various teaching methods are necessary, integrating information literacy into all aspects of students' academic, personal, and research lives, ensuring the sustainability and ubiquity of information literacy education. The content should cover areas such as data literacy, tool and platform literacy, academic research literacy, and intellectual property literacy. For beginners, introductory information literacy courses should be offered, employing flipped classroom methods, designing MOOCs with process-oriented goals, and teaching basic information retrieval skills to spark interest and address specific issues in learning and daily life, fostering self-directed and lifelong learning awareness. For intermediate and advanced learners, diverse learning contexts should be provided, allowing them to choose suitable methods such as classroom learning, self-study, seminar-based learning, or project-based learning. Integrating information literacy education with professional practice, scientific and technological innovation projects, or research topics can enhance students' abilities to communicate, collaborate, share, and create new information, thus fostering sustainable learning and development capabilities in their

academic, personal, and professional lives. Overall, classroom teaching design should revolve around expected educational objectives and utilize diverse methods such as flipped classrooms, online micro-courses, interest groups, and game-based competitions. These approaches can stimulate students' active participation, shifting them from passive recipients of information knowledge and skills training to active learners. This student-centered approach encourages self-directed learning, critical thinking, and proactive demonstration of learning outcomes, thereby better achieving educational goals.

5.3 Enhancing Formative Assessment and Multi-faceted Evaluation of Educational Outcomes

Evaluating learning outcomes involves testing and assessing students' abilities and their practical application post-learning. Conducting educational evaluation is a crucial aspect of OBE in information literacy instruction. Course-based information literacy education can incorporate the assessment of practical skills into the evaluation system, utilizing diverse methods such as classroom tests, project reports, literature reviews, micro-video production, case analysis, and skills competitions to gauge students' progress.

Evaluation of teaching effectiveness should be conducted through various means, including analysis of course objective attainment, MyCOS teaching effectiveness surveys, teaching supervision evaluations, and peer reviews. The focus should be on understanding students' perceived acquisition of information literacy knowledge and their experience with the teaching methods. Collecting extensive feedback from learners, identifying new needs in information literacy, and reflecting on existing issues are essential for continuously improving the content and methods of information literacy education.

In conclusion, as illustrated in Figure 2, the construction of an OBE-based information literacy teaching system revolves around predefined educational objectives. By employing diverse teaching methods, students' participation and enthusiasm are actively engaged, and educational plans are promptly adjusted based on feedback, ensuring the achievement of final educational goals. Under the OBE framework, information literacy education in university libraries requires a shift from "one-time teaching" to an effective knowledge transfer model, enhancing the educational function while continuing to provide information services. [11]

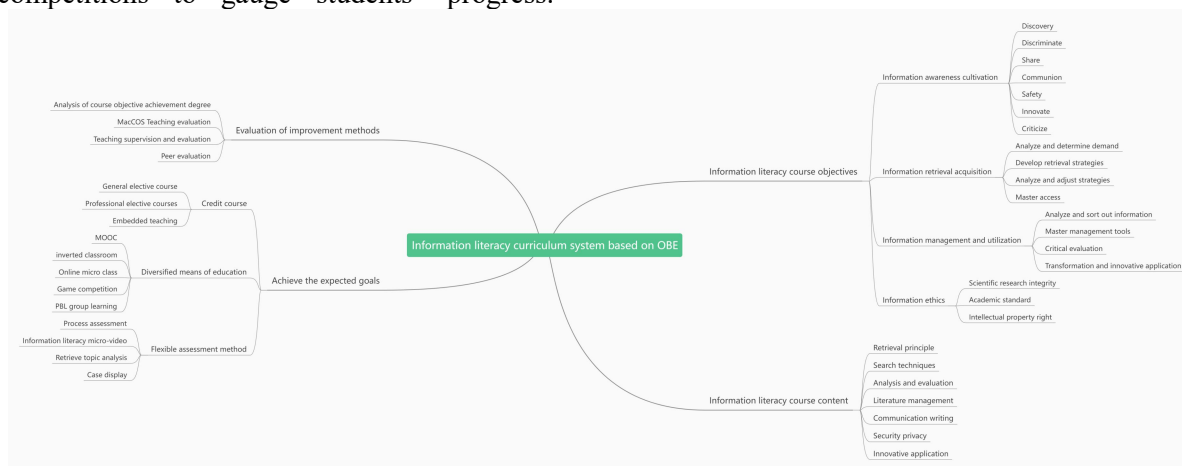


Figure 2 Schematic Diagram of the OBE-Based Information Literacy Teaching System

6. Conclusions

Information literacy education under the OBE framework demands that librarians utilize diverse teaching methods, abundant educational resources, and ubiquitous learning environments to engage and motivate learners according to the "learning output". This approach focuses on the skills and

competencies acquired by students upon completion of their learning journey, fostering their developmental growth. Applying OBE to information literacy education involves a progressive and systematic integration throughout various levels and types of instruction offered by university libraries, enabling learners to continuously acquire new knowledge and skills through critical thinking.

With the advent of the digital and intelligent era, the task of providing information literacy education in libraries is both challenging and essential. It necessitates the ongoing updating of educational philosophies, keeping pace with the times, and continuously advancing the reform of information literacy education.

Acknowledgments

This work was financially supported by the 2022 Inner Mongolia Autonomous Region Educational Science Research “14th Five-Year Plan” project “Research on Information Literacy Education in Higher Education Institutions Based on the OBE Concept”, Project Number: NGJGH2022357; and the 2023 Inner Mongolia University of Science and Technology Educational and Teaching Reform Research Project “Research on Information Literacy Curriculum Teaching Reform under the OBE Education Model”, Project Number: JY2023077.

References

- [1] Xu Chun, Zhang Jing, Bian Zuwei. Research on the Current Situation and Development Strategies of Information Literacy Education in University Libraries under the Background of “Double First-Class” Construction. *Researches in Library Science*, 2020, (03): 2-9.
- [2] William G. Spady. *Outcome — based education: critical issues and answers*. Arlington: American Association of School Administrators, 1994.
- [3] Duan Yueming, Shi Jinliang. Research on the Teaching Strategies of Public Physical Education Course in Colleges and Universities under the Background of Engineering Education Certification. *Education and Teaching Forum*, 2021, (14): 13-16.
- [4] Liu Xiaoqi. Theme Extraction and Evolution of University Library Cultural Education Based on the LDA Model. Shandong Normal University, 2022.
- [5] Huang Junfeng, Zheng Shenmao, Li Rong, et al. Information Literacy Curricula Design for Application-oriented Undergraduate Education from the Perspective of OBE. *Journal of Academic Libraries*, 2022, 40(03): 96-104.
- [6] Shan Wei, Li Fengyuan, Chen Shuping, et al. Goal-Driven, Node Implementation: New Practices in Information Literacy Training for Undergraduates at Yanshan University. *Hebei Sci-Tech Library Journal*, 2018, 31(06): 39-43.
- [7] Gong Furong. Construction and Teaching Practice Analysis of a Meta-Cognitive-Based Contextualized Information Literacy Education Model—A Case Study of the Undergraduate Course in Wuhan University Library. *Researches in Library Science*, 2021, (17): 18-25.
- [8] Fan Chenlu. "A Brief Analysis of the Implementation of Information Retrieval Courses under the OBE Education Model". *Shaanxi Education (Higher Education)*, 2019, (12): 45+47.
- [9] Du Shaoxia, Zhang Xiaojju. Practice and Exploration of Information Literacy Education in Undergraduate Graduation Design Stage under OBE Concept. *Journal of Library and Information Science in Agriculture*, 2018, 30(12): 83-86.
- [10] Chu Jingli, Liu Jingyi, Zhang Dongrong, et al. Beyond Information Literacy Education: the Changes and Prospect —15 Years’ Practical Exploration in the University of Chinese Academy of Sciences. *Library and Information Service*, 2020, 64(06): 3-9.
- [11] Dai Jinjin, Qu Wei, Tang Xin. Research on information literacy education of university library model based on OBE. *Jiangsu Science & Technology Information*, 2023, 40(18): 59-61.