The Internal Logic and Construction of a Content System for AI Literacy Education in University Libraries Driven by Digital Intelligence*

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Full Text

【Special Topic: AI Literacy Education】

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Abstract Constructing an effective content system for AI literacy education in university libraries plays a very important role in improving the AI literacy of university teachers and students. Through a literature review, this paper analyzes the connotations and practical achievements of AI literacy and AI literacy education in university libraries, extracts the content covered by AI literacy education in university libraries, and, by dialectically drawing on Bloom's taxonomy of educational objectives, constructs a content system for AI literacy education in university libraries. This system contains four main categories: concepts, knowledge, thinking, and skills. Among them, the concept category includes two subcategories: ethical outlook and values; the knowledge category includes two subcategories: basic knowledge and technical system; the thinking category includes two subcategories: problem thinking and computational thinking; and the skills category includes two subcategories: tool-use ability and risk-response ability.

[**Keywords**] AI; AI literacy education; digital-intelligence-driven; university libraries

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Introduction

The year 2025 is a crucial year for achieving the strategic goal of building China into a leading country in education. The *Outline of the Plan for Building China into a Leading Country in Education (2024–2035)*[1] (hereinafter referred to as the *Outline*) states that "by 2027, important phased results will be achieved in building China into a leading country in education. The level of universal access to education at all levels will continue to be consolidated and improved, a high-quality education system will be initially formed, and the people' s sense of gain from education will be significantly enhanced." Against this background, designing advanced, rigorous educational content that can be embedded into a new-type education system to support the implementation of new educational models is of great significance for strengthening the comprehensive capacity of higher education and constructing China' s independent knowledge system. The *Outline* also clearly states that standards for the digital literacy of teachers and students should be formulated and improved. As an emerging digital-intelligent technology, AI literacy derived from AI should be regarded as a new dimension of digital literacy. Since the release of generative AI models represented by ChatGPT, AI models have rapidly become a focus of research and application across various industries and fields. In universities in particular, teachers and students have actively applied AI technologies to learning and research. However, while AI models improve efficiency, on the one hand, irregular applications of AI models have emerged one after another; on the other hand, the use of AI models involves information pollution and ethical risks, which may trigger serious problems such as the widespread dissemination of polluted information, leakage of personal information, and harm to human subjectivity. In order to give full play to the positive role of AI technology, university libraries, while promoting the application of AI models and advancing the inclusive development of AI technology on campus, should uphold a new knowledge view of co-creation and sharing, a new learning view of intelligent connectivity and construction, a new curriculum view of integration and openness, and a new teaching view of human–machine collaboration[2]. They should actively carry out AI literacy education for university teachers and students, expand a high-quality cohort committed to "technology for good" ; while transferring past experience in literacy education and constructing a content system for AI literacy education, they should actively explore effective pathways by which new information technologies empower AI literacy education, enhance the inclusiveness, timeliness, and economy of AI literacy education, safeguard the interests of university teachers and students, and prepare in terms of literacy education for broader and more profound technological revolutions in the future. This paper intends to analyze

the construction of the content system for AI literacy education in university libraries from the perspective of digital-intelligence-driven development, striving to provide a reference for the design of AI literacy education content in university libraries.

1 Defining the Connotation of AI Literacy Education in University Libraries

1.1 Overview of AI Literacy

1.1.1 Defining the Connotation of Literacy In the Programme for the International Assessment of Adult Competencies (PIAAC)[3], the Organisation for Economic Co-operation and Development (OECD) assesses literacy from three core dimensions: literacy, numeracy, and adaptive problem solving. Its connotation is that individuals can understand and use textual materials in different contexts, and possess

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identification, understanding, communication, and computational abilities, and be able to achieve personal goals, expand knowledge, and develop potential through continuous learning. AI literacy not only inherits the general requirements of the term "literacy," but also reflects the contemporary need for people to understand and use AI technologies in order to "adapt to and master" technology[^4][^5]. Therefore, AI literacy has an applied attribute, and its connotations are closely related to the underlying technologies of AI.

Accordingly, the AI literacy discussed by the author is a product formed through the collision and integration of multiple perspectives, used to guide AI practice, and characterized by the features of the times. From the perspective of the general requirements of literacy, AI literacy should encompass the requirements for individuals to understand, apply, analyze, and create multimodal resources, as well as to continuously construct and expand their own systems of ideas, concepts, knowledge, and skills.

1.1 Defining the Connotations of AI Literacy

Regarding the concept and composition of AI literacy, Pinski M et al.[^6] point out that research on AI literacy does not focus on the purely technical characteristics of AI, but instead considers human–machine collaboration by analyzing the different "characteristics" of humans and AI. Xiao J Y et al.[^7] argue that AI literacy emphasizes proficiency and appropriate use, rather than requiring mastery of underlying theoretical knowledge. Ngo T N et al.[^8] indicate that, under the framework of Artificial Intelligence for Academic Purposes (AIAP), AI literacy needs to cover five core elements: conceptual terminology, the working principles of AI, prompt engineering, tools and applications, and ethics and appropriateness. Through a literature review, Chee H et al.[^9] reconstructed an AI literacy competency framework comprising eight competencies and eighteen sub-competencies, including AI application and operation capability, data and algorithm literacy, and problem-solving ability. Bu Miao[^10] argues that AI literacy is not merely the mastery of AI knowledge, but places greater emphasis on critical awareness, understanding, and application of its skills, ethics, and values. Li Chunqiu et al.[^11] believe that the connotations of AI literacy help individuals, on the basis of possessing AI knowledge, to master AI skills, cultivate AI thinking, and fulfill AI social responsibilities. Shi Li et al.[^12] hold that AI literacy is the comprehensive quality—including AI knowledge, skills, and ethics—that individuals need when adapting to the iterative development of AI technologies and collaborating with AI. Chen Shanshan et al.[^13] summarized the specific manifestations of AI literacy education in British universities in terms of cognition, application, thinking, and ethics. Huang Ruhua et al.[^14] designed an AI literacy education content framework consisting of four major parts: cognition, skills, application, and ethics. Yan Qiujuan et al.[^15] proposed the constituent elements of "information + AI" literacy, covering five dimensions: thinking, ethics, awareness, knowledge, and ability.

Synthesizing these viewpoints, the author believes that AI literacy refers to the concepts, knowledge, thinking, and abilities required by individuals or groups to engage in effective reflection and thereby promote human–machine collaboration. Viewed in light of Jacobson's metaliteracy model[^16], the author believes that AI literacy is a literacy system encompassing multiple dimensions, including application ability, underlying theoretical knowledge, and ethical concepts; its content can be summarized into four major dimensions: concepts, knowledge, thinking, and skills. As the underlying framework of AI literacy education, clarifying the connotations of AI literacy has guiding significance for constructing the AI literacy education content system of university libraries. However, to truly provide effective reference for it, it is also necessary to incorporate the practical outcomes of AI literacy education in university libraries, analyze feasible models of AI literacy education, and strive to construct the content system in a targeted manner.

1.2 AI Literacy Education in University Libraries

The facts of scientific and technological development have already shown that breakthroughs in major scientific and technological problems, and the creation of new theories and even new disciplines, are often the result of the cross-fertilization and integration of theories from different disciplines[^17]. In China, "AI+" educational projects continue to be implemented, and educators and researchers across various fields and levels are working together to explore and construct a new type of educational model, so as to meet the needs arising from the integrated development of general-purpose technologies and other industries. In this process, frontier practices of AI literacy education have emerged, such as "AI+X" micro-majors and compulsory general AI courses. AI literacy education in university libraries should also actively integrate into the tide of educational model reform, combine their own characteristics with user needs, and design an AI literacy education content system driven by digital-intelligent technologies.

Scholars at home and abroad have conducted relatively systematic research on the features of AI literacy education in university libraries. Lo L S[^18] proposed an AI literacy education framework for academic libraries covering seven aspects, including understanding the capabilities and limitations of AI systems, identifying and evaluating AI applications, and critically evaluating AI-generated content. Chee H et al.[^9] found that AI literacy education in universities should emphasize cultivating students' in-depth understanding of data and algorithms, problem-solving ability, and so on. The AI literacy needs of teachers involve three major aspects: data and algorithm literacy, AIGC creation, and operation of equipment and software. Du Jin[^19] investigated the practice of AI literacy education in American universities, pointing out that some universities build AI literacy education content systems based on theoretical frameworks such as the CLEAR framework and the ROBOT test. Different theoretical frameworks each have their own emphases, but overall they include three aspects: prompt design, AI hallucination evaluation, and AI ethical and legal risks. Du Xiuxiu et al.[^20] investigated the LibGuides of the top fifty universities in the United States and found that they usually contain reference resources such as basic use, curriculum teaching, scientific research, and evaluation and testing. Other scholars, based on the KSAVE model[^21], have respectively summarized and analyzed the practices of AI literacy education in university libraries at home and abroad[^22][^23]. The studies found that foreign university libraries pay attention to cooperation with internal and external institutions, user guidance, and librarian education; while focusing on the cultivation of basic literacy, they expand educational forms and construct a comprehensive educational system based on the KSAVE model that integrates knowledge, values, and other elements. In domestic university libraries, AI literacy education has problems such as singular training goals, forms, and content, as well as relatively weak AI literacy among teachers. However, Xia Ye[^24] and Luo Guofeng et al.[^25] point out that AI literacy education in domestic university libraries has advantages in resources, platforms, faculty, trust, space, and other aspects.

Librarians, university teachers, and students are both the subjects of AI literacy education and important recipients of education. The methods of AI literacy education include holding lectures, salons, thematic activities, and other events to promote the connotations of AI literacy, as well as building online resource platforms to serve teaching and research. AI literacy education

The content includes methods for using and evaluating AI tools, norms for the use of AI tools in teaching and research, and knowledge of AI ethics and law. It can be seen that university libraries have achieved certain results in constructing the basic content of AI literacy education. However, their educational model remains relatively traditional, and problems persist, such as a low degree of alignment with the educational needs of the digital-intelligence era and insufficiently in-depth development and application of digital-intelligence technologies, especially AI technologies.

2 Internal Logic of Digital-Intelligence-Driven AI Literacy Education in University Libraries

2.1 Practical Logic

The introduction of AI tools has profoundly transformed educational and teaching models. A digital-intelligence-driven educational model characterized by interdisciplinary education[26–27], human–machine collaboration[28–30], and multidimensional evaluation[31–32] is becoming a major development trend. Against this background, university libraries possess the conditions needed to carry out AI literacy education activities.

2.1.1 Information Elements From the perspective of information elements, through long-term development, university libraries—guided by their institutions' disciplinary development—have accumulated a large volume of academic literature resources in relevant fields at home and abroad, as well as education-related knowledge. They have also built one-stop information-resource service platforms and therefore possess unique advantages in conducting interdisciplinary teaching that integrates AI knowledge. For example, the "AI Literacy and Skills Enhancement Database" of the University of Science and Technology of China Library covers a large number of micro-video resources, providing substantial assistance for university teachers and students in understanding and mastering AI skills[33]. Wuhan University Library has established a systematic and comprehensive "Artificial Intelligence Resource Navigation" service, providing information-resource services across eight dimensions, including AI MOOCs, AI usage guidelines and norms, and domestic and international AI policies[34].

2.1.2 Human-Resource Elements From the perspective of human-resource elements, on the one hand, human resources represented by subject librarians and university teachers generally have relatively high educational qualifications[35–36], rich professional knowledge, and a strong ability to accept emerging

technologies. At present, among China' s 147 "Double First-Class" universities, the libraries of 83 universities have improved teachers' and students' AI literacy through training, competitions, reading-promotion activities, and other means[37]. At the same time, subject librarians often have experience in providing full-process personalized services for specific topics. For example, subject librarians at the University of Science and Technology of China Library provide students participating in the International Genetically Engineered Machine Competition with full-process services, including resource acquisition, analysis, management, event training, and consultation[38]. On the other hand, human-resource elements represented by university students show phased and concentrated characteristics in their demand for educational resources, which provides an opportunity for timely feedback, updating, and iteration of educational resources under a human–machine collaborative education model.

2.1.3 Technical Elements From the perspective of technical elements, although the current digital-intelligence transformation of higher education still faces difficulties such as imbalanced resource allocation and weak technological foundations[39], various independently launched GAI tools, relying on natural-language processing and diverse AIGC generation capabilities, have to a large extent already acquired the ability to collaborate with teachers in completing course-teaching tasks. These tasks cover analysis of learning conditions, formulation of teaching objectives, teaching implementation, and course assessment and evaluation[40–41]. At the same time, whether they are functionally dispersed AI tools or AI tools integrated into platforms, they can meet the needs of teaching practice to varying degrees[42]. This indicates that, whether through individual teacher subscriptions or unified institutional subscriptions, applying AI tools to literacy education is feasible in terms of both functionality and cost.

2.1.4 Spatial Elements From the perspective of spatial elements, university libraries have a solid foundation in the construction of network spaces, social spaces, and physical spaces. In recent years, university libraries have generally built service platforms such as AI literacy LibGuides[43–44] and AI+ workshops[45]. Digital teaching providers such as Chaoxing and Zhihuishu have also provided spatial and technical support for the implementation of AI literacy education in university libraries, enabling them to possess convenient and diversified network spaces for AI literacy education. University libraries are important venues for academic salons, lectures, daily learning discussions, and other activities. For example, Sichuan University Library held a series of generative AI themed lectures in the spring–summer semester of 2025[46], and Southern University of Science and Technology organized a thematic exchange meeting on information literacy education in university libraries in the AI era[47]. Since 2021, driven by the upsurge in the construction of future learning centers, many university libraries across China have, to varying degrees, renovated or newly built library facilities, providing advanced spatial services based on digital-intelligence technologies. For example, the Pao Yue-Kong Library of Shanghai Jiao Tong

University renovated its library space to provide users with teaching-support services integrating digital-intelligence technologies[48]. Future learning centers advocate the cultivation of learning ability, digital literacy, and critical thinking[49], thereby providing policy support for university libraries to carry out AI literacy education. Against this background, it can be said that university libraries already possess mature network spaces, social spaces, and physical spaces for AI literacy education.

2.2 Theoretical Logic

The cultivation of AI literacy requires both realization through teaching and implementation by individuals in practice. Taking the construction of a content system as the starting point, teaching and practice should be the two core dimensions of literacy education. In the context of the rapid development of information technology, educational products characterized by informatization, digitization, and intelligentization have become increasingly abundant, and education is no longer confined to the traditional model in which teachers serve as the sole educational subject. This makes it possible for learners to optimize their own a priori factors through intelligent and procedural educational means. Learners' self-directed digital-intelligence-driven learning practices should also be incorporated into the scope of AI literacy education.

Bloom's taxonomy of educational objectives, which reveals the logic of cognitive development through content classification, provides a classification reference for constructing the content system and a simple model of learners' cognitive development; it is an important reference for constructing content in the teaching dimension. This taxonomy divides the cognitive process into six levels: remembering, understanding, applying, analyzing, evaluating, and creating[50]. From the perspective of knowledge transmission and value creation, this method interprets the process of cognitive development as

the developmental pathway from knowledge storage to innovative output[51]. Among them, **remembering** refers to identifying or recalling information. It is the foundational level of cognition, does not involve understanding or applying information, and requires only accurate retrieval. **Understanding** refers to constructing the meaning of learned information through explanation, exemplification, classification, and other means, and to grasping the logical relationships within information, thereby internalizing and extending information so that it can be applied to diverse contexts; it serves as the bridge between remembering and applying. **Applying** refers to using already-understood knowledge in new, specific situations in order to complete tasks or solve problems, reflecting the transferability of knowledge. **Analyzing** refers to breaking down complex information, problems, or systems into multiple components; analyzing the attributes and functions of each part, as well as the logical relationships among parts and between parts and the whole; and thereby understanding the structure of information or the essence of a problem. **Evaluating** refers to making judgments about the quality, effectiveness, and other aspects of information,

products, plans, or viewpoints on the basis of preset standards, criteria, or values. **Creating** refers to integrating multiple dispersed pieces of information, concepts, parts, or methods into a new, coherent whole, or generating entirely new products, plans, and so forth; it is the highest level of cognition.

Accordingly, AI literacy education content can be proposed along dimensions such as knowledge, skills, and thinking. However, Bloom' s taxonomy of educational objectives pays relatively little attention to learners' prior factors in the educational process. Moreover, in teaching practice, it is difficult for teachers to systematically grasp each student' s prior factors, such as values and ethical outlook. Therefore, from the perspective of learners, it is necessary to supplement this with mainstream AI literacy content frameworks that adopt a neutral standpoint.

3 Construction of a Data- and Intelligence-Driven AI Literacy Education Content System for University Libraries

UNESCO has introduced an AI literacy framework for teachers[52] and an AI literacy framework for students[53]. Both adopt a three-level cognitive development system of understanding, application, and creation. In terms of content, they can be summarized into four dimensions: human-centered thinking, AI ethics, AI technical knowledge, and role-adapted AI use skills. Among these, human-centered thinking and AI ethics reflect the attention that mainstream AI literacy frameworks give to learners' conceptions. However, UNESCO' s AI literacy framework is mainly a publicly recognized framework for introducing AI technologies and methods into public education systems. Although its content selection is representative, it cannot directly serve as a content system. Therefore, with reference to the student AI literacy framework, the author expands the dimension of "conceptions" in order to complete the AI literacy education content system.

By integrating Bloom's taxonomy of educational objectives, the author proposes an AI literacy education content system for university libraries that includes four main categories and several subcategories. The main categories are: AI conceptions, which represent learners' prior factors; AI knowledge, which serves as the foundation of cognitive development; AI thinking, which functions as the hub of cognitive development levels; and AI skills, which cultivate AI literacy, as shown in Table 1.

Table 1 Content System for AI Literacy Education in University Libraries

Main category	Subcategory	Core content	Educational objectives
AI conception system	AI ethical outlook	Protecting the security of information resources such as intellectual property, personal information, and user data; resisting discriminatory and biased content and pursuing fairness and inclusiveness in AI; upholding the central position of human beings, safeguarding the rights to know and to make decisions, and pursuing algorithmic transparency and human-centeredness	Enable students to understand the connotations of various AI ethical risks, clarify the categories and manifestations of AI tool-use behaviors that violate ethical requirements, and reduce the harmfulness of such use behaviors

Main category	Subcategory	Core content	Educational objectives
AI conception system	AI values	Adhering to people-centeredness and balancing instrumental rationality with value rationality; advocating diligence and pragmatism, respecting individuality, and guiding students to correctly understand and accept themselves; promoting sustainable development, opposing technological monopoly, supervising resource consumption and environmental impacts, and narrowing the digital divide	Guide students to establish correct values, avoid ethical and value-related risks, develop the ability to attribute responsibility correctly and speak out reasonably, and stimulate their sense of social responsibility and mission of the times

Main category	Subcategory	Core content	Educational objectives
AI knowledge system	AI foundational knowledge	Conceptual connotations—the definitions of concepts such as data, algorithms, and AI, as well as the functions of AI models and the ethical tendencies of tools; conceptual extensions—outcomes of the integration of AI with various industries, interdisciplinary models, and so forth; patterns of AI development—historical evolution, influencing factors, and so forth	Provide "raw materials" for students' cognitive development; lay the foundation for remembering, understanding, and applying in learning and practice; and support activities of analysis, evaluation, and creation

Main category	Subcategory	Core content	Educational objectives
AI knowledge system	AI technical system	Underlying technologies—machine learning, computer vision, data processing, and so forth; technological cross-integration—integration with cloud computing, the Internet of Things, big data, and so forth; evaluation tool frameworks—the CLEAR framework, ROBOT testing, the "5S" model, and so forth	Help students understand the operating mechanisms and physical foundations of AI, broaden their technical horizons, master the dimensions and methods of AI evaluation, and strengthen their understanding and application of AI tools
AI thinking system	Problem thinking	Centered on discovering and posing problems; proactively using AI tools to solve problems and inspire ideas; uncovering real problems in unknown contexts	Cultivate students' ability to discover and pose problems, give play to the complementarity between human intelligence and AI tools, and build a hub for the mutual transformation of knowledge and ability

Main category	Subcategory	Core content	Educational objectives
AI thinking system	Computational thinking	Foundational thinking—abstract thinking, logical thinking, and so forth; computational thinking especially emphasized in digital and intelligent contexts—data thinking, algorithmic thinking, creative regulatory thinking, and so forth	Help students build a structured, critical, and creative thinking system; provide thinking tools for responding to AI risks; and adapt to problem-solving scenarios involving human-machine collaboration

Table 1 (continued)

Major Category	Subcategory	Core Content	Educational Objectives
AI Skill System	AI Tool Use Capability	Application capability (information retrieval, prompt writing, etc.); evaluation capability (systematic evaluation of input content, selected results, AI output content, etc.); optimization capability (adjusting prompts and questioning strategies, optimizing output content)	Cultivate students' abilities in applying, evaluating, and optimizing AI tools, so that they can use AI tools safely and creatively.
AI Skill System	AI Risk Response Capability	Pre-event prevention (identifying the content and scope of risks, selecting appropriate risk-identification tools); in-event response (evidence collection, identification of responsible subjects, selection of reporting and feedback channels)	Enable students to identify and control AI risks; when risks occur, stop losses in a timely manner and seek effective help, so as to prevent malignant incidents.

3.1 AI Conceptual System

Concepts are people' s generalized, summary, and integrative understandings and views of things or of certain aspects of things; people act according to their own concepts[54]. AI-concept education is the first step in carrying out AI literacy education. In terms of teaching methods, the application of digital-intelligent technologies makes it possible to intelligently assess students'cognitive biases. Based on data collection, management, and analysis, AI tools can assist educators, under conditions of relatively low cognitive load, in understanding learners' cognitive biases, and can automatically push or even generate targeted content to support their cognitive development. In terms of teaching content, AI concepts mainly include ethical concepts and values that guide knowledge acquisition, influence the formation of thinking, and clarify the key points of skill development. AI-concept education aims to teach the basic knowledge of AI ethics and values, enabling students to independently respond to typical problems and dilemmas. At the same time, it provides analytical examples, supplemented by intelligent resource integration and interpretation, to guide students in deconstructing such misconceptions in AI narratives as inevitability narratives and emotional discipline[55], so that students can scientifically evaluate AI ethical events based on concepts such as harmless AI, explainable AI, and human-centered AI.

3.1.1 AI Ethics

AI ethics mainly constrains usage behavior, and AI ethics education aims to reduce the harmfulness of usage behavior and bring into play the positive role of AI tools. Harmfulness comes from the characteristics of AI tools and from human strategies for using them. Views on AI ethics directly determine the bottom line of an individual' s AI-use behavior; they are the direct basis for individuals' AI ethical judgments and also an important foundation for building social consensus on AI. The teaching objective should be to enable students to understand the connotations of various AI ethical risks and to clarify the categories and manifestations of AI-tool use behaviors that violate ethical requirements. These mainly include: first, ethical concepts for protecting the security of information resources such as intellectual property, personal information, and user data; second, ethical concepts that resist discriminatory and biased content and advocate fairness and inclusiveness in AI; third, ethical concepts that uphold the instrumental status of AI and the subject status of human beings—that is, users should always retain the right to know, the right to decide, and the right to lead in the use of AI tools, pursuing algorithmic transparency and a human-centered approach.

3.1.2 AI Values

As a general-purpose technology that has triggered a profound restructuring of social modes of production, AI technology' s most prominent value issue is the contest between instrumental rationality and value rationality. Instrumental

rationality advocates choosing the most efficient means to achieve goals, reflecting a value orientation that emphasizes efficacy and takes technologicalism as the goal of development[56]. Value rationality, by contrast, advocates adherence to ideas and beliefs and the pursuit of the realization of value convictions, reflecting a value orientation that emphasizes the meaning of human existence and conscious awareness of life. In reality, instrumental rationality and value rationality are not purely an "either-or" relationship; the two need to be viewed dialectically, and the balanced development of technology should be pursued. As the core content at the conceptual level, AI-values education centered on instrumental rationality and value rationality should include the following. First, a people-centered value orientation. Excessive expansion of instrumental rationality can lead to disorientation in goal selection, bringing negative effects such as damage to the legitimacy of behavior and to human subjectivity; excessive expansion of value rationality can lead to disorientation in the choice of practical paths, and may even bring about internal and external depletion and confrontation for individuals or groups. Constructing appropriate AI values requires taking "people-centeredness" as the value anchor, providing students with a clear long-term goal for the use of instrumental rationality and value rationality. Second, a value orientation of being down-to-earth and respecting individuality. The powerful capabilities of AI tools require users to bring their own wisdom into play and seek their own development. Being down-to-earth and respecting individuality, and thereby correctly understanding and accepting oneself, are the basis for students in the digital-intelligent era to improve the efficiency and effectiveness of learning and research. Third, a value orientation toward sustainable development. In the course of education and application, AI should ensure social, economic, and other forms of sustainable development[57]. This is a deepening of "technology for good," aiming to cultivate in students values such as opposing technological monopoly, supervising the resource consumption and environmental impact of AI, narrowing the digital divide, and reducing technological dependence. It enables students to uphold a view of sustainable development on issues such as society, the economy, and human self-development, guides them to practice the concept of sustainable application of AI tools, and thereby promotes the coordinated development of human beings and AI tools.

3.2 AI Knowledge System

Knowledge is the "raw material" of students' cognitive development. At lower levels of cognitive development, structured knowledge is the main content of students' memory, the logical basis for students to understand relevant information, and the action anchor for students' practice. At higher levels of cognitive development, specific knowledge provides tools for content decomposition and classification when students analyze information, provides criteria for judgment when students evaluate information, and also provides a [[unclear: text continues off page after "可"]].

feasibility validation. In terms of teaching methods, based on knowledge-graph technology, teachers can use AI tools to provide students with summaries of key points in the AI knowledge system and personalized learning-path arrangements. At the same time, students can also use AI tools to connect with the library' s AI knowledge base or course-resource database, answer learning questions in real time, and make up for the limitations of classroom teaching. In terms of teaching content, the AI knowledge system aims to answer "What is AI?" and should include both the natural attributes and the social attributes of AI tools.

3.2.1 AI Basic Knowledge

AI basic knowledge includes the connotations and extensions of AI-related concepts as well as the laws governing AI development. First, conceptual connotations include definitions of commonly used concepts such as data, algorithms, AI, and AIGC; the functions and characteristics of various AI models; and the ethical orientations of AI tools. In terms of nature, they can be divided into three categories: AIGC types, functions, and characteristics that emphasize dissemination and application, involving AIGC classified by media form and AIGC classified by different vertical fields; AI tool types, functions, and characteristics that emphasize technical mechanisms, such as text-generation models and video-generation models classified by modality of generated content; and AI capability limits that emphasize technical limitations and risks, such as the element dependencies, capability limitations, and safety and ethical risks of AIGC tools. Second, conceptual extensions include the tendencies and achievements of cross-integration between AI technology and different industries and fields, such as the interdisciplinary teaching model of "AI+X" and the construction logic of large models in vertical domains. Education on conceptual extensions should pay greater attention to personalized teaching and provide information-flow sequencing services for students who need them. Finally, the laws of AI development mainly introduce the historical evolution and influencing factors of AI technology, aiming to analyze, from a social perspective, the power structures behind AI technology and to provide graded and personalized content for teachers and students in different disciplines and research fields.

3.2.2 AI Technology System

The AI technology system mainly introduces the underlying technologies of AI models, the phenomenon of cross-integration of AI technologies, and frameworks for AI evaluation tools. AI underlying technologies refer to technological categories that support the operation of AI models, such as machine learning and computer vision. This part of the teaching content aims to enable students to understand AI underlying technologies, the operating mechanisms of AI, and the physical foundations required for its operation. The cross-integration of AI technologies involves the integration of AI with technologies such as cloud computing, the Internet of Things, and big data, as well as the integration of AI with fields such as education, finance, and healthcare. This part of the

teaching content aims to help students understand the macro-level scope of AI applications. Frameworks for AI evaluation tools include the CLEAR framework, the ROBOT test, and the "5S" model. Evaluation is an important link in understanding and developing technology. As an important component of the technology system, evaluation frameworks can provide reference indicators for students to understand, select, and apply AI models.

3.3 AI Thinking System

Thinking is an important tool for exerting the guiding force of ideas and using knowledge to carry out practical activities. Its essence is to help educated individuals develop from lower-order cognitive levels to higher-order cognitive levels. In terms of teaching methods, with the assistance of AI tools, teachers and students can efficiently analyze and integrate thematic resources and systematically conduct visual modeling of content. In learning practice, AIGC can be used as a reference for mining new problems, and AI tools can provide references for methodological iteration and conceptual innovation. In terms of teaching content, AI thinking education aims to teach the conceptual definitions and core elements of modes of thinking related to individual cognitive development in the AI era, helping educated individuals construct a structured thinking system that is critical and creative, and providing them with thinking tools to respond to AI risks.

3.3.1 Problem Thinking

Problems are the hub through which knowledge and ability transform into each other; they are the starting point of all practical activities and are also an important boundary between current human intelligence and AI. At present, AI is more often used to solve problems rather than to discover them[^58]. The ability to actively discover and raise problems is not easily acquired by AI, and it is also a key capability that human beings need to master in the AI era. Thus, problem thinking has become an important component of the AI thinking system. Problem thinking is a mode of thinking centered on discovering and raising problems, and on actively using AI tools to solve problems and enlighten thought. A "problem" is no longer merely a question furnished with a reference answer, nor is it limited to a problem graph that connects knowledge and ability within an intelligent curriculum system. Rather, it contains, in unknown situations, a person' s willingness to explore problems that hinder the development of thinking, as well as the willingness to discover and raise new problems based on existing knowledge and thinking. To develop problem thinking, individuals need to be guided to use problems as cognitive entry points to expand thinking, and to use thinking as cognitive support points to generate problems[^59].

3.3.2 Computational Thinking

Computational thinking is a thinking model that uses computer knowledge and skills to solve problems, involving cognitive skills such as abstraction, decomposition, and evaluation[^60]. Since 2006, computational thinking has gone through the 1.0 era, which focused on "computer problem solving," and the 2.0 era, which focused on the construction of personalized computational models at the disciplinary level. In the AI era, computational thinking has evolved into the 3.0 era, which focuses on modes of intervention, thinking models, and problem-solving methods in human–machine collaborative contexts.

At present, scholars have proposed, for the 3.0 era, a three-level competency spectrum consisting of computational cognition, computational methods, and computational culture[^61], as well as a model for dividing and organizing the connotations of computational thinking into a three-level structure of association, abstraction, and systematization[^62]. When incorporating computational thinking into the content system of AI literacy education in light of the mechanisms and contexts of AI tools, it is necessary not only to transfer its emphasized abstract thinking and logical thinking, but also to emphasize three secondary forms of thinking. First is data thinking. Data thinking refers to a thinking model in which information and knowledge are formed through data mining, analysis, processing, and related activities, thereby providing a basis for practical decision-making. In human–machine collaborative scenarios, data, as the "fuel" for the outputs produced by AI models, is the foundation for human–machine collaboration in solving innovative problems. Data is one of the starting points of computational thinking, and data thinking is a secondary form of computational thinking. Second is algorithmic thinking. Algorithmic thinking is also a kind of data thinking, that is, using data to describe and explain objective or subjective ob—

objects, relationships, and processes, etc.[63] The matching of algorithms and data is the guarantee of the effectiveness of both. Algorithmic thinking is the hub between data thinking and computational thinking; it emphasizes using specific patterns to conduct data computation so as to solve concrete problems. Under the current classification model, algorithmic thinking and data thinking jointly support the functioning of computational thinking. Although algorithmic thinking focuses on different educational content, it should also be incorporated into the computational-thinking system. Third is creative regulatory thinking. Creative regulatory thinking is an advanced stage of active regulatory thinking. Active regulatory thinking is an important mode of thinking for effectively responding, in the digital-intelligent era, to the encroachment of AI technological agency and to paradigm shifts across multiple fields. In research on librarians' intelligent literacy, this mode of thinking emphasizes adapting to changes in library management and services in the intelligent era through cross-boundary thinking and a positive mindset, comprehensively examining and evaluating the effects of AI applications, and dynamically regulating the process of human–machine collaboration.[64] In the digital-intelligent era, computational thinking

does not merely pursue the procedural processing and one-dimensional execution of specific problems; rather, it pursues the dynamic iteration and transferability of problem-solving methods. This requires the subject to actively regulate, and even creatively regulate, the procedures for problem solving. Active regulatory thinking and its advanced stage, creative regulatory thinking, are important components of computational thinking. Creative regulatory thinking emphasizes creativity in the process of active regulation, focuses on solving real-world problems in human–machine collaboration creatively and with high quality, and aims to cultivate students' ability to solve practical problems creatively.

3.4 AI Skills System

Skills are a key element in carrying out social practice. A sound skills system enables individuals to better achieve their goals, avoid risks, or reduce negative impacts while conducting practice efficiently. In terms of teaching methods, teachers, based on hands-on operation of AI tools, can construct specific intelligent simulation scenarios, demonstrate corresponding skills and risk-response methods for students, and enable students to carry out AI operation practice with ease, thereby internalizing the educational content. In terms of teaching content, AI skills education aims to cultivate students' abilities in the application, evaluation, optimization, and risk response of AI tools, so that learners can use AI tools safely and creatively.

3.4.1 Ability to Use AI Tools The cultivation and enhancement of the ability to use AI tools follow a cyclical development model that moves from application to evaluation, then to optimization, and finally to new applications. Therefore, the ability to use AI tools should encompass the following three competence dimensions.

First is AI application ability. The construction of the content system for AI application-ability education needs to cover the entire process of using AI tools, focusing on users' control over content input and their analysis of AIGC. Its key content includes information-collection ability represented by data screening and cleaning, information-use ability represented by prompt writing, and critical-thinking ability toward AIGC. This ability focuses on users' degree of understanding of input content and AIGC, their ability to organize and output natural language and programming language, and their ability to analyze and judge information.

Second is AI evaluation ability. AI evaluation ability mainly comes into play after a complete process of using an AI tool has ended, that is, after the user asks a question, the AI outputs results, and the user selectively obtains knowledge; it is the ability to analyze and evaluate the user' s experience of using AI tools. This is not only an analysis and evaluation of the user experience, but also a systematic assessment of the input content, selected results, and AI-generated output. It contains the dialectical thinking of criticism and self-criticism and strengthens the link between application and optimization.

Third is AI optimization ability. AI optimization ability focuses on optimizing AIGC by adjusting prompts and questioning strategies. Different tool-use goals correspond to different prompting strategies. On the one hand, the utility of AIGC is affected by the number and accuracy of prompts; on the other hand, prompt modality and ordering are also important influencing factors.

3.4.2 Ability to Respond to AI Risks The ability to respond to AI risks can be analyzed according to two stages: before the event and during the event. First, pre-event prevention focuses on risk identification. To cultivate students' ability to identify risks, students need to master the content and scope of risks and learn to select appropriate risk-identification tools. The AI foundational-knowledge module can impart to students knowledge related to the content and scope of AI risks; the AI technology-system module can teach students methods for obtaining and using risk-assessment tools. In terms of pre-event prevention, students should be guided to carry out risk-identification practice, train their ability to apply relevant knowledge and assessment frameworks, and thereby form an awareness of pre-event prevention.

Second, in-event response focuses on risk control. When a harmful incident occurs, students need to stop losses in a timely manner and seek help from relevant departments. On this basis, in-event response ability covers the ability to collect evidence, the ability to identify responsible subjects, and the ability to choose reporting and feedback channels.

In the practice of AI literacy education, the content setting of the AI skills dimension must not only fit the roles of learners, but also fully consider the needs of specific roles in specific contexts, such as AI system-design skills for college students' practical exploration scenarios and AI teaching skills for university teachers' instruction. In this process, university libraries should fully leverage the role of AIGC to provide customized and intelligent educational support for teachers and students.

4 Conclusion

At present, the academic community has not yet reached a unified definition of AI literacy. Although universities with high-quality resources in China and abroad have taken the lead in carrying out preliminary explorations of AI literacy education and have achieved certain results, the boundaries and relationships among concepts such as AI literacy, information literacy, and metaliteracy remain unclear. At present, AI literacy education is still at an initial stage in which it is carried out according to practical needs. Before the position of AI literacy within the integrated literacy system is clarified, educational models centered on knowledge and application, as well as educational models centered on ethics and values, will both find it difficult to avoid the problem of limited perspective. The subjects of AI literacy education should incorporate the construction of the AI literacy education system into the broader construction of a literacy system for the digital-intelligent era. Guided by systems thinking and

combined with advanced digital-intelligent technologies, they should explore the goals, forms, and content of AI literacy education and promote personalized educational activities.

its popularization, as well as the alignment of educational actors' etic and emic perspectives, thereby improving the educational-content system and truly realizing the educational ideals of "teaching students in accordance with their aptitude" and "lifelong learning."

References

[1] Xinhua News Agency. The CPC Central Committee and the State Council issue the *Outline of the Plan for Building China into an Education Powerhouse (2024-2035)* [EB/OL]. [2025-08-21]. https://www.gov.cn/zhengce/202501/content_6999913.htm.

[2] Huang Ronghuai. Integrating large artificial-intelligence models into education: conceptual transformation, reshaping of forms, and key measures [J]. *People's Forum · Academic Frontiers*, 2024(14): 23-30.

[3] OECD. Survey of adult skills (PIAAC) [EB/OL]. [2025-09-23]. https://www.oecd.org/en/about/programmes

[4] Zhong Baichang, Liu Xiaofan, Yang Minghuan. What is artificial intelligence literacy: essence, composition, and evaluation system [J]. *Journal of East China Normal University (Educational Sciences)*, 2024(1): 71-84.

[5] Cai Yingchun, Zhang Jingbei, Yu Chenlin, et al. Artificial intelligence literacy in the era of digital intelligence: connotations, framework, and implementation pathways [J]. *Journal of Library Science in China*, 2024(4): 71-84.

[6] Pinski M, Hofmann T, Benlian A. AI literacy for the top management: an upper echelons perspective on corporate AI orientation and implementation ability [J]. *Electronic Markets*, 2024(1): 24.

[7] Xiao J Y, Alibakhshi G, Zamanpour A, et al. How AI literacy affects students' educational attainment in online learning: testing a structural equation model in higher education context [J]. *International Review of Research in Open and Distributed Learning*, 2024(3): 179-198.

[8] Ngo T N, Hastie D. Artificial intelligence for academic purposes (AIAP): integrating AI literacy into an EAP module [J]. *English for Specific Purposes*, 2025(1): 20-38.

[9] Chee H, Ahn S, Lee J. A competency framework for AI literacy: variations by different learner groups and an implied learning pathway [J]. *British Journal of Educational Technology*, 2025(5): 2146-2182.

[10] Bian Miao. Practices and pathways of AI literacy education in university libraries [J]. *Library Work and Study*, 2025(2): 89-96, 112.

[11] Li Chunqiu, Zhao Shengnan, Zhang Meng, et al. Research on strategies for cultivating AI literacy in university libraries from the perspective of activity

theory [J]. *Research on Library Science*, 2025(4): 103–115.

[12] Shi Yu, Jing Yihong. The concept, framework, and education of artificial intelligence literacy [J]. *Library Tribune*, 2024(11): 90–100.

[13] Chen Shanshan, Gong Yue, Wang Xiaoguang. The framework and implications of artificial intelligence literacy education in UK universities [J]. *Library Tribune*, 2025(9): 83–92.

[14] Huang Ruhua, Shi Leyi, Wu Yingqiang, et al. Construction of a content framework for artificial intelligence literacy education in China from a global perspective [J]. *Documentation, Information & Knowledge*, 2024(3): 27–37.

[15] Yan Qiujuan, Li Xiaoshan. Research on integrated "information + AI" literacy in the era of digital intelligence [J]. *Library Theory and Practice*, 2024(6): 81–88.

[16] Mackey T P, Jacobson T E. Reframing information literacy as a metaliteracy [J]. *College & Research Libraries*, 2011(1): 62–78.

[17] Wu Fei, Chen Jingyuan, Jiang Quanyuan. Empowerment through digital intelligence: promoting the transformation of the artificial intelligence textbook system into a teaching system [J]. *China Higher Education*, 2025(11): 26–30.

[18] Lo L S. Evaluating AI literacy in academic libraries: a survey study with a focus on U.S. employees [J]. *College & Research Libraries*, 2024(5): 635–668.

[19] Du Jin. Research on the practices of artificial intelligence literacy education services in U.S. university libraries and their implications [J]. *Library and Information Service*, 2025(14): 135–148.

[20] Du Xiuxiu, Xu Bowen, Chu Jiewang. Research on generative artificial-intelligence resource navigation in libraries of top U.S. research universities [J]. *Library Journal*, 2025(3): 68–81.

[21] Binkley M, Erstad O, Herman J, et al. Defining twenty-first century skills [M]//Griffin P, McGaw B, Care E. *Assessment and teaching of 21st century skills*. Dordrecht: Springer, 2012: 17–66.

[22] Yang Feng, Zhu Li, Hu Lin. Constructing an integrated model of artificial intelligence literacy education: response implications from foreign university libraries [J]. *Library Tribune*, 2025(4): 139–148.

[23] Xu Junhua, Wen Xinger. Exploration and countermeasures for AI literacy education in the libraries of 147 "Double First-Class" universities in the digital-intelligence era [J]. *Library*, 2025(7): 61–70.

[24] Xia Ye. Research on a new-quality talent cultivation model for university libraries based on artificial intelligence literacy [J]. *Journal of Library Science*, 2025(6): 10–13.

[25] Luo Guofeng, Liu Qingsheng, Yi Tong. Research on the content and strategies of artificial intelligence literacy education in university libraries from the

perspective of cultivating new-quality talent [J]. *Research on Library Science*, 2025(1): 85-93.

[26] Walter Y. Embracing the future of artificial intelligence in classroom: the relevance of AI literacy, prompt engineering, and critical thinking in modern education [J]. *International Journal of Educational Technology in Higher Education*, 2024(1): 15.

[27] Li Rui, Liang Yuqian, Du Panpan, et al. Research on differences in the development of generative artificial intelligence literacy among students at different types of universities [J]. *Open Education Research*, 2025(4): 85-96.

[28] Kim J, Lee H, Cho Y H. Learning design to support student-AI collaboration: perspectives of leading teachers for AI in education [J]. *Education and Information Technologies*, 2022(5): 6069-6104.

[29] Kim J. Leading teachers' perspective on teacher-AI collaboration in education [J]. *Education and Information Technologies*, 2024(7): 8693-8724.

[30] Qiao Xuefeng. From tool empowerment to intelligent collaboration: transformation of educational models driven by generative artificial intelligence [J]. *Nanjing Journal of Social Sciences*, 2025(1): 126-134.

[31] Li Ling, Han Jin, Xia Man. Improving teachers'artificial intelligence literacy within the "Ronghui" education matrix [J]. *People' s Education*, 2024(24): 23-26.

[32] Lin Xiaohong, Zhong Baichang. Comprehensive-quality evaluation empowered by large models for artificial intelligence education: concepts, models, and prospects [J]. *Open Education Research*, 2024(6): 72-78.

[33] Library of the University of Science and Technology of China. AI literacy and skills enhancement database [EB/OL]. [2025-09-24]. https://lib.ustc.edu.cn/电子资源/ai 素养与技能提升数据库/.

[34] Wuhan University Library. Artificial intelligence resource navigation [EB/OL]. [2025-09-16]. https://oldwww.lib.whu.edu.cn/webfile/category/AI_navigator.html.

[35] Ministry of Education of the People' s Republic of China. Educational attainment and professional-technical positions of full-time teachers in higher education institutions (total) [EB/OL]. [2025-09-08]. http://www.moe.gov.cn/jyb_sjzl/moe_560/2022/gedi/202401/t20240115_1100380.html.

[36] Chen Jianlong, Shao Yan, Liu Wanguo, et al. A compass report on the development of university library librarian teams [J]. *Journal of Academic Libraries*, 2023(1): 28-36.

[37] Zhang Miao. A survey of AI literacy education practices in Chinese university libraries [J]. *Library and Information Service*, 2025(18): 98-108.

[38] Fan Yafang, Li Chen, Wang Qingqing, et al. Construction and service practice of future learning centers in university libraries: a case study of the Library

of the University of Science and Technology of China [J]. *Journal of Academic Libraries*, 202

[40] Liu Dawei. The practical path of generative artificial intelligence in assisting teachers' teaching [J]. *Teaching and Management*, 2025(20): 29-33.

[41] Zhou Hongyu, Yu Jiangtao. Teachers' work in the era toward general artificial intelligence: challenges and ways forward [J]. *e-Education Research*, 2025(7): 5-12.

[42] Anhui Smart Education Platform. Professor Zhou Qulan of Xi' an Jiaotong University visits the Teacher Workshop [EB/OL]. [2025-08-09]. https://ehuixue.cn/index/news/detail?id=597.

[43] Harvard Library. Artificial intelligence for research and scholarship [EB/OL]. [2025-09-23]. https://guides.library.harvard.edu/c.php?g=1330621&p=10034696.

[44] Purdue University Libraries. Artificial intelligence (AI) [EB/OL]. [2025-09-24]. https://guides.lib.purdue.edu/ai.

[45] Tsinghua University Library. Notice on the trial operation of the Tsinghua University AI+ Workshop website [EB/OL]. [2025-09-05]. https://lib.tsinghua.edu.cn/info/1073/7328.htm.

[46] Sichuan University Library. Schedule of Mingyuan Academic Lectures for the spring-summer semester of 2025 [EB/OL]. [2025-09-05]. https://lib.scu.edu.cn/node/129148.

[47] Southern University of Science and Technology Library. Challenges and responses in information literacy education in the AI era: expert dialogue with librarians [EB/OL]. [2025-08-09]. https://lib.sustech.edu.cn/2025/0320/c58a7945/page.htm.

[48] Xu Jing, Dong Xiaoju, Li Xinwan. Reflections and practice on the construction of future learning centers in university libraries [J]. *Journal of Academic Libraries*, 2022(4): 12-18.

[49] Sun Peng, Wang Yu, Liu Xinyong. Construction of future learning centers in university libraries: origins, current status, difficulties, and paths [J]. *Library and Information Service*, 2024(6): 12-20.

[50] Krathwohl D R. A revision of Bloom' s taxonomy: an overview [J]. *Theory Into Practice*, 2002(4): 212-218.

[51] Li Peng, Cheng Chuansheng, Ma Sai, et al. Construction of an AI literacy cultivation framework for university librarians based on Bloom's taxonomy [J/OL]. *Library Journal*, 1-14 [2025-09-01]. https://link.cnki.net/urlid/31.1108.G2.20250724.1825.002.

[52] UNESCO. AI competency framework for teachers [EB/OL]. [2025-08-22]. https://unesdoc.unesco.org/ark:/48223/pf0000391104.

[53] UNESCO. AI competency framework for students [EB/OL]. [2025-08-22]. https://unesdoc.unesco.org/ark:/48223/pf0000391105.

[54] Wu Junming, Wu Min. Why should scientific concepts be emphasized? Reflections on scientific concepts and education in scientific concepts, Part I [J]. *Chemistry Teaching*, 2014(4): 3-6, 13.

[55] Baer A. Unpacking predominant narratives about Generative AI and education: a starting point for teaching critical AI literacy and imagining better futures [J]. *Library Trends*, 2025(3): 141-159.

[56] Feng Yonggang, Chen Ying. The "changes" and "constants" of teachers' roles in the era of smart education [J]. *China Educational Technology*, 2021(4): 8-15.

[57] Yang Junfeng, Chu Juan. Ethical risks and normative principles in the educational application of artificial intelligence [J]. *Journal of Chinese Society of Education*, 2024(11): 21-27.

[58] Zou Yu, Zhang Xiaodong. The rise of intelligence, artificial intelligence, and the information paradigm [J]. *Studies in Dialectics of Nature*, 2024(8): 56-65.

[59] Shen Shusheng. Problem thinking: the meta-literacy of new-quality learning ability [J]. *Journal of Soochow University (Educational Science Edition)*, 2025(1): 63-72.

[60] Geng Fengji, Liu Jiaxin, Hao Xiaoxin. Overlap and differentiation between computational thinking and creative thinking: evidence from brain science [J]. *Modern Distance Education Research*, 2025(3): 95-101.

[61] Chen Zan' an, Li Ningning, Yin Yiqing, et al. From algorithms to participatory construction of computational models: the connotative evolution and competency structure of computational thinking from the perspective of human-computer collaboration [J]. *Journal of Distance Education*, 2021(4): 34-41.

[62] Zhu Cailan, Zhou Ming, Li Yi, et al. Construction of a computational-thinking framework aimed at characterizing human intrinsic qualities [J]. *e-Education Research*, 2024(4): 67-73, 87.

[63] Peng Lan. How to realize "coexistence with algorithms": algorithm literacy and its two major dimensions in an algorithmic society [J]. *Exploration and Free Views*, 2021(3): 13-15, 2.

[64] Chen Xia. Research on strategies for improving librarians'intelligent literacy [J]. *Library Work and Study*, 2022(10): 47-53.

Research on the Construction of an AI Literacy Education Content System in University Libraries Driven by Digital Intelligence

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Abstract Constructing an effective AI literacy education content system is crucial for enhancing the AI literacy of university teachers and students. Through a literature review, this study analyzes the connotation of AI literacy and AI literacy education in university libraries, along with existing practices, to extract the requisite educational content. With dialectical reference to Bloom' s Taxonomy of Educational Objectives, an AI literacy education content system for university libraries is constructed. This system comprises four main categories: concept, knowledge, thinking, and skill. Specifically, the concept category includes ethics and values; the knowledge category covers basic knowledge and technical systems; the thinking category comprises problem-solving thinking and computational thinking; and the skills category contains tool-using ability and risk-response ability.

Keywords AI; AI literacy education; Digital intelligence-driven; University libraries

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