

Framework Construction and Enhancement Pathways of Artificial Intelligence Literacy for Liberal Arts Teachers in Higher Education under the Background of New Liberal Arts Initiative

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Abstract: Against the backdrop of the profound transformations in disciplinary development logic and talent cultivation paradigms driven by the construction of New Liberal Arts, university liberal arts teachers have been reshaped into compound talent cultivators, learning process enablers, and social value constructors. Their AI literacy directly determines the depth and effectiveness of New Liberal Arts construction. To address this, based on a systematic review of existing research, this paper clearly defines the core connotation of AI literacy for university liberal arts teachers, systematically analyzes its constituent elements, and constructs a two-level indicator system framework. Meanwhile, considering the practical challenges faced by these teachers in improving AI literacy—such as insufficient knowledge and skill reserves, difficulties in integrating teaching content with AI technologies, and inadequate support from practical guarantee conditions—this paper further proposes a trinity improvement pathway of "philosophy guidance- competence cultivation - ecological support." The research conclusions provide theoretical guidance and practical references for the systematic improvement of teachers' AI literacy and the realization of the New Liberal Arts construction goal of "technology empowering liberal arts innovation and liberal arts guiding technology for good."

Keywords: New Liberal Arts Construction; AI Literacy; Technology-Empowered Teaching; University Liberal Arts Teachers; Construction of Literacy Framework

1. Introduction

1.1 Role Reconstruction of University Liberal Arts Teachers in the Context of New Liberal Arts

The "newness" of New Liberal Arts embodies profound transformations in disciplinary development logic and talent cultivation paradigms, providing a core guideline for the role reconstruction of university liberal arts teachers. Academic interpretations of its connotation present a multi-dimensional perspective: Yu [1] argues that the essence of New Liberal Arts lies in the systematic innovation of traditional liberal arts, with the core being to break disciplinary barriers, promote in-depth interdisciplinary integration, and thereby construct a new knowledge system and knowledge structure adapted to the needs of the times. Quan et al [2]. further supplement that New Liberal Arts is problem-oriented, emphasizing the integrated application and innovative practice of interdisciplinary research methods. Zhang [3] focuses on the core goal of talent cultivation, pointing out that New Liberal Arts should strive to cultivate comprehensive talents capable of crossing disciplinary boundaries and addressing complex issues.

Overall, New Liberal Arts imposes threefold requirements on the role of university teachers: In terms of talent cultivation goals, teachers need to transform from disseminators of professional knowledge to cultivators of compound talents. This means that teachers must not only master the core knowledge system of their own disciplines but also possess the ability to integrate interdisciplinary knowledge, guide students to form systematic thinking through the integration of liberal arts and sciences, and support students' growth. Secondly, in terms of ability cultivation pathways, teachers should shift from one-way knowledge inculcators to enablers of the

learning process. Emphasizing the cultivation of critical thinking and innovative abilities, New Liberal Arts requires teachers to adopt inquiry-based teaching, project-based learning, situational simulation, and other methods to stimulate students' motivation for independent learning. Finally, in terms of value guidance orientation, teachers need to transform from defenders of disciplinary knowledge to constructors of social values. Highlighting the social responsibility attribute of humanities and social sciences research, New Liberal Arts requires teachers to integrate value judgments and ethical reasoning into the teaching process, guide students to connect theoretical knowledge with practical needs through service learning, community participation, and other practical pathways, and enhance their problem-solving abilities. It is evident that university liberal arts teachers should proactively embrace the wave of liberal arts reform and reshape their roles with a positive attitude. This is not only a requirement for teachers' personal professional development but also a sacred mission entrusted by the times. Only when teachers successfully achieve role transformation can they fully release the core effectiveness of education in the educational practice of New Liberal Arts and cultivate high-quality liberal arts talents with interdisciplinary perspectives, innovative abilities, and adaptability to the times.

1.2 Requirements of New Liberal Arts Construction for University Liberal Arts Teachers' AI Literacy

As the core subject of educational practice, the cultivation and improvement of university liberal arts teachers' AI literacy directly determine the depth and effectiveness of New Liberal Arts construction. Based on the talent cultivation goals and development logic of New Liberal Arts, the core requirements for teachers' AI literacy are summarized as follows:

1.2.1 Teaching dimension

The construction of New Liberal Arts promotes the transformation of teaching from the traditional orientation of "knowledge transmission" to the core goal of "ability cultivation." This transformation requires university liberal arts teachers to possess the ability of teaching reconstruction through human-machine collaboration. UNESCO's *AI Competency Framework for Teachers* has clearly identified AI literacy as a core

competency for teachers [4], emphasizing the teacher's role as a designer in intelligent education. Specifically, first, teachers need to master the ability to adapt and apply AI tools, select appropriate tools based on the humanistic characteristics and teaching needs of liberal arts courses, empower the simplification of repetitive teaching tasks through technology, and focus on guiding and cultivating students' higher-order thinking. Secondly, they need to possess the ability to design the integration of AI and disciplinary teaching, organically integrate AI-related knowledge into the curriculum system, and realize the coordinated development of students' technical literacy and core disciplinary literacy. Thirdly, they need to promote personalized teaching practice relying on AI technology, accurately analyze students' learning characteristics with intelligent diagnostic tools, identify knowledge blind spots and learning preferences, and thereby implement the educational philosophy and requirements of "teaching students in accordance with their aptitude" in New Liberal Arts.

1.2.2 Research dimension

The construction of New Liberal Arts has broken the disciplinary barriers of traditional liberal arts, and addressing complex social reality issues from an interdisciplinary perspective has become the core research orientation. Artificial intelligence technology is becoming a key support for breaking through traditional research paradigms and empowering scientific research innovation. This requires university liberal arts teachers to possess scientific research innovation capabilities empowered by digital intelligence. Specifically, first, they need to have the ability to apply AI tools in scientific research: expand research horizons and exploration boundaries relying on digital intelligence technology, address pain points such as narrow data acquisition channels and low analysis efficiency in traditional liberal arts research, and significantly improve the accuracy of the research process and the timeliness of achievement output through the professional application of AI tools. Secondly, they need to possess the innovative integration ability of interdisciplinary research: establish an interdisciplinary research mindset, based on cutting-edge issues in their own disciplines and practical social needs, proactively explore the entry points for in-depth integration of

technology and disciplines, and cultivate new academic growth points and research directions through the organic integration of cross-domain knowledge systems and research methods. Thirdly, they need to possess the ability to adhere to research ethics and control risks: in scientific research practice, strictly verify the authenticity of research data generated or assisted by AI, abide by ethical norms throughout the entire process of data collection, use, and sharing, ensure the technical innovation and scientificity of research, and uphold the value bottom line and ethical principles of humanities and social sciences research.

1.2.3 Talent cultivation dimension

Teachers' ability of value guidance of "technology for good" is the key to anchoring the direction of New Liberal Arts talent cultivation and upholding the humanistic foundation. First, teachers need to take the initiative to assume the core guiding responsibility of AI ethics education, and deeply integrate the concept of "technology for good" into the entire process of talent cultivation such as classroom teaching and practical activities. Through the analysis of concrete technical application scenarios and discussions on typical cases, guide students to penetrate the surface of technology, accurately recognize the instrumental nature of AI, establish a correct understanding that "technology serves people," avoid blind technological worship, and alleviate unnecessary technological anxiety. Secondly, focus on the systematic cultivation of students' AI collaboration capabilities, and guide students to proficiently master human-machine collaborative scientific research methods and practical pathways through the design of targeted practical training projects, helping them achieve efficient linkage with intelligent tools in academic inquiry, practical operations, and other scenarios, and enhance their comprehensive ability to solve complex problems. Finally, strengthen the shaping of AI critical thinking under value guidance, and cultivate students' abilities of identification and judgment, logical verification, and value review of AI-generated content through case analysis, traceability of intelligent output results, and multi-dimensional comparative analysis. This requires teachers themselves to first possess the literacy of technical cognition and value adherence, which can not only guide students to actively adapt to the development trend of the intelligent era but

also safeguard the humanistic core of liberal arts education, and ultimately cultivate compound New Liberal Arts talents who "understand technology and uphold bottom lines."

In summary, the requirements for university teachers' AI literacy under the background of New Liberal Arts construction are explained from the perspectives of "how to teach," "how to research," and "how to cultivate people." Only by comprehensively improving their AI literacy adapted to the characteristics of New Liberal Arts can teachers effectively address the practical pain point of disconnection between humanities and technology, realize the construction goal of New Liberal Arts of "technology empowering liberal arts innovation and liberal arts guiding technology for good," and inject lasting impetus into the digital transformation and high-quality development of higher education.

2. Composition of AI Literacy for University Liberal Arts Teachers

2.1 Connotation of AI Literacy for University Liberal Arts Teachers

Against the background of the comprehensive penetration of artificial intelligence technology, AI literacy has become a core criterion for measuring an individual's ability to adapt to the development of the digital intelligence era, rapidly attracting great attention from the academic community at home and abroad. Currently, relevant research focuses on two major issues: concept definition and connotation analysis. In terms of concept definition, scholars have formed diverse interpretations based on different research perspectives. For example, Kandlhofer et al [5] defined AI literacy as the sum of a series of abilities and qualities required to adapt to the artificial intelligence era from the perspective of the essence of ability. Dai et al [6] focused on the application dimension and defined it as the core ability to acquire and apply AI-related knowledge and skills. In terms of connotation analysis, research has shown an evolutionary characteristic of expanding from a single cognitive dimension to multiple dimensions: early research mostly focused on explicit elements such as technical cognition and tool application; with the deepening of research, implicit dimensions such as ethical judgment and emotional attitude have gradually been included in the research scope. For

example, Li et al [7] proposed that the connotation of AI literacy should not be limited to the cognitive field but also include social dimensions such as ethical norms and emotional identity.

With the in-depth penetration and integrated application of AI technology in the field of education, the process of educational digital transformation has continued to accelerate, which has also put forward higher requirements for teachers. In fact, only when teachers have solid AI literacy can they fully release the core value of technology empowering education; otherwise, it will be difficult to effectively guide students to cope with the technical competition brought by the intelligent era [8]. To this end, UNESCO proposed a three-dimensional framework of "knowledge - skills - ethics" and released the *Guidance for Generative Artificial Intelligence in Education and Research* [9]. The AI Competency Framework for Teachers (2024) clearly states that teachers should possess five core competencies: human-centered AI concept, AI ethical awareness, basic AI knowledge, AI teaching ability, and AI professional development. It also divides teachers of different ability levels into progressive dimensions of "acquisition - deepening - creation," forming a two-dimensional AI competency matrix. The academic community has formed a multi-dimensional consensus on the connotation of teachers' AI literacy, generally believing that it is a comprehensive ability covering multiple levels such as knowledge, skills, and ethics. Younis [10] et al. pointed out that teachers' AI literacy refers to a series of skills to understand, use, and integrate different AI technologies to empower teaching methods, promote students' understanding, and improve educational outcomes. Zhang and Diao [11] believed that teachers' AI literacy means teachers' ability to understand and use AI technology in the field of education, which includes a basic understanding of AI technology, the ability to apply AI technology to promote teaching and learning, and the ability to evaluate and criticize the educational application of AI. Luo Meina et al. [12] proposed that teachers' AI literacy is an interdisciplinary and multi-dimensional compound literacy, and teachers need to master AI-related basic knowledge, skills, and the ability to integrate AI technology into the teaching process. Long et al. [13] defined teachers' AI literacy as the basic

ability to understand, create, use, apply, and evaluate AI tools in educational environments. Delcker et al. [14] proposed that based on the human-machine collaborative teaching scenario, teachers' AI literacy is the literacy that teachers should possess when using AI tools, including three dimensions: AI knowledge, AI skills, and AI attitude and ethics. Li et al. [15] focused on university teachers and defined it as the professional literacy to be competent for the functions of teaching, scientific research, social service, and cultural inheritance in the intelligent era, which is specifically manifested in five dimensions: the concept of educating people in the intelligent era, basic knowledge of intelligent education, human-machine collaborative teaching ability, scientific research innovation empowered by digital intelligence, and the humanistic value of technology for good.

The above research not only provides a practical path for teachers to improve their teaching and research capabilities but also lays a theoretical foundation for clarifying the connotation and composition dimensions of AI literacy for university liberal arts teachers. In the current era of AI-driven educational transformation, human-machine collaboration has become the core interaction mode in the field of education. Under the construction of New Liberal Arts, university teachers shoulder multiple responsibilities of talent cultivation, social service, and scientific research innovation. The definition of their AI literacy needs to establish dual anchors: on the one hand, anchor the general environment of digital intelligent higher education and respond to the reshaping of the form of humanities and social sciences education by technological innovation; on the other hand, closely link to the professional attributes of liberal arts teachers and conform to the unique laws of humanities and social sciences teaching and scientific research. Based on this, this paper defines the AI literacy of university liberal arts teachers as follows: In the digital intelligent educational ecology of the artificial intelligence era, with human-machine collaboration as the core interaction mode, university liberal arts teachers must possess compound abilities to efficiently fulfill the professional missions of talent cultivation, scientific research innovation, and social service in the process of carrying out teaching innovation, scientific research exploration, and

other practical activities with the help of artificial intelligence educational application products. These abilities include four core dimensions: AI thinking, AI knowledge, AI application skills, and AI attitude.

2.2 Constituent Elements of AI Literacy for University Liberal Arts Teachers

To promote the digital transformation of higher education and consolidate the talent support for New Liberal Arts construction, systematically improving the AI literacy of university liberal arts teachers has become a key task that needs to be promoted urgently. Based on the connotation and requirements of university liberal arts teachers' AI literacy, and synthesizing the discussions and opinions of senior experts in the fields of management, education, and other humanities and social sciences, the core elements of liberal arts teachers' AI literacy are summarized as follows:

2.2.1 AI thinking

AI thinking is a core thinking paradigm formed by teachers after fully recognizing the innovations and model transformations brought by AI technology to education and teaching, and proactively cultivating AI application capabilities and human-machine collaboration awareness [16]. Combined with the practical scenario of "artificial intelligence + higher education," this thinking can be further decomposed into four core dimensions: innovative thinking, data thinking, systematic thinking, and critical thinking. Among them, innovative thinking focuses on the willingness to accept new technologies and the spirit of exploration, advocating that liberal arts teachers break through traditional teaching frameworks, proactively explore the integration points of AI technology and disciplinary teaching, solve pain points in teaching practice, and continuously stimulate the vitality of educational and teaching innovation. Data thinking emphasizes the ability to perceive, analyze, and apply educational and teaching data, requiring teachers to proficiently master basic methods of data collection, collation, and analysis, and optimize teaching plans and accurately locate students' needs with data support. Systematic thinking guides liberal arts teachers to regard education as a complex system in which technology, teaching, management, and other elements interact synergistically. In the practice of integrating AI technology, attention should be paid to the

adaptability and linkage effect among various elements. Critical thinking is a dialectical judgment ability based on humanistic professional accumulation and educational practice experience, requiring teachers to adhere to an independent professional stance and maintain a clear understanding of AI output results without blind obedience.

2.2.2 AI knowledge

Artificial intelligence has become an important driving force for the innovative development of higher education. Only mastering basic AI theories is difficult to meet the practical needs of the in-depth integration of technology and education. Liberal arts teachers also need to possess interdisciplinary integration thinking and cutting-edge technology tracking capabilities [17]. According to the relevant theoretical methods of knowledge classification, the AI knowledge system can be divided into three modules: basic knowledge, interdisciplinary knowledge, and cutting-edge technology. Among them, basic knowledge focuses on core content highly related to artificial intelligence, including computer systems, statistical principles, and the development of artificial intelligence. Interdisciplinary knowledge mainly includes basic principles and research methods in fields such as psychology, sociology, and education. Cutting-edge technology covers cutting-edge theories and practical methods such as blockchain applications and deep learning algorithms.

2.2.3 AI application skills

AI application skills focus on the practical application of intelligent tools in higher education scenarios, requiring teachers to be familiar with specific technologies corresponding to professional courses and understand the theories and norms of integrating AI technology with traditional teaching technologies [18]. Combined with the connotation of artificial intelligence skills, it can be divided into four modules: first, AI technology application ability, emphasizing the accurate selection of suitable AI tools or services for specific teaching or scientific research problems to achieve efficient docking between technical tools and educational needs. Second, information processing ability, improving information processing efficiency relying on AI tools, requiring teachers to have the ability to quickly retrieve, systematically

organize, and in-depth analyze curriculum resources or academic information to provide solid data support for teaching and scientific research. Third, teaching technology integration ability, advocating teachers to optimize teaching methods such as AI technology to upgrade classroom teaching effects and students' learning experience and promote the innovation of teaching models. Fourth, lifelong learning ability, focusing on mastering methods and skills for continuous learning and self-improvement with the support of AI technology, improving the knowledge system and making up for ability shortcomings.

2.2.4 AI Attitude

In the research on the AI literacy framework, many scholars emphasize the importance of AI morality, AI ethics, and AI attitude. This highlights the safety norms and moral principles that must be observed in the process of technology use [19], and also determines the final cognitive level of AI literacy [20]. Combined with the goals of higher education, according to the definition of artificial intelligence attitude and the artificial intelligence ethical guidelines and suggestions proposed by relevant organizations, the AI attitude is subdivided into the following five dimensions: first, AI ethics and morality, covering key content such as the core ethical principles of artificial intelligence technology and the analysis of typical moral risk cases. Through the analysis of concrete cases, it helps teachers accurately recognize the potential ethical risks in the application of AI technology and master scientific response ideas and solutions. Second, collaborative awareness, advocating teachers to strengthen their collaborative ability with technology developers, interdisciplinary teachers, and other subjects through practical forms such as building and sharing knowledge resource libraries and carrying out cross-domain technical seminars. Third, privacy protection awareness, focusing on the whole life cycle management of data, including key nodes such as compliance review during data collection, security protection during storage, standardized operation during processing, and permission control during sharing, helping teachers clarify the boundary of data security. Fourth, cross-domain adaptability, which mainly refers to teachers' environmental adaptability and dynamic resilience in interdisciplinary and cross-domain AI

integration application scenarios, supporting them to calmly respond to future challenges and diverse needs. Fifth, risk assessment and judgment ability, requiring teachers to clearly recognize the unpredictability and uncontrollable risks that may be caused by the iteration of AI technology, clarify the potential threats of such risks to information security and personal privacy, and then form a normalized risk prevention mindset.

2.3 Framework System of AI Literacy for University Liberal Arts Teachers

To promote the practice of cultivating AI literacy among New Liberal Arts teachers and improve the effectiveness of cultivation under the background of the integrated development of "artificial intelligence + higher education," this study systematically summarizes the key dimensions and core elements of AI literacy based on an in-depth deconstruction of the requirements for teachers' abilities in New Liberal Arts construction, and then constructs a scientific and adaptive framework system of AI literacy for New Liberal Arts teachers, as shown in Table 1.

3. Challenges Faced by Liberal Arts Teachers in the Artificial Intelligence Era

The rapid development of artificial intelligence technology is profoundly driving the digital transformation of the global education field. At the same time, this technological change has brought many new challenges to the educational and teaching practice of university liberal arts teachers.

3.1 Insufficient Reserve of AI Knowledge and Skills

Against the background of the accelerated empowerment of education by new technologies, technological adaptability has become a common challenge for teachers. Due to the inherent differences in disciplinary characteristics, knowledge structures, and teaching scenarios, this problem is more prominent among liberal arts teachers. From the perspective of knowledge structure, the professional accumulation of liberal arts teachers mostly focuses on the theoretical system of humanities and social sciences, with insufficient technical cognition such as algorithm logic and data principles. However, the application of generative AI, data platforms,

etc., requires a certain degree of technical understanding ability as a prerequisite. This cognitive gap makes it necessary for liberal arts teachers to invest a lot of extra time to make up for the knowledge gap when contacting new technologies, so as to gradually achieve the entry and adaptation of technical application. From the perspective of teaching practice, insufficient reserve of knowledge and skills directly restricts the improvement of teaching quality. Due to the limited cognition of AI technology, it is difficult for liberal arts teachers to clearly explain the specific value and application path of artificial intelligence for

learning in their own disciplines from the multi-dimensional perspective of the integration of technology and profession. This limitation not only makes it impossible for teachers to help students construct a compound knowledge framework of "AI + liberal arts" and difficult to cultivate students' practical ability to solve professional problems using technology but also deviates from the educational goal of the coordinated development of humanistic literacy and technical ability in New Liberal Arts, restricting the comprehensive improvement of students' comprehensive quality and the deepening of teaching achievements.

Table 1. Framework System of AI Literacy for University Liberal Arts Teachers

Dimensions	Secondary Indicators	Explanation of Secondary Indicators
AI Thinking	Innovative Thinking	Possess the thinking ability to innovate teaching methods, optimize teaching tools, and enrich teaching content using AI technology.
	Data Thinking	Possess the thinking ability to optimize teaching strategies, match students' needs, and realize personalized teaching by applying various data.
	Systematic Thinking	Possess the thinking ability to coordinate the integration of AI technology and teaching systems to achieve the synergistic linkage of multiple elements.
	Critical Thinking	Possess the thinking ability to conduct objective analysis, rational judgment, and scientific evaluation of AI technology.
AI Knowledge	Basic Knowledge	Possess basic concepts, core terms, and fundamental principles of AI, and understand knowledge related to AI educational application scenarios and ethical norms.
	Interdisciplinary Knowledge	Possess interdisciplinary knowledge of AI integrated with education, psychology, sociology, and other disciplines.
	Cutting-edge Technology	Understand the technical trends related to teaching, such as blockchain, virtual-real bionics, and spatial computing.
AI Application Skills	Technology Application	Possess the ability to operate AI teaching systems, platforms, and tools to carry out teaching and scientific research.
	Information Acquisition	Possess the ability to retrieve, screen, and integrate disciplinary teaching resources and scientific research literature using AI tools.
	Integration of Teaching and Technology	Possess the ability to design teaching activities, organize classroom interactions, and evaluate learning effects in combination with AI tools.
	Lifelong Learning	Possess the ability to continuously supplement knowledge, make up for ability shortcomings, and practice the ideal of lifelong learning relying on AI resources.
AI Attitude	Ethics and Morality	Abide by the ethical and moral norms of AI technology application, consciously avoid the risk of technology abuse, and uphold the humanistic bottom line of education.
	Collaborative Cooperation	Possess the awareness and willingness to carry out AI teaching collaboration across disciplines and organizations, and co-construct and share high-quality educational resources.
	Privacy Protection	Attach importance to the security and privacy of teaching data throughout its life cycle, and strictly abide by the norms of compliant data use.
	Cross-domain	Possess the ability to flexibly adjust AI teaching models according to the

	Adaptability	characteristics of the major to ensure the adaptation of technology and disciplinary teaching.
	Risk Assessment and Judgment	Clearly recognize the limitations of AI technology, do not over-rely on AI output, and possess the awareness of predicting and preventing potential risks of technology application.

3.2 Adaptability Dilemma in the Integration of Teaching Content and AI Technology

Liberal arts teaching is characterized by emphasizing speculation, emotion, and humanistic experience, while some AI technologies imply a design logic of prioritizing efficiency and standardized output. The difference in their inherent attributes directly constitutes an obstacle to the integration of technology and teaching content. On the one hand, the functions of AI tools are disconnected from the personalized teaching needs of liberal arts, making it difficult to support the in-depth integration of teaching content. The research and development of current mainstream AI educational tools are mostly adapted to scenarios such as knowledge point sorting and standardized exercise generation in science, and their functional design focuses on data processing efficiency and result uniformity. However, the core needs of liberal arts teaching are concentrated in relatively subjective links such as case expansion and situational scenario creation. The support of existing AI tools for such needs is obviously insufficient, making it difficult to match the personalized and open characteristics of liberal arts teaching.

On the other hand, liberal arts teachers lack reference paradigms for technology integration. Science teachers can quickly realize the implementation of technology and teaching through mature application scenarios such as AI experiment simulation and data visualization analysis, while the application of AI in the field of liberal arts is still in the initial stage of exploration, lacking typical teaching cases and standardized operating procedures that can be directly learned from. When trying to integrate AI technology with teaching content, liberal arts teachers not only need to bear the risk of trial and error but also need to invest extra time and energy to explore integration paths and design schemes. This makes teachers hold a cautious attitude towards the integration practice of "AI + teaching" and difficult to form a large-scale and normalized application pattern.

3.3 Insufficient Support from Practical Guarantee Conditions

From the perspective of university practice, although the policy level has clearly put forward the requirement of promoting the in-depth integration of AI and education, the resource allocation of some universities still remains at the general level, failing to provide precise support in combination with the characteristics of liberal arts teaching, directly leading to the lack of effective guarantee for the integration practice of AI and liberal arts teaching. In terms of the supply of training resources, existing AI-related training mostly focuses on the explanation of basic concepts and the operation of general tools, lacking scenario-based design and targeted guidance of "AI + liberal arts." This kind of general training is difficult to match the core teaching needs of liberal arts such as case expansion, speculative guidance, and humanistic scenario creation, leading to a common phenomenon of "disconnection between learning and application" among teachers, who cannot effectively transform training content into practical teaching ability. In terms of the construction of collaborative mechanisms, the integration of AI and liberal arts teaching is essentially an interdisciplinary practice, which requires the joint efforts of liberal arts teachers, technology developers, and educational technology experts. However, most universities have not established effective cross-domain collaborative mechanisms, making liberal arts teachers fall into the dilemma of "fighting alone" in the practice of technology integration. At the same time, the cooperation between universities and AI enterprises and scientific research institutions mostly stays at the level of technology procurement, lacking in-depth joint research and development around the pain points of liberal arts teaching, making it difficult to form solutions with strong adaptability. In terms of the evaluation and incentive system, current universities have not improved the achievement recognition standards for "AI + teaching," and the incentive for teachers' innovative application of AI in performance appraisal is insufficient. The lack of this evaluation and incentive directly weakens the initiative and enthusiasm of liberal arts teachers to participate in

technology integration practice, further restricting the advancement of integration practice.

4. Improvement Paths of AI Literacy for University Liberal Arts Teachers

In response to the above dilemmas, it is necessary to base on the core requirements of New Liberal Arts construction, construct a systematic improvement path of "philosophy guidance, competence cultivation, and ecological support," and promote the comprehensive upgrading of liberal arts teachers' AI literacy.

4.1 Philosophy Guidance: Construct a Cognitive System of "Humanities + Technology"

First, implement a hierarchical and classified cognitive guidance plan. Carry out precise cognitive guidance for liberal arts teachers of different ages and disciplinary backgrounds: for senior teachers with strong technological anxiety, intuitively show the practical value of AI technology in the field of liberal arts through "AI + liberal arts" application case sharing sessions, demonstration lectures by academic leaders, etc., to eliminate the gap in technological cognition. For young teachers, organize thematic technical ethics salons to conduct in-depth discussions on the dialectical relationship between AI technology and humanistic spirit, and guide them to establish a scientific and rational view of technology application. At the same time, carry out special training on AI ethics in combination with relevant laws and regulations to help teachers deeply recognize the ethical boundaries of technology application and strengthen their ethical awareness and sense of responsibility.

Second, build a regular interdisciplinary exchange platform. Organize regular dialogues between liberal arts teachers and computer science experts, promote the two-way penetration and in-depth integration of technical knowledge and humanistic knowledge through joint teaching and research, project research, and other forms, and help liberal arts teachers construct a cognitive chain of technical understanding, professional integration, and value sublimation.

4.2 Competence Cultivation: Implement a Scenario-based + Step-by-step Cultivation

Model

First, strengthen scenario-based practical support: establish a "AI + liberal arts" community of practice, and design practical projects around real problems in teaching and scientific research, such as organizing AI-assisted classic text interpretation teaching workshops and big data-driven social governance research salons. At the same time, learn from the experience of Beijing Forestry University, provide regular practical guidance by designing and pushing teachers' scenario-based prompt word study articles every week and carrying out practical case sharing every month.

Second, implement a step-by-step cultivation path: learn from Zhejiang University's "STEP Teacher AI Literacy Improvement Program" and Sun Yat-sen University's "four-stage progressive" training path, and construct a four-stage cultivation system of cognitive enlightenment, practical training, in-depth practice, and radiation and promotion. The cognitive enlightenment stage eliminates technological anxiety, the practical training stage carries out basic tool application training, the in-depth practice stage carries out AI curriculum development and scientific research innovation projects, and the radiation and promotion stage encourages teachers to play a demonstration and leading role, forming a sustainable ability development mechanism.

4.3 Ecological Support: Improve the Guarantee System for Collaborative Cultivation

First, improve the institutional guarantee mechanism: establish an incentive mechanism, incorporate AI teaching innovation achievements, open-source contributions, interdisciplinary cooperation projects, etc., into professional title evaluation and performance distribution to stimulate teachers' enthusiasm. Improve the ethical supervision system, establish an AI education ethics committee, and establish an ethical review process for AI applications in the field of liberal arts to provide standardized guidance for teachers' practice.

Second, optimize the resource supply structure: on the one hand, integrate the teaching application resources of general AI tools to reduce the threshold for teachers' basic application; on the other hand, jointly build vertical domain models for liberal arts with

enterprises and scientific research institutions, and develop exclusive resources adapted to the needs of liberal arts teaching and scientific research. Synchronously establish an AI literacy case database, systematically collect and sort out typical AI application cases of different liberal arts majors, refine learnable and replicable practical experience, and provide intuitive reference for teachers.

Third, build a collaborative cultivation ecology: establish an integrated management mechanism of "school coordination, college leadership, and multi-department collaboration," with the Academic Affairs Office and Teacher Development Center as the leading units, linking relevant departments such as liberal arts colleges, computer colleges, and libraries, clarifying the division of responsibilities of each subject, and jointly promoting the implementation of AI literacy cultivation work. Actively introduce high-quality social resources, establish in-depth cooperation with artificial intelligence enterprises to build teacher AI literacy development bases, and provide teachers with precise technical support, practical training, and scenario-based practical opportunities with the help of enterprises' technical advantages and practical resources. Construct a teacher-student co-construction and sharing mechanism, encourage students to actively participate in AI teaching tool testing, curriculum resource development, teaching plan optimization, and other activities, give full play to students' subjective initiative, form a virtuous cycle of teacher-student interaction and teaching mutual benefit, and help the continuous improvement of the AI literacy cultivation ecology.

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