New Ideas for University Libraries in Artificial Intelligence Literacy Education

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Abstract: With the rapid development of artificial intelligence technology, the application of artificial intelligence literacy in various fields of society is becoming increasingly widespread, and it has also had a profound impact on higher education. As an important battlefield for information literacy education, university libraries are facing an urgent need to transition from traditional information literacy education to artificial intelligence literacy education. This article aims to explore new ideas for artificial intelligence literacy education models in university libraries. By analyzing the current education status, challenges, and opportunities, a series of innovative strategies are proposed to provide theoretical support and practical guidance for the intelligent transformation of university libraries.

Keywords: University Library; Artificial Intelligence Literacy; Literacy Education; New Ideas

1. Introduction

1.1 Research Background

With the rapid advancement of technology, artificial intelligence has become a key driver of social change. This context has spurred the rise and development of AI literacy education. Influenced by technological progress, societal needs, evolving educational philosophies, and changes in the information environment, AI literacy education has become an essential part of modern education. Universities, as the cradle of talent cultivation, must keep pace with the times and enhance AI literacy education to nurture high-quality individuals who can meet the demands of future society. University libraries, as vital platforms for knowledge dissemination and literacy education, play a crucial role in the age of AI.

1.2 Research Significance

Studying the AI literacy education in university libraries is crucial for enhancing students 'AI skills, advancing the intelligent transformation of higher education, and promoting the sustainable development of library services. Through this research, libraries can better utilize AI technology to optimize processes such as collection management, reader services, and information retrieval. This not only meets the growing demand for AI knowledge among readers but also provides theoretical support and practical guidance for libraries' positioning and transformation in the AI era, ensuring their competitiveness and influence in the information service sector.

2. Artificial Intelligence Literacy Has Become a New Issue of Concern to all Countries

Artificial Intelligence (AI) has become a new focal point in international competition. The rapid development and widespread application of AI technology have injected new vitality into the global economy, placing it in a favorable position in international technological competition and enabling it to lead the future direction of technological development. The use of AI in the military is expanding, with countries increasing their investment in AI research and development to enhance their military capabilities and security. To address these challenges, countries are implementing policies and measures to boost AI R&D and talent cultivation, promoting innovation and application of AI technology. Additionally, strengthening international cooperation and exchange to jointly tackle the challenges and risks posed by AI technology is also a shared responsibility and mission for all countries.

2.1 Foreign Research on AI Literacy

Artificial intelligence (AI) literacy is highly valued globally. Governments worldwide have introduced policies to promote the development and application of AI technology, as well as to enhance the training and education of relevant talents. In 2021, UNESCO published "AI and Education: A Guide for Policymakers," emphasizing that "future learning and training systems must ensure that everyone has core AI literacy" [1]. Germany has developed and applied AI through the release of the "AI Strategy," promoting the implementation of AI literacy among citizens [2]. The U.S. government has elevated AI development to a development strategy, issuing several policy documents, including the Artificial Intelligence Research and Development Strategic Plan and Preparing for the Future of AI, which focus on supporting AI talent development and interdisciplinary research [3]. Multiple AI research institutes have been established, such as the Institute for Artificial Intelligence, to enhance cross-departmental and interdisciplinary collaboration among top AI researchers. In 2018, the American Association for the Advancement of Science (AAAS) and the Association of Computer Science Teachers (ACCT) formed an AI working group, launching AI education initiatives in primary and secondary schools, developing teaching guidelines, and promoting the formation of open teaching resource communities [4]. The UK government has released policy documents such as "Developing AI in the UK," "AI Industry Agreement," "AI Roadmap," and " AI Strategy" to strengthen the cultivation and aggregation of AI talent. AI education is being promoted in primary and secondary schools, with curriculum reforms and teacher training aimed at enhancing the AI literacy of students. We will combine higher education with artificial intelligence technology, encourage universities to set up online courses and continuous professional skills training, build Alan Turing Institutes, and establish collaborative cooperation with many universities.

2.2 Domestic Research on AI Literacy

The Chinese government places a high priority on AI literacy education, promoting the application and development of AI technology in education through the formulation and implementation of a series of policy documents. In 2017, the state released the 'New Generation Artificial Intelligence Development Plan,' integrating 'AI' into the development strategy. This plan aims to establish AI disciplines in higher education institutions and accelerate the cultivation of high-end AI talent. In March 2024, the Ministry of Education launched a special action for the integration, intelligence, and internationalization of digital education, marking the start of the 'Year of Quality Improvement' [5]. The launch included the introduction of the 'AI Learning' column on the smart education platform, which details the intelligent upgrade plan for the platform and the demonstration action for the application of large AI models in the education system. In July 2024, the Beijing Municipal Commission of Education released the 'Opinions on Deepening the Reform of Professional Courses in Higher Education Institutions to Improve College Students' AI Literacy, 'emphasizing the deepening of AI literacy education reform. It supports universities in encouraging students to engage in interdisciplinary AI learning through minor programs, micro-specializations, and dual degrees, aiming to cultivate top-notch innovative talents needed by society [6]. In August 2024, Beijing released the' Beijing Action Plan for Promoting 'AI+' (2024-2025), 'which clearly states the need to strengthen the deep integration of AI with education and promote the application of large AI models in teaching and learning. These policies aim to advance AI literacy education, enhance students' AI literacy, and nurture innovative talents suited for future societal needs. Different regions and schools may develop specific measures and implementation details based on their own circumstances.

3. Analysis of the Current Situation of Artificial Intelligence Literacy Education in University Libraries

3.1 Status Analysis

Currently, university libraries have made significant progress in AI literacy education through initiatives such as offering relevant

courses, hosting lectures and seminars, and building intelligent resource libraries. Many university libraries recognize the importance of AI literacy and actively organize various training sessions and lectures. Some university libraries have integrated AI literacy education into their professional courses, using embedded teaching methods to enhance students' AI literacy. Librarians, as providers of library services, play a crucial role in AI literacy. While some university libraries emphasize librarian training, overall, AI literacy education in university libraries is still in its early stages, facing issues such as insufficient educational resources, monotonous teaching methods, and an incomplete evaluation system. There is a significant imbalance in AI literacy educational resources among different universities. Some key universities have more abundant resources and advantages, while ordinary universities are relatively lacking. The rapid development of AI technology has raised the bar for faculty. However, many universities still have limited faculty in the AI field, making it difficult to meet teaching needs. Although many universities have introduced AI-related courses, the overall curriculum system is still underdeveloped. Some courses lack coherence and continuity, hindering the formation of a comprehensive knowledge system.

3.2 Problem Sorting

Currently, the content of artificial intelligence literacy education is not comprehensive or systematic enough. The curriculum and training often focus on popular AI applications and tools, lacking in-depth discussions on foundational theories, ethics, and laws and regulations. In terms of teaching methods, traditional lecture-based approaches are predominantly used, lacking interactivity and practicality, which fails to meet the diverse learning needs of students. Regarding teaching methods, while some libraries have adopted online platforms and other tools, the application of advanced technologies such as virtual reality and simulation experiments is still limited. There is a relative shortage of teachers with solid AI knowledge and teaching experience, which may impact the quality and effectiveness of education. Librarians often have limited professional knowledge of AI and need further training and learning. There is a lack of unified standards and norms for the goals, content, and quality of AI literacy education, and no comprehensive evaluation mechanism has been established, making it difficult to accurately assess the educational outcomes and students' AI literacy levels.

4. New ideas of Artificial Intelligence Literacy Education Mode in University Libraries

4.1 Content Innovation of AI Literacy EducationMode in University Libraries

To build a systematic curriculum that aligns with the development trends of artificial intelligence technology and industry needs, covering foundational theories, core technologies, application scenarios, and ethical considerations. Introduce cutting-edge scientific achievements and promptly incorporate the latest research findings and technological advancements into the classroom to keep students informed about the latest developments in the field of artificial intelligence. Enhance interdisciplinary integration by fostering collaboration with other disciplines such as computer science, mathematics, and philosophy, to develop students' comprehensive skills and innovative capabilities.

4.2 Reform of Teaching Methods of Artificial Intelligence Literacy Education

In the realm of AI literacy education, traditional teaching methods may not fully meet the needs, making it imperative to reform these methods. Project-based learning is an effective approach. By engaging students in real AI projects, such as developing a simple image recognition system or an intelligent chatbot, they can gain a deeper understanding of AI principles and applications through hands-on experience. For instance, students can work in groups to complete a project on a smart campus waste sorting system, from data collection, model training to system implementation, ensuring their full participation throughout the process. To cultivate students 'AI literacy through various teaching methods. Problem-based learning involves teachers posing real AI-related questions to guide students in

thinking and solving them. For example,' How can AI improve urban traffic efficiency? 'Students need to conduct research, analyze data, and try different technical solutions to find answers. Situational teaching involves creating real-world AI application scenarios to help students experience and understand knowledge. For example, simulating a smart customer service scenario allows students to practice using natural language processing technology to solve customer issues. Blended learning combines online and offline approaches. Online resources provide rich educational materials and self-learning platforms, while offline sessions offer face-to-face discussions, practical exercises, and guidance. For example, students study AI theory online and then engage in practical operations and group discussions in the lab. Gamified learning involves designing educational games related to AI to enhance learning interest and participation. For example, an' AI Knowledge Competition 'game helps students reinforce their knowledge through competition. Inquiry-based learning encourages students to explore unknown areas of AI on their own. For example, given a topic like' Potential Risks of AI in Healthcare,' students are encouraged to research, analyze cases, and draw their own conclusions.

In short, through the reform of these teaching methods, students' interest in learning can be stimulated, their practical ability and innovative thinking can be improved, and the development of artificial intelligence literacy education can be better promoted.

4.3 Optimization of Educational Resources for AI Literacy Education

To build an intelligent resource library that integrates high-quality educational resources from both domestic and international sources, providing students with a wealth of learning materials. Utilize Internet technology to create online learning platforms that facilitate the sharing of educational resources and enable remote teaching. Integrate high-quality teaching videos, open-source projects, and learning materials. For instance, leverage MOOC platforms to offer high-quality AI courses, which can complement and expand local educational resources. Provide AI literacy training for librarians and teachers to enhance their professional skills and teaching abilities. Provide ample high-performance computing equipment to meet the needs of students for model training and experiments. For example, establish a dedicated AI laboratory equipped with advanced GPU servers to create a conducive practical environment for students. Additionally, optimizing educational resources requires strengthening cooperation and sharing among schools and enterprises. Schools can collaborate to develop educational resources, reducing costs and improving resource quality. By partnering with enterprises, they can access real data and case studies for practical teaching. In summary, by making efforts in multiple areas to optimize educational resources, we can provide a solid foundation for the effective implementation of AI literacy education, cultivating talents with solid literacy and practical skills.

4.4 Cultivate the Team of Librarians and Enhance the Strength of Educational Subjects

In today's digital and intelligent era, librarians face new challenges and opportunities. The education of artificial intelligence literacy has become crucial for building a high-quality team of librarians. The application of AI technology has raised the bar for librarians. Therefore, university libraries are enhancing the training and education of their staff to improve their capabilities in intelligent operations, management, and service. Additionally, they encourage librarians to actively engage in academic research and technological innovation, contributing their wisdom and strength to the library's development. The focus is on enhancing the external skills of subject librarians, including their subject service capabilities, communication skills, and training skills for subject users, as well as their internal skills, such as subject cognition, rational judgment, decision support, and analytical abilities, to help them proactively provide personalized, knowledge-based, and intelligent services to subject users [8].

Provide systematic training courses for librarians, covering the basics of artificial intelligence, application cases, and practical operations. Invite industry experts to give lectures and workshops, sharing the latest technological trends and practical experiences.

Encourage librarians to participate in real projects to enhance their skills through hands-on experience. For example, they can be involved in the development and optimization of intelligent library consultation systems. Establish a learning and exchange platform where librarians can share their insights and experiences, and collaborate to address challenges. Through continuous learning, further education, and reflection, librarians can stay updated with the latest research findings and the cutting-edge developments in their field. This enables them to continuously update their knowledge systems and introduce the latest educational concepts and methods into their classrooms, providing readers with higher quality education [9]. In summary, emphasizing the education of AI literacy will help build a team of librarians who are adaptable to the demands of the times, innovative, and service-oriented, thereby injecting new vitality into the development of libraries.

4.5 Expand the Service Area of the Library

In the context of AI literacy education, libraries have vast potential for service expansion. Firstly, libraries can establish specialized AI learning resource centers. These centers can collect and organize a wide range of AI-related books, journals, papers, and online databases, making it easier for readers to access comprehensive learning materials. For example, a dedicated 'AI Zone' could showcase the latest and most authoritative works in the field. Secondly, libraries can organize AI-themed training sessions and lectures. Experts and scholars can be invited to explain the basics, cutting-edge applications, and future trends of AI. For example, topics such as 'AI in Healthcare' and 'AI and Future Education' can be covered in specialized lectures. Furthermore, libraries can create AI learning practice spaces. Equipped with necessary hardware and software tools, these spaces allow readers to experience and practice AI technology firsthand. For instance, a designated computer area can be set up with deep learning frameworks and development tools, enabling readers to conduct model training and development. Libraries can also offer personalized learning services. By leveraging AI technology, libraries can recommend relevant learning resources and courses based on readers 'needs and interests. For example, by analyzing readers' borrowing history and browsing records, libraries can precisely recommend suitable AI learning materials and use VR and AR technologies to create immersive reading experiences. In summary, by expanding their service areas through these various methods, libraries can play a more significant role in AI literacy education, meeting the growing learning needs of readers.

4.6 Improve the Evaluation System of AI Literacy Education

To conduct statistical analysis of students' exam results to assess their knowledge acquisition, and to collect data on the frequency of library resource usage and the number of participants in activities to gauge the popularity of these resources and activities. Additionally, gather written feedback from students, opinions and suggestions from group discussions or individual interviews, and have teachers reflect on and evaluate their teaching practices. Peer reviews are also conducted, and experts in artificial intelligence are invited to review the teaching content and course design. Formative and summative evaluations are combined, with periodic quizzes, homework grading, and classroom feedback provided during the teaching process to adjust strategies as needed. Comprehensive exams and evaluations are conducted at the end of the course or semester to summarize student learning outcomes and teaching effectiveness. A combination of regular and irregular evaluations is implemented. Regular evaluations can be conducted once per semester or academic year to comprehensively assess educational outcomes, while irregular evaluations can be carried out after significant teaching activities or projects to promptly identify and address issues. To improve the evaluation system for AI literacy education, university libraries need to clarify evaluation goals, establish an evaluation index system, adopt diverse evaluation methods, strengthen faculty development, enhance teaching resource construction, and provide policy support and guarantees. By implementing these measures, university

libraries can achieve more significant progress in AI literacy education.

5. Conclusion and Prospect

5.1 Research Conclusions

This article explores and analyzes new approaches to AI literacy education in university libraries. AI technology has permeated various aspects of university libraries, including the management and construction of literature resources, reader services, and reference consultations. These applications have not only enhanced the efficiency of library operations but also significantly enriched service offerings and improved user experiences. By upgrading the content of information literacy courses and adding AI literacy themes, university libraries have comprehensively covered the principles, applications, limitations, and usage techniques of generative AI tools, effectively enhancing the AI literacy of faculty and students. This innovative educational model has laid a solid foundation for cultivating talents with future competitiveness. The library collaborates with faculty from various colleges to integrate generative AI tools into professional course instruction, achieving significant results. Additionally, the library actively participates in domestic and international academic exchanges, sharing its experiences in applying generative AI in teaching and research, which has earned widespread recognition and high praise.

5.2 Looking to the Future

Integrating intelligence literacy with various disciplines, we should delve into how to closely integrate intelligence literacy education with each discipline, forming an AI literacy education model that reflects the unique characteristics of each field. For instance, in the medical field, we can explore the application of AI in medical diagnosis and drug development. In the legal field, we can focus on the role of AI in legal consultation and contract review. Interdisciplinary collaboration is crucial for advancing AI literacy education. University libraries should continue to strengthen their cooperation with colleges and research institutions, jointly exploring the application of generative AI tools in academic research and teaching management, promoting knowledge sharing and interdisciplinary integration. With the continuous advancement of AI technology, intelligence literacy will become a vital component of lifelong learning. Researching how to build an intelligence literacy education system for lifelong learning, providing personalized learning resources and services for people of different age groups and professional backgrounds. In the context of globalization, university libraries should actively engage in international exchanges and cooperation, drawing on advanced international experiences and technological achievements to promote the international development of AI literacy education. By organizing international academic conferences and participating in international project collaborations, we can enhance the influence and competitiveness of Chinese university libraries on the global stage.

In summary, the innovative approach to AI literacy education in university libraries has infused new vitality into library development. In the future, as AI technology advances and its applications expand, university libraries will play a more significant role in information literacy education [10], contributing more to the cultivation of talents with future competitiveness.

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