Research on Data Repositories and Investigation of Sources: A Review of the Postprint of "Research on Information Science Education and Talent Cultivation"

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Abstract

[Purpose/Significance] This study conducts a multi-perspective and multi-level critical analysis of the monograph "Research on Intelligence Science Education and Talent Cultivation", aiming to promote more effective and rapid advancement of intelligence science education and talent cultivation research in China toward deeper domains. [Methods/Process] Employing comparative and content analysis methods, the monograph's content is evaluated from four dimensions: the developmental history of intelligence science education and talent cultivation, specific empirical investigations, actual recruitment practices, and comparative analysis with iSchools education. [Results/Conclusions] Through systematic analysis and research, the monograph not only yields effective conclusions, strategies, and recommendations, but also constructs unique data, information, and knowledge specifically oriented toward Chinese intelligence science education and talent cultivation research.

Full Text

Data-driven Research, Source-driven Study: A Book Review of *Research on Information Science Education and Talent Cultivation*

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Abstract: *[Purpose/Significance]* In order to promote the further and faster development of information science education and talent cultivation research in China, this paper reviews and analyzes the monograph *Research on Information Science Education and Talent Cultivation* from multiple angles and levels.

[Method/Process] By means of comparative and content analysis, the content of the monograph was evaluated and analyzed from four aspects: the development process of information science education and talent cultivation, specific investigations, real-world recruitment, and comparison with iSchools education. *[Result/Conclusion]* Through systematic analysis and research, this monograph not only obtains effective conclusions, countermeasures, and suggestions, but also forms unique data, information, and knowledge for Chinese information science education and talent cultivation research.

Keywords: information science education; iSchools; talent cultivation

Against the backdrop of rapid development in big data, data science, and artificial intelligence, the connotation and direction of information science have undergone corresponding expansion and change in recent years [1-3]. As the foundation and support for the entire discipline's development, information science education and talent cultivation have also undergone adjustments in teaching content, methods, concepts, and pedagogy [4-5]. However, in the process of these adjustments, some content has emerged that is irrelevant to the core connotation and extension of the information science discipline, while also contravening, to a certain extent, the principle of "conservation and expansion" that information science development should follow [6]. In the new era of rapid artificial intelligence development and evolving new liberal arts construction, information science education and talent cultivation can only cultivate first-class information science talents and build an education system adapted to the new era by closely integrating their own developmental history, aligning with contemporary talent demands, and fully drawing upon excellent experiences from foreign information science education and talent cultivation.

In this context, the monograph *Research on Information Science Education and Talent Cultivation* [7], authored by Professors Wang Dongbo, Liu Liu, Shen Si, and Xie Jing from Nanjing Agricultural University, Nanjing University of Science and Technology, and Nanjing University of Chinese Medicine, systematically explores China's information science education and talent cultivation from multiple perspectives.

1. Systematic and Comprehensive Review of the Current State of China's Information Science Education and Talent Cultivation

Building upon systematic review and analysis of the state of information science education research in China [8], and considering the mission of information science education in the new era [9], the monograph summarizes the state of information science education from two perspectives: the positioning of the information science discipline and the development of information science work. It examines the developmental history of information science education from the perspective of scientific and technical intelligence, explores the development of information science through the connotation and extension of "Intelligence," and investigates the evolution of information science education from a national

security perspective [10].

Based on key time points in the development of information science education, the work systematically and comprehensively reviews the overall developmental history of China's information science education, which mainly consists of four stages: the initial stage of information science teaching, the restoration and development of information science teaching, the development of graduate education in information science, and the continuing development of information science professional education. In reviewing the overall process of information science education development, the monograph conducts detailed and comprehensive analyses of the distribution of information science degree programs, training conditions and learning status, and foreign information science education and talent cultivation. It explores training directions for information science education from both master's and doctoral perspectives, and investigates the curriculum system through detailed analysis of course titles from each university and research institution. In the process of reviewing the history of information science education and talent cultivation, the monograph not only constructs unique databases related to information science education institutions, research topics of information science organizations, and academic master's, professional master's, and doctoral courses, but also achieves data-driven analysis of information science teaching and talent cultivation based on these databases.

2. Multi-angle and Comprehensive Investigation of China's Information Science Education and Talent Cultivation Needs

First, from the perspective of information science educators, the monograph surveyed participants at the Information Science Education Annual Conference through questionnaires, obtaining first-hand data on educators' perceptions of current information science education. It analyzed current teaching and talent cultivation from three aspects: the status quo of the information science education system, the education system and curriculum design, and the curriculum system and talent cultivation [11].

Second, from the perspective of information science employers, the monograph surveyed recruiters at provincial information institutes through questionnaires, obtaining first-hand data on the general and professional knowledge requirements for information science employees. It explored current teaching and talent cultivation from multiple angles, including educational background and work experience requirements, interdisciplinary learning experience needs, disciplinary knowledge and basic competency requirements, professional skill development, disciplinary integration, and practical ability cultivation [12].

Finally, from the perspective of information science learners, the monograph surveyed information science students from different regions, institutions, and grade levels through questionnaires, obtaining first-hand information on learners' perceptions of the current information science teaching and talent cultivation system. It investigated current teaching and talent cultivation from mul-

tiple perspectives, including theory and methodology courses, data technology courses, big data and artificial intelligence courses, data science courses, data science competency development, interdisciplinary content development, thesis and internships, competency qualities and disciplinary knowledge, and data mining and machine learning technologies [13].

3. Real-world Recruitment Perspective on China's Information Science Education and Talent Cultivation

First, targeting mainstream domestic recruitment websites and using relevant keywords for information science and data science recruitment, the monograph designed specialized data crawling programs, developed data cleaning software, and trained deep learning models for entity extraction from unstructured text data in information science and data science, thereby forming a unique fine-grained entity knowledge base for Chinese information science and data science. This laid a solid data foundation for subsequent analysis of China's information science education and talent cultivation from a recruitment perspective.

Second, from the perspective of entity knowledge distribution across information science job postings and using network analysis methods, the monograph summarized and induced the various competencies and skills required by recruiting units for information science job seekers, mainly covering five aspects: educational requirements, professional requirements, competency requirements, personality requirements, and experience requirements [14].

Finally, using data science recruitment, which is closely related to information science, as an entry point, the monograph analyzed China's information science education and talent cultivation from two components: job requirements and skill competencies. The former examined professional courses, general education courses, practical courses, and other courses in information science education and talent cultivation from the perspective of job requirements, while the latter proposed specific skill requirements for information science education and talent cultivation from the perspective of skill competencies, such as data analysis, python, databases, and spark [15-16].

4. Vertical and Horizontal Comparative Perspectives on China's Information Science Education and Talent Cultivation

First, targeting 65 universities across six different iSchools levels (iCaucus, Enabling, Sustaining, Supporting, Basic, and Associate), the monograph systematically and comprehensively collected semi-structured and unstructured data on training programs and specific courses through manual collection. Based on data cleaning, it developed deep learning extraction models for training program and curriculum knowledge, laying a solid data foundation for subsequent vertical and horizontal comparisons of information science education and talent cultivation.

Second, based on the extracted entities from iSchools training programs, the

monograph conducted detailed and comprehensive analyses of iSchools training programs from two aspects: competency development and research fields involved in the training programs [17].

Finally, based on the extracted curriculum knowledge entities from iSchools, the monograph provided targeted recommendations for China's information science education and talent cultivation through vertical and horizontal analyses from three perspectives: adding information technology courses, strengthening core information science courses, and balancing foundational and interdisciplinary courses [18].

Regarding the development trends of information science education and talent cultivation in the new era, the monograph *Research on Information Science Education and Talent Cultivation* conducts multi-angle and multi-level summaries, investigations, analyses, and explorations of information science education and talent cultivation based on a data-driven philosophy. Focusing on Chinese information science education and talent cultivation research, and based on systematic, fine-grained, first-hand structured, semi-structured, and unstructured data, information, and knowledge, the monograph combines data analysis and artificial intelligence technologies and methods to summarize targeted conclusions, propose specific countermeasures, and provide feasible recommendations, thereby laying a solid foundation for subsequent related research.

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