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Teaching Practice and Experience Exploration of the "Digital Humanities" Course at Peking University: A Postprint

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Abstract

[Purpose/Significance] Against the backdrop of undergraduate education reform in the new era, the Department of Information Management at Peking University has piloted digital humanities education by offering a "Digital Humanities" course, providing a reference for digital humanities pedagogy and exploring digital humanities education.

[Method/Process] This paper introduces and summarizes the course's training objectives, content design, and distinctive features, thereby examining the exemplary role of digital humanities course development for library and information science disciplines as well as undergraduate education reform.

[Results/Conclusion] Recommendations are proposed for digital humanities course development, including forming a teaching team, creating application scenarios, and establishing digital humanities courses as fundamental quality education courses.

Full Text

Teaching Practice and Experience Exploration of the "Digital Humanities" Course at Peking University

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Abstract

[Purpose/Significance] Against the backdrop of undergraduate education reform in the new era, the Department of Information Management at Peking

University has established the "Digital Humanities" course, using digital humanities education as a pilot to provide references for digital humanities teaching and explore digital humanities education. [**Method/Process**] This paper introduces and summarizes the course's training objectives, content design, and distinctive features, thereby exploring the exemplary role of digital humanities curriculum construction for library and information science disciplines as well as for undergraduate education reform. [**Result/Conclusion**] The paper proposes recommendations for digital humanities course construction, including forming teaching teams, creating application scenarios, and positioning digital humanities courses as foundational quality education courses.

Keywords: undergraduate education reform; digital humanities; digital humanities education; library and information science education
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Introduction

The transformation of the information era has profoundly impacted professional education in library science. The iSchools alliance emphasizes the integration of people, information, and technology, providing new development concepts for library and information science education while also optimizing the professional environment. Domestic reforms in library and information science education have demonstrated characteristics such as being information-centric, emphasizing technological applications, focusing on social needs, orienting toward broader information professions, and cultivating interdisciplinary talents. Li Yang [1], through analysis of enrollment, training, and employment conditions at Peking University's Department of Information Management and examination of talent cultivation models at key domestic and international universities in library and information science, identified trends such as the growing importance of information technology in training library and information science professionals and the need for coordinated integration between library science and information science.

In 2016, Peking University issued the "Guiding Opinions on Comprehensive Reform of Undergraduate Education," which clarified the path toward establishing an undergraduate education system combining general education and professional education [2]. During the course preparation phase, the curriculum planning group surveyed digital humanities course systems at University College London, Indiana University, and other institutions. Meanwhile, digital humanities education in China was just emerging. Wang Tao [3] introduced his course "Digital Tools and World History Research" offered for historical studies, summarizing experiences and reflections. This paper uses the "Digital Humanities" course at Peking University's Department of Information Management as a case study to summarize explorations in undergraduate education reform and library and information science education reform.

2. The "Digital Humanities" Course at Peking University's Department of Information Management

2.1 Course Objectives

2.1.1 Promoting Integration of Library Science and Information Science Curricula Library science and information science share direct genealogical connections, and in the context of information-age development, the trend toward integration between the two disciplines is evident. The development of LIS (library and information science) education abroad, along with social demands in enrollment and employment, has also promoted the integration of domestic library and information science. This course combines fundamental research areas of library science with techniques and methods from information science to facilitate the integrated development of education in both fields.

2.1.2 Strengthening Interdisciplinary Research Perspectives Interdisciplinarity has become an important topic in education reform. The "13th Five-Year Plan for National Education Development" emphasizes the development of interdisciplinary education, exploring talent cultivation models that combine general and professional education to promote integration between arts and sciences [4]. Against the backdrop of disciplinary integration and interdisciplinary talent cultivation, this course aims to help students understand interdisciplinary research perspectives that use information technology and methods to solve problems in the humanities, thereby stimulating students' interest in interdisciplinary research.

2.1.3 Cultivating Students' Practical Digital Humanities Project Abilities Through course instruction and faculty guidance, students can conduct practical digital humanities research using fundamental digital humanities techniques and methods such as text analysis, social network analysis, and data mining, producing valuable results and developing abilities for interdisciplinary collaboration and communication. Digital humanities provides new concepts and methods for academia, creating new perspectives for interdisciplinary research. Although digital humanities currently lacks clear and precise conceptual definitions, it generally refers to the combination of digital technology and humanities disciplines—using digital technology to discover and solve humanities problems, and promoting research, teaching, and dissemination in humanities fields. The ultimate goal remains solving specific problems in the humanities. Therefore, this course must both strengthen students' interdisciplinary perspectives and emphasize the cultivation of practical digital humanities project abilities.

2.2 Teaching Faculty

The course involves six instructors, with the authors serving as course coordinators. The remaining faculty members and their research directions are: (1) Professor Wang Jimin, specializing in search engines, Web data mining, scien-

tometrics, and information visualization; (2) Associate Professor Zhang Pengyi, specializing in information organization, user information behavior, and human-computer interaction; (3) Associate Professor Huang Wenbin, specializing in management information systems and multimedia technology; (4) Deputy Director Liu Wei from Shanghai Library as a guest lecturer, a renowned scholar in library technology with extensive experience in digital humanities project construction; (5) Associate Research Librarian Zhu Benjun from Peking University Library, with backgrounds in history and education, and an early expert in digital humanities research in China.

2.3 Course Content

The course consists of 16 sessions: 9 classroom lectures, 1 session for student project consultation, 2 sessions for midterm project presentations, 2 sessions for final project reports and feedback, and 2 guest lectures. The course assessment comprises: 10 points for regular performance, 30 points for midterm presentations, and 60 points for final reports. The main course content consists of three components: basic concepts of digital humanities, digital humanities project practice, and digital humanities technologies, as shown in Figure 1 [Figure 1: see original paper].

2.4 Course Characteristics

2.4.1 Integration of Theory and Practice In terms of faculty, the teaching team includes instructors engaged in fundamental research in library science and humanities, as well as those with strong project capabilities and backgrounds in mathematics and computer science. Regarding curriculum design, course content can be broadly divided into theoretical and practical components, including basic concepts such as digital humanities and digital history, as well as practical components like digital humanities project implementation and visits to digital ancient book institutions outside class. In teaching style, the course coordinator ensures that all instructors emphasize the combination of theory and practice, using practical cases to help students understand concepts, enhance interest, and improve engagement. For example, the case "What are Jay Chou's songs singing about" is used to explain text mining and sentiment analysis, while cases such as genealogies, Tang dynasty poet relationships, and character relationships in *Romance of the Three Kingdoms* are used to teach social network analysis.

2.4.2 Team-Based Instruction As an interdisciplinary field, digital humanities involves multiple disciplines and domains including humanities, library science, information science, computer science, and libraries. The course adopts a team-teaching approach in its faculty configuration, bringing together experts from major related fields for unified coordination, with each contributing their strengths. The six-person teaching team includes two library science instructors, two information science instructors (with mathematics and computer sci-

ence backgrounds), and two library experts (one with a history background and one with a computer science background). This team-based approach enhances teaching strength, provides students with broad research perspectives, delivers professional knowledge, and offers professional guidance for practical projects. Simultaneously, through collaborative teaching, connections are established among faculty members, creating opportunities for subsequent research and project development. The construction of this digital humanities teaching team has formed a small-scale digital humanities research team, which can attract more interested scholars to join and enable broader cooperation with related research teams, thereby strengthening digital humanities research capacity.

2.4.3 Project-Oriented Approach Throughout the Course Digital humanities originates from practical needs, and its ultimate goal is to meet research demands in humanities disciplines in the information age. While opening students' perspectives on combining humanities with information technology, the course also aims to cultivate students' ability to conduct research using digital humanities methods. Course assessment is primarily based on student projects, with a project-oriented approach throughout to stimulate inquiry-based and active learning. At the beginning of the semester, the responsible instructor explains assessment requirements for student projects, cultivates problem awareness, and encourages students to think about digital humanities application projects in their fields of interest or major. After students have mastered relevant theoretical knowledge and understood the landscape of digital humanities practice domestically and internationally, mid-semester project presentations are conducted with faculty guidance. Following topic selection, subsequent lectures provide targeted explanations of relevant digital humanities techniques and tools to help students complete their projects. Finally, at the end of the semester, students present their project reports. Through full participation in the process from project conception to final presentation, students deepen their understanding of digital humanities concepts, master certain research methods and technical approaches, and develop interest in interdisciplinary research.

2.5 Student Feedback

Through the course, students generally reported gaining basic mastery of digital humanities concepts, content, history, current research status, and frontier directions, along with practical abilities to undertake projects. Additionally, the course sparked students' attention to and reflection on interdisciplinary research, providing assistance for their future studies. For example, one group of students consulted a renowned professor of Song dynasty history at Peking University for their assignment, making considerable efforts to understand Song history issues. One student commented: "Digital humanities research will be a major trend in interdisciplinary research for some time to come. It is a new independent research object formed by the organic combination of 'digital' and 'humanities,' and this combination will bring many opportunities and challenges." Students

also offered suggestions for the course, such as inviting humanities faculty to explain digital humanities from a humanities perspective to better understand humanities scholars' perspectives and needs regarding digital humanities.

3. Digital Humanities' Reform of Library and Information Science Education

3.1 Expanding the Research Object of Library Science

Professor Wang Zizhou summarized previous research objects of library science as "total organization theory," "library management theory," and "library cause theory," arguing that these theories failed to reveal the essence of libraries [5]. In the mid-1980s, new trends emerged in basic theoretical research in library science. Professor Zhou Wenjun proposed "document communication studies," Mi Hao proposed "knowledge communication theory," Xu Yinchai and Huo Guoqing proposed "information resource theory," and Wang Zizhou subsequently proposed "knowledge collection theory." Under this theoretical guidance, the research object of library science broke through the constraints of library institutions, expanding from libraries to knowledge collections and deepening from documents to knowledge. Library science research cannot merely remain in the middle of the knowledge lifecycle, satisfied with serving as an intermediary for document exchange and knowledge exchange; it must expand upstream and downstream. For the upstream, digital humanities represents in-depth research, development, and utilization of documentary information resources. For the downstream, it advances literature and information services to knowledge services and research services, innovatively applying technologies, methods, and tools to personalize services for students' and scholars' learning and research needs, thereby enhancing efficiency.

3.2 Strengthening Library-Information Science Integration

Library science and information science exhibit substantial intersection and overlap in research objects, content, questions, and domains. In the "Catalogue of Academic Degrees and Talent Cultivation" issued by the Ministry of Education in 2011, library, information, and archive management were established as first-level disciplines under management. The integrated development of library and information science helps strengthen disciplinary capacity, cultivate interdisciplinary talents, and meet diverse talent needs of various information service institutions. Digital humanities promotes exchange and cooperation across multiple disciplines and further advances the integration of the closely related library science and information science teaching. Using student coursework as examples, the structuring of historical data is fundamental work in digital humanities. In such projects, students must apply knowledge of information organization, information resource cataloging, and database design. Another group of students, based on surveying humanities scholars' needs, designed a data visualization system for CBDB (China Biographical Database), requiring knowledge of refer-

ence consultation, visual analysis, and information system design. The digital humanities course serves as a training ground for students to apply their library and information science knowledge, deepening their understanding of departmental curriculum and the disciplines of library and information science.

3.3 Enhancing the Applicability of Talent Cultivation

Library and information science originated from library and information work, with the fundamental goal of cultivating talents competent for work in information service institutions such as libraries. Digital technology has transformed the storage, discovery, utilization, and dissemination of information materials in humanities fields. For libraries, there is a need for application-oriented talents who can provide digital humanities services. Scholars' demands for librarians have evolved from "book cover" scholarship to knowledge within books, from locating documents to discovering problems and finding usable materials within them. Practical work in information service institutions such as libraries also requires library and information science students to master the ability to use digital tools, technologies, and methods to complete research and projects. For example, the University of Virginia Library used geospatial technology to help Professor Jenny Strauss Clay of Classical Studies verify her theories about the relationship between ancient geographical mnemonic devices and poetic forms [6].

The digital humanities course cultivates students' practical abilities to conduct digital humanities projects using digital technology, enhancing their knowledge reserves for communicating with service recipients and facilitating their engagement in related work at cultural, media, and information institutions.

3.4 Deepening Information Literacy Education

Since the late 1980s, information literacy education has been widely implemented in the United States, and the "Information Literacy Competency Standards for Higher Education" have been promoted worldwide. Currently, literature retrieval courses and information literacy education courses are widely offered in Chinese university libraries. The "Framework for Information Literacy for Higher Education" issued in 2015 summarized information literacy into six conceptual dimensions: "authority is constructed and contextual," "information creation as a process," "information possesses value," "research as inquiry," "scholarship as conversation," and "searching as strategic exploration," with each element encompassing both knowledge skills and behavioral aspects [7]. Digital humanities can be regarded as a further enhancement of literature retrieval and information literacy education courses. Digital humanities provides new perspectives and research methods for humanities fields, which helps cultivate students' critical thinking. As an open field, digital humanities does not have absolute boundaries for scholar identity and requires participation from multidisciplinary scholars. The digital humanities course is also open to undergraduates university-wide, with students from various majors learning together

and exchanging ideas in project collaboration. Furthermore, digital humanities projects require participants to have high-level understanding and application abilities regarding information resources, which can cultivate students' information awareness and information abilities, providing long-term benefits for their development.

4. Digital Humanities' Contributions to Undergraduate Education Reform

The development of digital humanities education not only brings new development opportunities to the field of library and information science but also serves as an experimental field for undergraduate education reform, providing concepts and cases for its exploration.

4.1 Innovation in Teaching Methods

The Ministry of Education's "Opinions on Accelerating the Construction of High-Level Undergraduate Education and Comprehensively Improving Talent Cultivation Capacity," Part IV, proposes deepening teaching reforms around stimulating students' learning interest and potential, with Article 11 emphasizing "promoting classroom teaching revolution." The course emphasizes the practical characteristics of digital humanities, requiring students to have problem awareness and actively consider applications of digital humanities in solving relevant disciplinary problems, thereby enhancing students' enthusiasm and capacity for active learning and independent exploratory learning. During project completion, students conduct independent exploratory learning on specific humanities fields and digital humanities techniques according to their needs, with faculty providing relevant assistance, thereby realizing a student-centered learning model.

4.2 Cultivation of Interdisciplinary Talents

The concept of general education at the undergraduate level has gained relatively widespread acceptance and practice in China. The University General Education Alliance initiated by Peking University, Tsinghua University, Fudan University, and Sun Yat-sen University was established in 2015 and currently has over 40 member universities. Peking University's general education leads nationally, having established a high-quality general education curriculum system. This general education model can help students broaden their knowledge base and enhance basic qualities, but it has shortcomings in interdisciplinary integration. General and public elective courses chosen by students themselves often provide insufficient direct assistance to their major studies and research, raising concerns about being "broad but not specialized." For interdisciplinary talent cultivation, Peking University has established interdisciplinary majors such as PPE (Philosophy, Politics, and Economics), Foreign Language and Foreign History, Paleontology, and interdisciplinary directions such as Classical

Philology and Thought and Society at Yuanpei College. However, establishing interdisciplinary majors is difficult and serves narrow audiences.

The digital humanities course offers a new approach for general education and interdisciplinary talent cultivation. As a public elective open to undergraduates university-wide, this course opens learning and research horizons for students, cultivates interdisciplinary awareness, and engages students from relevant disciplines. It enables humanities students to master digital technologies and methods, and non-humanities students to enhance their humanities literacy while conducting humanities research. Additionally, course learning can promote students' learning and research in their own majors.

4.3 Cultivation of Innovative Talents

Digital humanities has brought new research paradigms to traditional humanities disciplines, emphasizing actual outputs such as new academic questions, viewpoints, discoveries, and technologies. The application of new digital humanities methods and technologies promotes academic innovation and helps cultivate students' innovative awareness and capabilities. For example, at the end of the course, a student from a humanities college expressed: "I previously knew very little about computer science, let alone these research methods. Seeing how these methods can combine with my discipline in such wonderful ways has opened my mind and made me realize that this is possible." Additionally, course assignments are completed in group form, requiring student collaboration, which also helps cultivate teamwork awareness and abilities.

4.4 Cultivation of Application-Oriented Talents

The development of digital humanities arises from practical needs and ultimately serves practical needs. Digital humanities has broad applications in literature and information resource centers (such as libraries), humanities disciplines, and information technology disciplines (such as computer science), with promising development prospects. Libraries and other literature information resource centers need digital humanities to innovate the development and utilization of collection resources and enhance service levels and capabilities; humanities disciplines need digital humanities to promote the discovery and utilization of documentary materials, serve the development of new disciplinary fields, transform research methods, and disseminate humanities knowledge; computer science and other information technology disciplines also need digital humanities to provide new application scenarios. Furthermore, with increasingly vibrant social and cultural demands, digital humanities also has extensive application scenarios beyond academia. For example, in 2017, Tencent and the Dunhuang Research Academy reached a strategic cooperation to jointly build the "Digital Silk Road" to promote the digital preservation, discovery, and inheritance of Silk Road traditional cultural heritage [8]. Baidu and the National Cultural Heritage Administration launched the "AI Museum Plan" [9], using AI technology to make cultural relic displays more vivid. These cases demonstrate the

broad applications of digital humanities.

Digital humanities has broad application prospects, and its emphasis on practice and application plays a positive role in cultivating application-oriented talents in related fields, enhancing information skills among humanities students and broadening students' career options.

5. Recommendations for Digital Humanities Course Development

Digital humanities education serves as a vivid case of "classroom revolution" for undergraduate education reform and an exploratory path for cultivating "innovative, interdisciplinary, and application-oriented talents." Against the backdrop of disciplinary development and social demand, digital humanities education will have greater development space. The "Digital Humanities" single course represents only the first step of "crossing the river by feeling the stones" in digital humanities education. The following reflections are offered for discussion.

5.1 Building Teaching Teams

From the perspective of education reform, teaching team construction is an effective path for enhancing exchange and cooperation among faculty, achieving complementary capabilities, and promoting curriculum content updates and quality improvement. Peking University has established teaching team awards to encourage teaching team construction. From the digital humanities perspective, the interdisciplinary nature of digital humanities requires faculty to be experts in multiple fields, the practical nature requires high theoretical and practical competence, the use of materials requires proficiency in multiple databases, and the rapid iteration of digital technology requires faculty to keep pace with the latest software and tools. Each of these requirements poses considerable challenges for any individual instructor. As Wang Tao noted when summarizing his course, "It is difficult to comprehensively introduce digital humanities single-handedly… For the course's completeness, the author had to teach content outside his expertise, even facing the dilemma of learning and teaching simultaneously" [3].

Therefore, digital humanities course faculty construction should focus on building teaching teams. Digital humanities emphasizes multidisciplinary cooperation, and instructors should naturally practice this philosophy. Moreover, given the extensive content involved in digital humanities, individual effort cannot guarantee teaching quality. When forming teaching teams, on one hand, faculty professional directions should be complementary and coordinated around the theme of digital humanities; on the other hand, student backgrounds and foundations should be considered, with targeted invitations for instructors in relevant directions to teach or provide guidance. For example, history faculty can guide history students in topic selection and assignment revision, while

technically challenged students may need guidance from faculty with strong engineering capabilities.

5.2 Emphasizing Application Scenario Creation in Teaching

Digital humanities has a strong practical orientation, and digital humanities education should also emphasize practicality, creating application scenarios for students, encouraging hands-on practice, and promoting students' ability to use digital humanities tools and methods for research. The "Digital Humanities" course guides student practice through project-based assignments and includes off-campus visits. To further stimulate student interest and enhance practical abilities, we guide students out of the classroom to participate in digital humanities projects. For example, students choosing CBDB as the basis for their assignments can personally experience related work at Peking University's Center for Research on Ancient Chinese History, while groups selecting the Republic of China literature database construction project can participate in related work at Peking University Library. Additionally, we emphasize using students' disciplinary backgrounds as entry points to guide them in introducing digital humanities into their own disciplines' research, creating discipline-specific digital humanities application scenarios that enhance student interest, reduce anxiety, and make digital humanities more clearly promote students' learning and research in their majors.

5.3 Positioning Digital Humanities as Foundational Quality Education Courses

With the continuous development of the information age and the undergraduate education reform concept emphasizing foundations and promoting interdisciplinarity, digital humanities integrating "arts" and "sciences" will become foundational courses for humanities disciplines or for broader undergraduate populations. Renowned international universities such as MIT's School of Humanities, Arts, and Social Sciences, Harvard University's Center for Geographic Analysis supported by the Faculty of Arts and Sciences, and the Digital Humanities Institute under the University of Sheffield's School of Humanities have all conducted digital humanities research projects.

With the digital development of information resources, vast amounts of documentary materials (such as genealogies, diaries, land deeds, etc.) have been discovered, with increasingly large data volumes, such as CBDB and the Shanghai Genealogy Database. Traditional research methods of "one person, one pen, one pile of books" struggle to process massive new materials, and humanities disciplines also need to master methods for using large-scale databases and digital tools and research methods. As Chen Yinke stated, "The scholarship of an era must have its new materials and new problems. Using these materials to research problems constitutes the new trend of scholarship in this era" [10]. The new materials and methods brought by digital humanities will greatly promote the proposal and research of new academic questions. For example, scholars like

Liang Chen [11] believe that the quantitative database research model, while effectively expanding the scope of historical materials and transforming research-driven models, can discover hidden historical facts and patterns. Wang Tao's article "Group Portrait Depiction and Type Analysis of *Allgemeine Deutsche Biographie* under the Digital Humanities Framework" published in *Historical Research* [12] used Python code to transform textual data and employed social network analysis methods and QGIS mapping tools—an example of humanities scholars mastering digital humanities methods and technologies to serve their research.

Furthermore, for non-humanities students, digital humanities also serves as general education and foundational training for cultivating humanities literacy and interdisciplinary perspectives. Against the backdrop of the information age, disciplinary paradigms are also undergoing adjustment and change. Digital humanities courses will become increasingly important as foundational courses that promote undergraduates' mastery of basic humanities and technical knowledge and research methods, cultivating students' multidisciplinary vision and thinking abilities.

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Author Contributions

Zhang Jiuzhen: Conceived the ideas, provided materials, revised the article;
Han Yuzhe: Organized materials, wrote the article.

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

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