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Research Article

Research on the Innovative Reform of Media Literacy Education in Universities Driven by Data Thinking

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Abstract:

Data thinking has brought profound changes in the global media industry and has also set new requirements for media literacy education in the training of professionals in related fields of universities. Based on the characteristics of the current digital communication ecosystem, this study systematically discusses the main concepts of data-driven thinking and the innovative paths for integrating it into university professional education. The research suggests that traditional media literacy education has certain limitations in terms of the era and technology. In the current data-driven communication environment, the demands of the media industry for practitioners have expanded beyond professional skills and comprehensive qualities, including media literacy centered on data thinking. We took the teaching practices of

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related majors in Chinese universities as the research object. We found that the teaching framework of the communication major rarely included courses related to data thinking, which directly led to the mismatch between university talent cultivation and industrial demands. This paper proposes an innovative teaching framework based on constructivist teaching methods and professional competence orientation. It mainly puts forward three suggestions for the reform of media literacy education, including integrating data thinking into instructional design, introducing project-based teaching and carrying out the construction of digital virtual media laboratory. The research aims to implement the above three innovative reform plans to help establish a media literacy education framework and comprehensive assessment system centered on data thinking in the professional teaching practice of universities. By adding the cultivation of critical media awareness, comprehensive professional abilities and innovative skills to the university's talent training goals, university education can better meet the employment needs of the media industry and fulfill its role as a think tank and talent output support for the industry.

Keywords : data thinking, media literacy education, Chinese media education, evaluation system

Introduction

The global media communication ecosystem is undergoing a transformation around digital technology. Artificial intelligence, algorithms, and big data analysis have deeply participated in the production and creation of news, changing the long-standing communication paradigm. The dissemination logic of media content has shifted from one-way distribution to precise push based on data and user profiles (Dijck, Poell, & Waal, 2018: 65). These phenomena imply that the digital media industry has raised more requirements for practitioners regarding data thinking capabilities.

Traditional media literacy education in universities is derived from the practical experience of single-directional communication media such as printing, broadcasting and television. It's mainly teaching objective is to cultivate students' ability to identify, produce and interpret news content (Qin, 2014:141). In the data-driven communication context, the professional practitioners trained by the traditional communication major teaching model exhibit obvious theoretical limitations and low practical abilities (He& Chen, 2023:81). The classic theoretical framework in university communication major teaching cannot fully explain the communication phenomena and practical problems under the data-driven circumstances (Zhang, 2018:25). Algorithmic push and industrial digital transformation require media practitioners to have more comprehensive data thinking abilities and digital professional skills (Bidgood, Hunt, & Jolliffe, 2010:135). The current talent cultivation plans in Chinese universities have shown a significant structural mismatch with the urgent employment demands of the industry (Lou, 2023:5). Graduates from universities only possess relatively lagging communication theoretical knowledge and basic reporting and editing skills and are far from the requirements of practitioners who serve the

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development of industries, cope with datafication challenges and possess data thinking abilities (Qin, 2014:141).

This study focuses on the teaching practice of media literacy education in Chinese universities, particularly in the field of radio and television production. By analyzing teaching cases in Chinese universities, we explore innovative reform paths for media literacy education. The research provides case support and research references for the teaching reforms of other universities.

This research introduces data thinking into the exploration of the reform path of media literacy education in contemporary universities. Specifically, it suggests adding data thinking as both content and method to the communication major teaching framework (Hu, 2017:3).This comprehensive implementation of media literacy education in universities leads to systematic teaching method innovation. The conclusion guides teachers to precisely match teaching goals with industry demands，that forming an employment-oriented talent cultivation path. During the research process, we confirmed the driving ability of data thinking for the current communication industry. The researchers systematically constructed a teaching framework based on constructivist theory. In the new teaching framework, teachers will pay more attention to the cultivation of students' professional abilities through the integration of course content and project-based teaching methods. We believe that it will gradually for man employment-oriented teaching model. Universities' communication majors are also recommended to actively carry out the construction of virtual digital media laboratories, to further conduct scientific process evaluation under the premise of ensuring news ethics, and comprehensively enhance students' media literacy. In the analysis of specific teaching cases of related majors in Chinese universities, the research proposed improvement and enhancement plans for the traditional media literacy education framework and had a certain positive impact on teaching outcomes.

Methods

In our research, we mainly employed qualitative research methods, comprehensively utilized specific approaches such as literature review, comparison analysis of teaching cases, and interviews with the research subjects. Based on the review of communication theories and the analysis of teaching cases, the researchers completed the design of an innovative teaching framework for media literacy education in related majors of universities and formed a logically coherent research route.

During the process of literature review, the researchers discovered that the classic communication theories currently employed in media literacy education in universities are unable to meet the basic requirements of the digital media industry for practitioners. In response to the structural disconnection between the university teaching system and the actual employment demands, the researchers

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objectively described the phenomenon of the absence of core professional abilities such as data literacy, platform awareness, and digital content strategies in the current curriculum design. Currently, relevant scholars have merely remained at the level of academic discussion regarding the design of teaching frameworks (Qin, Qin, & He, 2011:121), have not yet developed feasible scenarios for transforming teaching.

This study conducted a survey in four Chinese universities, including Communication University of China, Hebei University, Hebei Normal University, and Handan University. All these four universities offer journalism and communication-related majors. We selected 4faculty members and 20 current students and graduates for a total of 300 minutes of structured interviews. At the same time, we conducted telephone interviews with 8 employers who hired graduates from these four universities. We focused on the employers' satisfaction with the graduates and their evaluation of media literacy and asked the employers to describe the current most-needed talent profile. While the four universities are geographically concentrated, they represent different levels of Chinese university education. The hometowns of their students covered most provinces in China. These companies come from 5 provinces and municipalities with different levels of development. The selection of these research subjects ensures the diversity of geographical composition and provides a solid data foundation for the study. It comprehensively examines the fundamental reasons for the mismatch between the teaching objectives and the industry demands. The research covers both the macro perspective of employment market data analysis and the micro perspective of specific course performance analysis. We took the teaching reform process of the *creative thinking and cultural industry* course at Hebei University as the study case, providing empirical evidence for the effectiveness of the proposed professional teaching reform framework.

Based on the traditional media literacy teaching framework, this article proposes an innovative teaching reform plan. Itaddressesthe problems of lagging teaching content and single evaluation standards in the communication major. This plan presents a teaching reform idea covering three aspects, theoretical teaching content, project practice platform construction and process evaluation system. We argue that in teaching practice, the teaching of communication theories should be continuously strengthened. Data thinking should be integrated into all professional course teaching, with emphasis on the integration of relevant knowledge across disciplines. The teaching framework proposed in this article has been experimentally implemented in a certain scope. In the subsequent interviews with students and enterprises, it has received many positive comments. Through classroom teaching and professional practice, students have enhanced their critical understanding of digital communication media, subconsciously shaped correct professional ethics and news ethics, and comprehensively

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improved the effectiveness of media literacy education.

Results

Media literacy education, as an important part of the talent training plan for communication majors in universities, currently faces the biggest challenge in the significant gap between teaching goals and industry demands. The media literacy education content in related majors in universities lacks attention to digital media communication theories and communication paradigms, and most professional education also neglects the cultivation of data thinking and digital technology-related abilities. Taking the Chinese communication industry as an example, graduates trained under the traditional teaching framework often fail to meet the job requirements in the algorithm-driven communication ecosystem. The focus of university talent cultivation urgently needs to shift from the traditional concepts of collecting and editing skills (Xu, 2016:103) to comprehensive talents with data thinking-driven content creation and platform operation capabilities (Zhang & Hu, 2022:9). The research also found that the joint construction and cooperation platform between schools and enterprises has a positive impact on teaching outcomes. Project-based teaching can efficiently achieve the requirements of professional ability improvement and process evaluation. The regular communication between schools and enterprises has solved the problem of information flow between teaching content and professional practice, the collaborative talent cultivation strategy has improved the efficiency of teaching outcome transformation and promoted the healthy development of the industry.

Discussion

1.The iteration of media literacy education model

The data-driven communication ecosystem has transformed the traditional media's communication paradigm. The wide application of digital technologies such as artificial intelligence, algorithmic recommendations, and big data analysis within the industry has completely overturned the entire process of content production, distribution, and reception in traditional media (Kong & Wang, 2020:19). From a theoretical perspective, the explanatory power and predictive ability of traditional communication theories for digital communication phenomena have gradually weakened. Academic research focusing on digital media has emerged continuously, filling the gap in the communication theory framework. In the specific teaching practice, the new communication theories failed to be timely integrated into the course teaching content, directly weakening the employment competitiveness of graduates in related majors. Respondent A (a graduate from a certain university, with 2 years of work experience) frankly stated that after joining the company, he self-studied a lot of knowledge related to online community operation, which was never mentioned by the teachers in school. Moreover, there are also obvious deficiencies in current media literacy education in the actual teaching scenarios and teaching evaluation systems. Respondent B

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(a teacher from a certain university) said in the interview, "I know that media literacy education is very important, but I haven't found the appropriate teaching evaluation standards yet. I'm worried that the new scoring system will cause students' unease." News ethics and professional ethics merely remain at the conceptual level and have not truly met the basic requirements of media literacy education.

In the actual teaching practice process, teachers should proactively enhance their ability to integrate theoretical instruction with ability cultivation, helping students truly understand communication theories and then carry out professional practice. Especially for the teaching content of data thinking, the teaching goals should not be limited to the understanding of concepts. Teachers should lead students to carry out practical activities through project-based teaching and organizing classroom activities, cultivate students' ability of data development, management and operation (Carlson, Miller, &Nelson, 2011:632). In the teaching design of *creative thinking and cultural industry*, group teaching is integrated throughout the entire course learning period. It requires students to complete the teaching objectives of each class through groups, and finally integrate the group assignments of 12 lessons into the final project for display. This final project will be published online, and the number of views, likes, and comments it receives will all be part of the course evaluation. In the anonymous student evaluation system, the course evaluation score is 99.13 (out of 100), which is much higher than the average score of around 90 for other courses in the school. In the subjective evaluation content, 5 students specifically wrote about the gains brought by project-based teaching, believing that it significantly improved their professional abilities.Within the entire professional teaching framework, specialized data courses should be added (Liu & Zhan, 2021:230), the teaching content of interdisciplinary integration should be increased. Students are required to possess cross-disciplinary abilities in data collection, organization and application. In addition, in the design of professional course teaching contents, teachers should consciously incorporate data thinking, continuously enhance students' data awareness, strengthen the ability to distinguish and produce digital content, internalize media literacy in professional daily teaching (Pasquale, 2015:147).

The cultivation of data thinking and the enhancement of media literacy show a clear positive correlation. This viewpoint has gained widespread recognition. The relationship between the two is very close. Data thinking provides methodological support for students to understand the digital communication paradigm in media literacy education, offers more quantitative and visual evaluation standards for teaching practice. At the same time, media literacy education can help students conduct humanistic thinking and ethical reflection in practice, avoiding the extreme of technicism. Therefore, introducing data

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thinking as a new teaching model into university media literacy education is very necessary. It is not only an important professional knowledge content in the contemporary digital communication environment, but also a highly practical teaching method. The teaching reform led by data thinking can fundamentally reverse the mismatch between university professional education and industry talent demand (Li, 2023:89), bringing better results and social evaluation to university professional education.

2. Current Dilemmas and Transformation Directions

In recent years, the communication-related majors in Chinese universities have faced widespread criticism. The root cause of this criticism mostly stems from the high job pressure faced by graduates. The lag in teaching content of communication majors in universities and the timeliness required in the digital communication era have intensified the dissatisfaction of the job market with university education, to the extent that many enterprises do not care whether candidates possess a degree in the relevant field when recruiting. During interviews, C (the human resource directors of enterprises) stated that not limiting the profession does not mean the company does not value traditional collection and editing skills; rather, data thinking is scarcer in practical work. The cultivation of data literacy, platform operation and innovation ability take longer than traditional communication skills, which means companies need to invest more in training new employees. That is to say, the abnormal phenomenon in the current employment market of the communication industry is not an abnormality in industry development, but rather a secondary choice made by enterprises. The direction of professional teaching reform in universities has become very clear. The teaching goals need to directly face the demands of the industry and timely incorporate contents such as data interpretation, user behavior analysis, cross-platform operation and professional ethics into the curriculum design (Pasquale, 2015:146), to comprehensively enhance the comprehensive abilities and media literacy of graduates.

Data thinking ability has become a key component of media literacy education, especially for students majoring in journalism and communication, who will eventually become media practitioners. Their work results, which are the media content, serving as the source of civic media literacy development and education. Many scholars have emphasized that university media literacy education needs to re-evaluate and reposition its teaching goals based on digital technology (Wang, Sun, 2011: 148). Professional talent cultivation should be based on constructivist teaching theory and career-oriented educational concepts. Higher education should serve the needs of society and industries (Wang, 2025: 83), and it is particularly important to enhance the sense of responsibility of graduates.The visibility and timeliness of the media industry determine that the professional training programs of higher education institutions should have a

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more acute responsiveness and stronger inclusiveness, which places higher demands on the teaching and management of higher education institutions.

3.Data-driven innovation path

The media literacy education reform led by data thinking requires systematic innovation in three aspects: curriculum design, teaching methods, and evaluation mechanisms (Tong, 2021:7). Through the analysis of specific teaching cases, researchers have initially completed the design of the media literacy education reform path.

In terms of curriculum design, specialized data courses should be added to the professional teaching framework of universities, systematically explain the core concepts and application logic of digital technology. The teaching objectives of the courses should clearly require students to possess data analysis and management skills. Students should be able to independently complete basic content creation and platform operation tasks using digital tools. Additionally, data thinking should be integrated into all professional courses, such as audio-visual text writing, online communication research, new media platform management, and digital ethics in journalism (Wang, 2025:84).The virtuous cycle of simultaneous improvement in theoretical teaching and professional practice, helps students systematically cultivate data thinking abilities, enhance their cross-disciplinary integration skills and employment competitiveness.

University professional education should increase the application of project-based teaching methods (Lowrey, Daniels, & Becker, 2005:36).They are expected actively seek cooperation with enterprises and build more practical teaching bases. Universities should encourage teachers to collaborate with enterprises through incentive measures. Students' professional practical experience through various forms such as project assignment and professional internships (Cao, Li, & Nie, 2020:187)can reduce the cost of enterprise research. This will develop a win-win situation. Respondent D (a current student majoring in journalism at a certain university) stated that the internship she completed at ByteDance during her vacation gave her a deeper understanding of algorithms. The news reports she was responsible for enabled her to appreciate the social responsibility of journalism. The media literacy education in universities should appropriately extend the teaching internship period to help students verify communication theories and practice professional skills. Appropriately increasing the duration of teaching internships enables students to verify communication theories, practice professional skills, and then enhance media literacy comprehensively.

The virtual digital media laboratory is a crucial component in the construction of the teaching evaluation system. It addresses the issue of the single evaluation standard in traditional media literacy education effectively. Through the integration of real platform data, simulation algorithm recommendation mechanisms and user feedback behaviors, digital technologies can fully recreate

the real communication ecosystem. It enables students to conduct professional practice in a safe and controllable environment. The virtual digital media laboratory can accurately record every student's behavior, providing complete data support for teachers' process-based evaluation. It also solves the problem of the difficulty in quantifying media literacy education in universities. Of course, such digital teaching platforms place even higher demands on the course design capabilities of the instructors. E (a teacher from a certain university) is skeptical about this digital platform. He believes that it will bring additional workloads and the data it provides is not comprehensive.

The laboratory creates immersive teaching scenarios. Both teachers and students can complete the review of individual projects by retrieving data. By adjusting specific parameters, they can conduct repeated comparisons. This is the key to improving teaching effectiveness. In laboratory teaching practice, teachers can set extreme events to enhance students' sense of social responsibility and news ethics awareness. Compared to real project internships, the virtual digital media laboratory provides a safe scenario for trial and error. The laboratory effectively avoids the risks of students being bullied online due to mistakes or unforeseen ethical issues.

Conclusion

In the era of digital communication, media literacy education is not only an important part of communication professional education, but also the goal of university talent cultivation. Traditional media literacy education has certain limitations, which have led to a structural disconnection between university talent cultivation and the employment market demand. Professional education urgently needs reform and innovation. The data thinking module is an important teaching content of communication professional courses and a methodology that runs through the entire process of professional teaching. It can help teachers and students establish a more scientific and comprehensive teaching evaluation system, filling the shortcomings of the single evaluation standard and the lack of process evaluation in traditional media literacy education. The limitations of this study include the lack of thorough discussion on issues such as the difficulty in implementing the teaching reform and the construction costs of the virtual digital media laboratory. In future research, we will pay more attention to the applicability test of these methods, and more rigorously verify their teaching effects. The subsequent research goal is to further improve the scientific of the design of innovative teaching reform paths, systematically improve the feasibility of teaching methods and teaching evaluation systems.

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