

In the Era of Big Data: The Practical Value, System Construction, and Risk Governance of Red Cultural Education in Higher Education Institutions

Cao Yuxuan

Guangxi Minzu University, Nanning, Guangxi, China

Abstract: Integrating red cultural elements into the ideological education of young students is an effective approach for higher education institutions to inherit their red genes. The higher education institution's red cultural education system, empowered by big data, is a multi-nodal structure comprising universities as the core, digital platforms, students, social units, and organizations. This system aims to enhance patriotism and promote the inheritance of red spirit and character values. However, red cultural education in higher education faces challenges in terms of cultural environment risks, lagging discourse, and institutional development. Therefore, there is a pressing need to accelerate the establishment of a unified Red Cultural digital education platform, continuously update discourse mechanisms, develop scientific education data analysis tools, construct a progressive professional feedback and supervision system, and enhance the digital effectiveness of Red Cultural education.

Keywords: Empowerment by Big Data; Higher Education Institutions; Red Culture; Governance

1. Introduction

Red Cultural Resources, as a Material Entity with Historical Significance, Contemporary Value, and Educational Function Formed by the Chinese Communist Party's Leadership in Promoting the Integration of Marxist Basic Principles with China's Reality and Traditional Chinese Culture during the Revolutionary, Construction, Reform, and the New Era of Socialism with Chinese Characteristics, Represents an Important Manifestation of Socialist Core Values. Higher education institutions bear the important mission of moral education and are entrusted with the sacred duty of promoting red culture and carrying forward the red legacy. In the era of big data, higher education institutions' red cultural education faces new challenges and tasks. It requires the utilization of big data technology and platforms to innovate the content, forms, and methods of red cultural education, enhancing its relevance, impact, and effectiveness. This article aims to explore the conceptual definition, value connotation, current status analysis, problem diagnosis, and policy recommendations for red cultural education in higher education institutions in the era of big data. It intends to provide theoretical support and practical reference for red cultural education in higher education institutions

2. The Concept and Value of Red Cultural Education in Higher Education Institutions in the Era of Big Data

Red culture education refers to the activities of ideological and political education and spiritual civilization construction for different groups through various educational channels, with the revolutionary history and socialist construction achievements led by the CPC as the main content, the Marxist education concept as the guidance, and the goal of cultivating the social red culture atmosphere and encouraging the masses to inherit the red gene. Red culture education is an ideal moral education model that can enhance the patriotic consciousness and political quality of the people, stimulate a sense of historical responsibility, struggle spirit, and innovation consciousness, promote the cohesion of socialist core values, and establish firm ideals and beliefs.

Red culture serves as a valuable resource for the teaching of ideological and political theory courses in higher education institutions. Integrating red culture into these courses is a practical requirement for fulfilling the fundamental mission of moral education and is a significant approach to creating distinctive and exemplary ideological and political courses.^[1] As the vanguard of red cultural education,

higher education institutions, through curriculum design, textbook development, and other teaching methods, translate the spiritual essence of red culture into a scientific educational approach. Higher education institutions also play a vital role in innovating and advancing red culture. Leveraging their academic advantages and innovative capabilities, they can delve deep into the exploration and theoretical interpretation of red culture, continually infusing it with new contemporary significance that aligns with the primary tasks of the new era. Additionally, higher education institutions can serve as crucial platforms for promoting red culture, fostering collaboration between universities, enterprises, museums, and research institutions to organize various commemorative and educational activities. These initiatives inspire young talents in higher education to consciously inherit the red genetic code, carry forward the red legacy, and shoulder the responsibility of national rejuvenation.

With the development of information technologies such as the Internet, the Internet of Things (IoT), and cloud computing, the volume of data has experienced explosive growth, marking the advent of the era of big data. Diverse data types and widespread data analysis and application are key characteristics of the big data era. Leveraging big data technology, data from various aspects of social production and daily life are collected, stored, and processed. This empowers various industries with precise data processing and utilization capabilities that surpass those of traditional information societies. The advent of big data technologies, tools, and methodologies has significantly propelled societal development, garnering high attention from the Party and the nation.

Since the 5th Plenary Session of the 18th Central Committee of the Communist Party of China, the Party and the nation have implemented a national big data strategy, driving the widespread application of big data in our country. The big data era provides a favorable opportunity for innovating the paradigm of red culture dissemination and education. Higher education institutions, as crucial platforms for research, innovation, and ideological education, have become important settings for the application of big data technologies and methodologies. The material form of red cultural resources is transitioning from physical to digital. Leveraging higher education institutions as vital platforms, the convergence of big data and red culture demonstrates remarkable compatibility and offers immense practical value. In the big data era, the material form of red cultural resources is shifting from the physical to the digital, and their spiritual essence is evolving from the typical to the comprehensive, showcasing their significant role in governance and nurturing individuals.^[2] Seizing the development opportunities of the new era, actively utilizing big data technology, thinking, and methodologies to drive the transformation of red cultural education, continuously enhancing the effectiveness of red cultural education, and achieving its steadfast innovation and development is imperative. The value of big data empowerment in higher education's red cultural education can be realized in the following aspects:

Firstly, empowering red culture education in universities with big data can help enhance national awareness and consolidate ideological positions in the virtual field. The first problem faced in the current construction of national ideological security is to hold onto the battlefield of online information dissemination and ensure the quality of cultural dissemination. Red culture, as an advanced culture with Marxism as its core value, has always held high the clear banner of criticizing capitalism. Spread red culture, effectively analyze erroneous trends such as money worship and value nihilism in the online space, guide the healthy and positive atmosphere of online platforms, achieve the promotion of turbidity and purity in the online space, make red culture a positive energy, and create a clean and upright online cultural environment.^[3] Big data technology and thinking are conducive to the innovative practice of red culture education, which can change the one-way preaching mode of traditional education, enhance the attractiveness of red culture in the vast information flow, achieve more effective dissemination effects, and better help red culture education cultivate national spirits and enhance national identity. Red culture education in universities can use big data technology to collect, organize, and analyze red culture resources, innovate the content and methods of displaying red culture, better showcase the excellent qualities of the older generation of revolutionaries, and stimulate students' sense of national pride, patriotism, and passion for struggle. At the same time, red culture can play a positive role in uniting the ethnic masses. The red culture created by the Chinese people's unity and unity in the great practice of striving for national independence, national prosperity, and people's happiness is the spiritual crystallization of the Chinese nation's awakening in danger and struggle in difficulties. Over the past century, the CPC has forged the most vivid cultural memory of the Chinese nation, condensed into the spirit of unity, diligence, courage, and self-improvement, and is an important part of the red culture. The online dissemination of red culture has enhanced and consolidated the identification of the new generation of young people with Chinese national culture, awakened the emotional memory and national cohesion of the Chinese nation, and played a strong supporting role in the great rejuvenation of the Chinese nation.

Secondly, big data empowers red cultural education in colleges and universities to help promote and inherit red spiritual character. On one hand, digital technology has broken the temporal and spatial limitations of inheritance education, promoting the transformation from traditional didactic and linear teaching methods to experiential and immersive education. This technological shift provides the conditions for a comprehensive and lifelong inheritance education model. Learners can shape emotional identification and shared values through immersive experiences. By developing red culture digital creative products such as audiovisual and gaming content, young students can receive education while being entertained and practice while learning. This nurtures their steadfast ideal beliefs and lofty moral character. Leveraging the interactive and emotionally impactful nature of converged media, it encourages the production and dissemination of red cultural products aligned with the spirit of the times and contemporary issues through multimedia outlets. This enables the seamless integration of red culture into the lives of young students, making it more relevant to their everyday experiences. It allows them to intuitively grasp the essence of red culture, transforming red cultural education from a one-way transmission to a process of 'interactive identification,'^[4] which fosters a conducive environment for red culture in society. On the other hand, it promotes the digital storage and dissemination of red culture, protecting and inheriting the red cultural heritage. Through technological innovation mechanisms like collaborations between institutions and museums, a digital repository for red culture resources is established. This includes the systematic, standardized, and dynamic uploading and management of red documents, images, audio-visual materials, artifacts, and more. This ensures the effective preservation and wide dissemination of red cultural resources. Additionally, digital storage enhances and optimizes the channels for red cultural education in higher education institutions. By creating and utilizing digital platforms for sharing red culture, such as online memorial halls, revolutionary sites, museums, etc., a combined approach is formed, bridging the online and offline worlds, and enhancing the complementarity between on-campus and off-campus resources. This results in a diverse, multi-dimensional red cultural education network."

Thirdly, big data empowering red culture education in colleges and universities can help resolve the contradiction between education supply and demand and improve the quality and efficiency of red culture education. Big data tools can effectively improve the accuracy of red culture, grasp the laws of red culture education, and improve the scientific planning and pertinence of red culture education work. On the one hand, we should optimize the supply of red cultural resources, promote adjustment and optimization of the "supply side", and enhance the timeliness and effectiveness of communication. Digitization not only broadens the preservation paths of red cultural resources and improves resource mining and collection capabilities, but also promotes targeted innovation of red cultural education content. Big data-related technologies can effectively handle the diachronic and synchronic coordination of heritage education, thus Improving the relevance of the times and vivid personalization of red cultural education content. By constructing and using the big data model of red culture education, we can accurately analyze and predict the needs, interests, behaviors, etc. of young students. Focused communication uses individual needs as a breakthrough, which can effectively improve the penetration of communication to break down barriers and accurately Grasp the "demand side" psychology to achieve personalized and intelligent dissemination of red cultural education. On the other hand, the evaluation feedback mechanism of red cultural education is optimized through big data tools and methods. The application of big data in education effectively captures the changing patterns of students' many learning behaviors and forms a "digital portrait" of their studies, thereby promoting the reconciliation of the contradiction between red culture education and the students. Establish an instant digital visual evaluation and feedback mechanism for red culture education practices to provide educators with a more reliable realistic basis for their educational behaviors and decisions. Recommendation algorithms and artificial intelligence technology help colleges and universities explore the learning preferences of learners, capture changes in thinking, emotional cognition, and other patterns, and help improve the scientificity, pertinence, and planning of red culture education work.

3. The System Construction of Red Cultural Education in Higher Education Institutions in the Era of Big Data

In the era of big data, the construction of the system for red cultural education in higher education institutions involves establishing an integrated educational model that centers on universities, leverages red cultural resources, utilizes big data technology, and aims at fostering moral character while inheriting the red genetic code.

This system is designed to effectively enhance the patriotism and emotional connection to the

nation among young students, inherit the glorious traditions of revolutionary eras, and pass down the spiritual lineage of Chinese Communist Party members. It efficiently mobilizes university students to collaborate and facilitates the sharing and real-time allocation of red cultural education resources. As a diverse network system in the age of big data, it integrates the effective consolidation of red cultural resources from research institutions, red educational bases, red memorial halls, red electronic archival materials, red educational websites, red cultural education courses, and other social organizations and online red cultural resources. Compared to traditional red cultural education in higher education institutions, the empowerment of big data in red cultural education achieves a triple leap: a leap in information resource control, transitioning red culture into the digital realm; a leap in scientific thinking, quantifying teaching evaluation feedback and indicator verification; and a leap in model and method, personalizing and targeting educational paradigms.

The red cultural education system in higher education institutions possesses several distinctive characteristics: First and foremost, it has a firm value orientation. The value pursuit of red cultural education in higher education institutions embodies the goals of the Party and the nation in ideological and ideological education. From the perspective of students, the red cultural education system in higher education institutions should cultivate students to inherit revolutionary character and nurture their love for the Party and the country. From the perspective of the institutions themselves, the red cultural education system should promote the red history and revolutionary traditions of the university and its region, enhancing the red cultural atmosphere and spiritual civilization. At the national level, the red cultural education system in higher education institutions should widely disseminate advanced models of the era, inspiring the people of the new era, especially young intellectuals, to embark on the new journey of building a socialist modernized and strong nation. Secondly, it is characterized by digitization. Modern digital information technology has profoundly transformed cultural communication methods and educational formats. The red cultural education system in higher education institutions has achieved digitization of the material carriers of red cultural resources, expanded educational and dissemination forms, and greatly improved the efficiency of communication. Thirdly, it possesses purification and optimization capabilities. Through evaluation feedback and learning improvement mechanisms, the various units of the red cultural education system in higher education institutions can continuously obtain dynamic feedback on their educational and teaching or product manufacturing activities. This enables them to make immediate improvements in their educational and service capabilities. Lastly, it is characterized by collaboration and inclusiveness. The red cultural education system in higher education institutions is not a closed system but one that can involve social units, public organizations, and individuals in accordance with certain rules and norms. Through the establishment of network platforms and other means, it facilitates resource sharing and collaborative governance among multiple participants, continuously improving its own teaching methods and enhancing the quality of education. While driving the continuous advancement of red cultural education in higher education institutions, it also engages in two-way interactions with other participating nodes in society, providing them with feedback, support, and assistance.

In the era of big data, the key components of the red cultural education system in higher education institutions consist of top-level design, digital platforms, universities, students, social units, and organizations. Firstly, there are closely related policies and regulations governing the development and operation of red cultural education in higher education institutions. These policies and regulations serve as the top-level design guiding the digital development of red cultural education in universities and regulating its operation. Related planning guidelines, task assignments, and inspection and supervision require legal support from relevant government departments. Secondly, there are digital resources and educational platforms, consisting of a unified standard red cultural digital resource library and a red cultural digital dissemination platform. These components are responsible for collecting, organizing, processing, storing, and presenting red cultural resources, especially their material carriers. They also create digital windows for interactive communication and wide dissemination with the external world. Next, there are universities, including the university party committee, propaganda department, relevant colleges, and red cultural education bases, which play a crucial role in providing red cultural promotion and education. Universities are responsible for conducting diverse, multi-form, and multi-level red cultural education activities, developing red cultural teaching materials that align with the characteristics of the era and student needs, offering specialized red cultural courses, and organizing a wide range of colorful red cultural practice activities. Furthermore, there are students who are not only recipients of red cultural education but also active participants and disseminators of red cultural education in the era of big data. They engage in a combination of online and offline red cultural education activities through platforms, online classrooms, online communities, etc., guiding them to understand, identify with, and practice red cultural values through their active involvement. Lastly, there

are social units and organizations, including memorials, research institutes, enterprises, non-governmental organizations, volunteer associations, etc., that provide red cultural education projects. These entities are important participants in the construction of digital red cultural education facilities, resource development, product creation, and promotional activities in the context of big data. They are contributors to the construction of the red cultural education system in higher education institutions.

In conclusion, the red cultural education system in higher education institutions in the era of big data should be an open structure guided by policies, led by universities, and characterized by a clear value orientation. The system is centered around several universities with control and influence radiating to the surrounding areas. These universities are interconnected through a network, maintaining close ties. Each unit enhances its capacity to provide corresponding services for red cultural education through collaborative governance. Simultaneously, with the wide-ranging influence of the big data network, the number of participants continues to increase, and the boundaries of the system expand, gaining new functions and capabilities. It possesses the ability for self-upgrade and evolution.

4. Risk Governance in Red Cultural Education in Higher Education Institutions in the Era of Big Data

In the era of big data, red cultural education in colleges and universities is facing new opportunities and challenges. Big data technology provides rich resources, convenient platforms, and effective means for red culture education in colleges and universities. While improving the coverage, participation, and influence of red culture education in colleges and universities, it also brings some risks and hidden dangers, such as information security, Issues such as personal privacy, online public opinion, and values that may have a negative impact on the development of red culture education in colleges and universities. In order to lead and regulate the upright and innovative development of red culture education in colleges and universities in the era of big data, we should actively respond to risks and challenges and further promote the digital transformation of the red culture education system.^[5]

4.1 The digitalization of red culture education is uneven and the risks to the cultural environment

To tackle these challenges, it is imperative to accelerate the construction of a unified digital platform for red cultural education. In the era of big data, ideological struggles have expanded from the physical realm to the virtual domain. In the world's digital environment dominated by global capitalism, developed Western countries are striving for 'digital colonization' of the third world. The information domain has become a significant battleground where China and the West engage in ideological struggles, affecting the process of information dissemination, perception, and acceptance, thereby posing environmental risks to digital red cultural education. Constructing a unified standardized digital platform for red cultural education is the ideal choice to enhance the effectiveness of digital red cultural education and address these cultural environmental risks.

Firstly, this should be an overall planning effort led by relevant authorities, involving the structural collection and integration of red cultural resources nationwide. Using national unified big data standards, a public digital repository for red cultural resources should be established, offering diverse options for safeguarding various forms of red cultural resources. Leveraging big data technology, data collection, categorization, and integration of red cultural relics from different regions should be conducted to create a comprehensive, content-rich, and diverse digital resource library for red cultural education. Emphasis should be placed on the classification and standardization of red cultural resources while developing a unified metadata standard and retrieval system to enable rapid retrieval and sharing of red cultural resources. Furthermore, innovation and development of red cultural resources should be prioritized, utilizing technologies such as artificial intelligence, digital modeling, and augmented reality, among others, to transform these resources into red cultural products encompassing audiovisual materials, models, games, and more.

Secondly, establishing a digital propaganda platform for red cultural education is vital. Big data technology should be fully exploited to build a multi-level, multi-channel, and multi-dimensional digital propaganda platform that ensures extensive coverage and deep penetration of red cultural education. This platform should prioritize interactivity and experiential elements by employing techniques like media integration, online live streaming, virtual interaction, and more, to enhance user participation and immersion. Personalization and precision of the red cultural propagation platform

should also be emphasized. Big data analysis, recommendation systems, and similar technologies should be employed to provide customized and intelligent red cultural products based on user characteristics, behaviors, and preferences, making red cultural education more appealing.

In summary, leveraging resource repositories and propagation platforms is essential to enhance the effectiveness of digital red cultural dissemination. By employing digital dissemination methods, static exhibitions can be transformed into dynamic experiences. This approach allows for the full exploration of the unique value of red objects, historical sites, and stories, revitalizing red culture in the modern era while catering to the personalized aesthetic preferences of young students.

4.2 The issue of obsolete discourse in red culture education

Trendy Internet discourse in the big data era has weakened the discursive effectiveness of red culture. Discourse mechanisms need to be constantly updated to adapt to the fashionable and fast dissemination of discourse.

In terms of discourse content. The discourse content of red culture education in colleges and universities should conform to the characteristics of the times and the needs of students. It must not only adhere to the core values and spirit of red culture but also be combined with the current development status of contemporary China and the goal orientation of the new era and new journey. At the same time, the discourse content of red culture education in colleges and universities should focus on diversity. On the premise of ensuring the political nature and correctness of the educational content, multiple perspectives can be respected and avoid simply emphasizing unity. In addition, the discourse content of red culture education in colleges and universities should focus on innovation and vitality, use big data technology to collect, analyze, mine, and display new materials and stories of red culture, and avoid reusing old materials.

In terms of discourse form. The discourse form of red culture education in colleges and universities should adapt to the diversity advantage of big data and improve the attraction and attention of red culture education in colleges and universities. It can learn to absorb the diverse expression forms of interactive spaces such as social platforms and online communities, learn and integrate discourse forms in different media, spaces, and fields, and form a discourse system for red cultural education in colleges and universities in the big data era. But at the same time, the discourse form of red culture education in colleges and universities should focus on moderation and standardization and must adhere to the revolutionary and simplicity of red culture discourse to avoid falling into the trap of being flashy and entertaining.

4.3 Lack of professional education analysis technology and lagging evaluation system

The lack of scientific data analysis tools for red cultural education makes it difficult to carry out dynamic and precise educational data analysis for the red cultural education process, hindering effective feedback and supervision of red cultural education. To enhance the effectiveness of digital red cultural education, it is imperative to establish scientific educational data analysis tools and build an up-to-date professional feedback and supervision system.

On the one hand, with the help of big data and artificial intelligence analysis tools, we build a red culture education evaluation, analysis, and prediction mechanism to dynamically control the needs of digital red culture education. Crawlers can be used to collect information generated by young student groups when browsing and studying, and accurately push relevant red cultural information. Use data analysis tools to analyze the learning behavior habits, psychological cognition, and emotional changes of young students to build an educational prediction model and dynamically grasp their cognitive, emotional, and behavioral change trends, thereby achieving accurate judgments on learning trajectories and providing a basis for improving education and teaching. Paradigms provide a reference. Use the focus communication method and combine the analysis of the impact and effectiveness of big data on students of different ages and disciplines to improve the educational communication plan in a timely manner and improve the efficiency of red culture acceptance. On the other hand, build a digital evaluation system. The digital evaluation system is a feedback channel for red culture education and a supervision mechanism for red culture education. Through technical means such as data collection, data analysis, and data mining, quantitative and qualitative evaluations of the quantity, quality, and structure of red cultural resources are conducted to provide a basis for the protection, development, and utilization of red cultural resources. Through data tracking, data monitoring, data statistics, and other technical means, real-time and dynamic evaluation of the coverage, influence, satisfaction and other

aspects of red cultural communication can be carried out to provide a reference for the optimization and innovation of red cultural communication. In short, it is necessary to make full use of big data technology to build a scientific, reasonable, comprehensive, objective, dynamic, and flexible red culture prediction model and digital evaluation system to provide effective support for the quality improvement and effect optimization of red culture education.

5. Conclusions

To sum up, promoting the digital construction of red culture education in colleges and universities is an inevitable trend in the era of big data. Big data technology and thinking are of great value in improving the dissemination attractiveness of red culture, the pertinence of education, and resolving educational conflicts. At the same time, big data also brings a series of risk challenges, which may affect the quality and efficiency of the digital construction of red cultural education. In the new era, in order to further promote the digital development of red culture education in colleges and universities, we should adapt to the requirements of the times, make full use of the advantages of big data technology, and innovate the content and form of red culture education. At the same time, we will improve the theoretical construction of red culture education in colleges and universities, prevent and continuously crack down on the disadvantages of big data technology, and thus promote the creative transformation and innovative development of red culture digital construction.

Acknowledgements

Supported by Innovation Project of Guangxi Graduate Education "Research on Strategies for Inheriting Red Genes in Guangxi Universities in the Era of Big Data" (YCSW2023287)

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