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Shaanxi Red Culture and Intangible Cultural Heritage International Communication System

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Abstract: With the profound historical background of Shaanxi Red Culture and the increasing emphasis on its cultural heritage, existing methods for organizing and disseminating red cultural resources face challenges with fragmented information and limited dissemination, given their broad historical scope and diverse content. To address these issues, this paper proposes integrating digital media technologies with intelligent analytical methods to promote the systematic organization and in-depth exploration of Shaanxi Red Cultural Resources. Through digital archive management, multidimensional data models, and virtual reality technologies, revolutionary documents, artworks, and historical sites of Shaanxi Red Culture are presented more comprehensively and intuitively, enhancing the preservation and dissemination of cultural heritage. Experimental results show that the ideological and political quality scores of the experimental group show a sustained upward trend at different time points. Pre-intervention scores are 3.5 ± 0.9, rising to 4.0 ± 0.7 after 4 weeks, further increasing to 4.3 ± 0.6 after 8 weeks, and finally reaching 4.5 ± 0.5 after 12 weeks. This indicates that the ideological and political quality of students in the experimental group significantly improves with the duration of the intervention.

1. Introduction

In the context of the new era, red culture, as the advanced culture forged by the Communist of China (CPC) during the course of revolution, construction, and reform, is increasingly becoming a crucial component of ideological and political education in universities. In recent years, with the Ministry of Education's promotion and practical exploration of "great ideological and political courses," effectively integrating red culture into curriculum and practical activities has become a key issue in improving students' comprehensive qualities and sense of social responsibility. Previous research has shown that red culture education can help inspire students' patriotism and a sense of historical mission, but its actual impact on college students' social practice performance, learning attitudes, and overall literacy remains lacking.

This study, focusing on university students, compares the scores of those who participate in and those who do not participate in red culture education on social practice, learning attitudes, and overall performance, exploring the specific effectiveness of red culture education in educating students. This study aims to provide theoretical basis and practical reference for ideological and

political education reform in universities.

2. Related Works

In recent years, as the attention paid to red culture and intangible cultural heritage continues to rise in academic and practical aspects, scholars have conducted multi-dimensional research on its dissemination paths, technological applications, cultural transformation, and other aspects, and have formed rich theoretical results and practical explorations.

Wang built an influence evaluation model and optimized the dissemination strategy by integrating the online social media data and offline audience behavior data of the Red Culture Museum. The results of the study showed that the optimized dissemination path expanded the coverage and the user interaction rate of the online platform increased by about 15.6% [1]. Yanfei and Wai Yie explored the transformation of the intangible cultural heritage of oil-paper umbrellas in modern creative design through cultural translation theory. By analyzing the cultural symbols of oil-paper umbrellas at the material, behavioral and spiritual levels, they designed products such as earrings, necklaces and pens [2]. Tan et al. found through a differentiated analysis method that the participation of intangible historical projects and inheritors greatly promoted global travel. Trend analysis showed that the inclusion of intangible cultural heritage contributed to the long-term growth of China's international tourism [3]. Cao et al. explored the impact mechanism of metaverse applications on the intention of Generation Z to participate in the dissemination of intangible cultural heritage. The study found that metaverse applications can significantly enhance the participation intention of Generation Z. Its mechanism of action was through the combined effects of “technology-individual-environment”, with smooth experience as the mediator and self-efficacy and subjective norms as the moderating factors, presenting a chain path of “stimulus-state-response” [4]. Zhang et al. studied the impact of perceived scarcity, customer cultural identity, and knowledge on the purchase intention of intangible cultural products. The study found that cultural identity had a positive impact on purchase intention, and this effect was more significant among customers with higher levels of consumer knowledge [5]. Gwerevende and Mthombeni proposed that indigenous music, dance and language have similar protection needs, and emphasized that these cultural heritages should be jointly protected through an interdisciplinary community-based model, especially in the fields of applied ethnomusicology, ethnodance and linguistics, to promote the implementation of relevant protection strategies [6]. Ariffin et al. conducted interviews with 14 handicraft entrepreneurs and representatives of government and non-governmental organizations. The study found that handicraft innovation includes mixed skills, patterns, materials, technology and use, and innovation should be balanced on the basis of maintaining the authenticity of traditional crafts [7]. Yu et al. took the Shiwan pottery sculptures located in the Chen Clan Ancestral Hall in China as an example, and designed a system to embed the narrative information of intangible cultural heritage into tangible cultural heritage through narrative analysis and 3D scene construction, motion capture and virtual reality technology. The experimental results showed that the system can enhance the audience's understanding of the background story of intangible cultural heritage and stimulate their strong interest in intangible cultural heritage [8]. Through a survey of 86 Cantonese opera practitioners, Chung explored the challenges and opportunities of technology application in the inheritance of intangible cultural heritage, emphasizing that while technology is widely used, the core values and artistry of tradition must still be preserved [9]. Wang et al. conducted semi-structured interviews and participant observations with two generations of practitioners and found that the intergenerational evolution of handicraft Intangible Cultural Heritage (ICH) involves interactions among practitioners, government, museum management and tourists [10]. Based on the object-object consistency theory, Guo and Zhu explored tourists'

willingness to purchase intangible cultural heritage (ICH) souvenirs and its driving factors and antecedent mechanisms. The study found that ICH inheritor/souvenir consistency was positively correlated with tourists' purchase intention and perceived authenticity, and brand identity played a chain mediating role between ICH inheritor/souvenir consistency and purchase intention [11]. Ben-Amos pointed out that in the past half century, "folklore" and "intangible cultural heritage" (ICH) have experienced parallel but opposite development paths. Folklore has gradually declined in academia, but with the support of UNESCO, it has developed in parallel with tangible and intangible heritage, forming the concept of "intangible cultural heritage" [12]. Existing research focuses on the content dissemination and symbolic translation of red culture, and lacks a systematic construction and empirical analysis of its cross-media integrated dissemination path in the context of intangible cultural heritage.

3. Methods

3.1 Digital Organization and In-depth Exploration of Shaanxi's Red Cultural Resources

Shaanxi Province, as a key birthplace of China's Red Revolution, possesses rich red cultural resources. However, traditional research methods are often limited by the vast historical span, complex data, and diverse types, making it difficult to fully uncover the deeper value of these cultural resources. With the rapid development of digital media technology, new opportunities have emerged for the organization and exploration of Shaanxi's red cultural resources. Through the application of digital archive management, intelligent analysis, and multidimensional data models, scattered revolutionary historical materials have been reorganized and integrated. This digitization approach not only makes the inherent connections between Shaanxi's red historical documents, revolutionary art, and cultural relics more intuitive, but also effectively preserves the original appearance of red cultural resources and gives them a new form of dissemination. Digital technology has enhanced the vitality of Shaanxi's red culture, providing a richer and more vivid way to pass on history, marking a shift in red cultural resources from static display to dynamic, interactive transmission.

3.2 Construction of Digital Interactive Platform and Dissemination of Red Culture

To further promote the dissemination and inheritance of Shaanxi's red culture, universities have designed an internet-based digital interactive platform. The platform not only provides a space for students to interact with red culture but also strengthens multi-dimensional information sharing between universities and red cultural resources. Through this platform, students can deeply experience the charm of red culture and, on this basis, pass on this precious cultural heritage. Furthermore, the platform can promote specialty products from regions with red cultural resources in Shaanxi Province, boosting local economic development and achieving a win-win situation for red culture and the regional economy.

With the help of digital platforms, red cultural resources can reach a wider audience, particularly young people. Through the internet and multimedia, red culture is no longer limited to traditional museums and memorial halls, but is now integrated into daily life through online activities, virtual exhibitions, interactive courses, and other forms, increasing the effectiveness and appeal of red culture dissemination.

3.3 Creative Transformation and Innovative Development of Intangible Cultural Heritage

Shaanxi Province's intangible cultural heritage is an integral part of traditional Chinese culture.

Its protection and inheritance not only respects historical culture but also safeguards future cultural diversity. In the past, the international dissemination of intangible cultural heritage remained superficial, primarily characterized by the simple output of cultural symbols and fragmented content. In the absence of audience feedback mechanisms, it was difficult to systematically assess the subjective perceptions of international audiences (e.g., cultural understanding, value identification, and emotional resonance), resulting in a long-standing "black box" state of dissemination. Generative AI, exemplified by DeepSeek, can establish a real-time dynamic feedback mechanism of "perception-feedback-optimization". Its core approach is to collect real-time data such as user browsing time and interaction times, and conduct multi-dimensional big data analysis to gain timely insights into user behavior and interests. This allows for an assessment of audience focus and underlying needs, allowing for adjustments to dissemination strategies accordingly, such as dynamically optimizing content output and presentation methods.

Specifically, a dissemination effectiveness monitoring model can be established based on indicators such as the reach of intangible cultural heritage (number of shares/cross-platform diffusion), engagement (secondary creation/derivative content), and emotional engagement (commentary trends/topic activity). This allows for tracking and evaluating the dissemination effectiveness of specific intangible cultural heritage projects. Dynamic adjustments can then be implemented based on this foundation to effectively unlock their potential value. The "instant feedback-dynamic adjustment" mechanism of generative artificial intelligence can not only reduce the "black box effect", but also transform the traditional one-way "cultural output" into a two-way interactive cultural exchange.

3.4 Promotion of the Cultural “Two Creations” Strategy to the International Dissemination of Shaanxi’s Intangible Cultural Heritage

The "Two Creations" strategy refers to the creative transformation and innovative development of China's fine traditional culture. This strategy not only guides the modern transformation of intangible cultural heritage but also provides a new direction for the international dissemination of Shaanxi's intangible cultural heritage. In international communication, it is necessary to focus on innovative cultural transformation, ensuring that Shaanxi's intangible cultural heritage, while preserving its traditions, integrates contemporary art and technology to create cultural products with international characteristics. The joint efforts of government, academia, and the private sector are crucial in this process.

To promote the international dissemination of Shaanxi's intangible cultural heritage, in addition to leveraging digital platforms and technological innovation, cultural exchange activities and cross-border cooperation are also possible. Within this international cultural partnership, Shaanxi can leverage the framework of the Belt and Road Initiative to strengthen cultural exchange and cooperation with countries around the world, promoting Shaanxi's intangible cultural heritage to more countries and regions. Furthermore, the international influence of Shaanxi's intangible cultural heritage can be expanded through channels such as overseas Chinese communities and international sister cities. Through these channels, Shaanxi's intangible cultural heritage can not only gain global recognition but also contribute to the diversity and prosperity of global culture.

3.5 Popular Communication Strategies and the Integration of Intangible Cultural Heritage into Daily Life

To achieve widespread global dissemination of Shaanxi's intangible cultural heritage, it must be integrated into public life. This requires not only the planning of cultural events but also the innovative operation of commercial and social platforms to ensure that intangible cultural heritage

is widely accepted in daily life. For example, businesses can incorporate intangible cultural heritage elements into the design and marketing of everyday consumer goods, such as food and daily necessities. Through product packaging or advertising, they can combine traditional art with modern consumer needs and attract more consumers.

Social media platforms are also playing an increasingly important role in the dissemination of intangible cultural heritage. By creating engaging hashtags and encouraging public discussion and sharing, the popularity and awareness of intangible cultural heritage topics can be rapidly increased. Furthermore, cultural event planners can incorporate diverse intangible cultural heritage activities, such as parent-child activities and community experiences, into modern people's needs for entertainment and leisure activities, allowing a wider audience to understand and identify with intangible cultural heritage through participation.

4. Results and Discussion

4.1 Experimental Design

Controlled Experiment: The experiment includes an experimental group and a control group, with all external variables controlled except the target variable.

Pre- and Post-Test Experiment: The experimental group is evaluated by comparing measurements taken before and after the intervention.

Groups: The study consists of an experimental group and a control group.

Experimental Group: Students participating in Red Culture Education.

Control Group: Students not participating in Red Culture Education.

Variable Setting:

Independent Variable: For example, "Red Culture Education Intervention."

Dependent Variable: For example, "Students' Ideological and Political Quality Scores."

Control Variables: Such as students' age, gender, and cultural background.

4.2 Experimental Procedure

Preliminary Preparation: Researchers determine the sample size for the experimental and control groups and ensure similar baseline characteristics between the two groups (e.g., using randomization).

Intervention Implementation: Educators design and implement Red Culture Education activities for the experimental group, such as organizing Red Culture lectures and visits to revolutionary memorial halls.

Measurement Instruments:

Psychological Scales: Such as the Ideological and Political Quality Scale and the Social Cognition Scale.

Behavioral Observation: Teachers observe and record students' behavior during daily learning and discussions.

Self-Report Questionnaire: The research team distributes a self-report questionnaire to collect information on student perceptions and attitude changes.

Intervention Duration: The study director determines the duration of the intervention, for example, 4 or 8 weeks.

4.3 Experimental Data

The experiment primarily evaluates the effectiveness of the educational intervention using

indicators such as ideological and political quality scores, participation in Red Culture Education, and social practice performance scores.

The data in Table 1 shows that the ideological and political quality scores of the experimental group show a continuous upward trend at different time points. They are 3.5 ± 0.9 before the intervention, rising to 4.0 ± 0.7 after four weeks, further increasing to 4.3 ± 0.6 after eight weeks, and reaching 4.5 ± 0.5 after 12 weeks. This indicates that the ideological and political quality of students in the experimental group significantly improves over the intervention period. In contrast, the change in the control group's scores is more gradual, with only a slight increase from 3.4 ± 0.8 to 3.7 ± 0.6. This indicates that the experimental intervention has a positive effect on improving students' ideological and political quality. The increase in the experimental group's scores is particularly significant between weeks 8 and 12, demonstrating the sustainability and effectiveness of the intervention.

Table 1 Changes in ideological and political quality scores

Time Point	Experimental Group Score (Mean ± SD)	Control Group Score (Mean ± SD)
Before Intervention	3.5 ± 0.9	3.4 ± 0.8
4 Weeks After Intervention	4.0 ± 0.7	3.5 ± 0.8
8 Weeks After Intervention	4.3 ± 0.6	3.6 ± 0.7
12 Weeks After Intervention	4.5 ± 0.5	3.7 ± 0.6

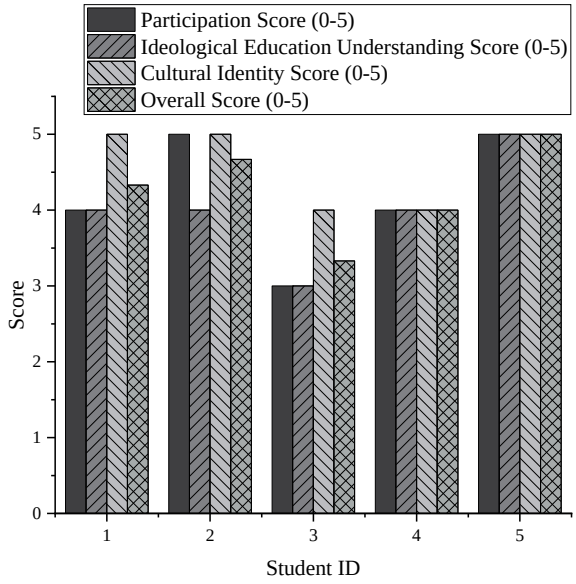

Figure 1 Red culture education participation scores

The data in Figure 1 shows that students demonstrate high enthusiasm for participation and cultural resonance in red culture education activities. Most participants score at medium to high levels across the three dimensions of participation, ideological and political understanding, and cultural identity. Many students achieve full marks for cultural identity, demonstrating the positive impact of Shaanxi's Red Culture on strengthening ideological and political consensus among young students. Overall scores show relatively limited individual variation, generally ranging from 3.33 to 5.00, demonstrating the strong acceptance and recognition of this educational model within the group.

Figure 2 shows the pre- and post-test changes in students' ideological and political quality under different educational models. The data shows that most students' ideological and political quality

scores improve after receiving the Red Culture education intervention. Student 001's score increases the most, from 3.2 to 4.5, representing a 40.63% increase. This is followed by student 005, whose score increases from 3.8 to 4.7, an increase of 0.9 points, or 23.68%. Students 002 and 004's scores each increase by 0.7 points, a roughly 20% increase. Student 003 has the smallest change, increasing by only 0.5 points, a 14.71% increase. Overall, all students participating in the intervention show positive changes, indicating that Red Culture education significantly improves students' ideological and political qualities, with the effect being particularly pronounced for students with relatively low initial scores. This result validates the positive value of this educational model in improving ideological and political literacy.

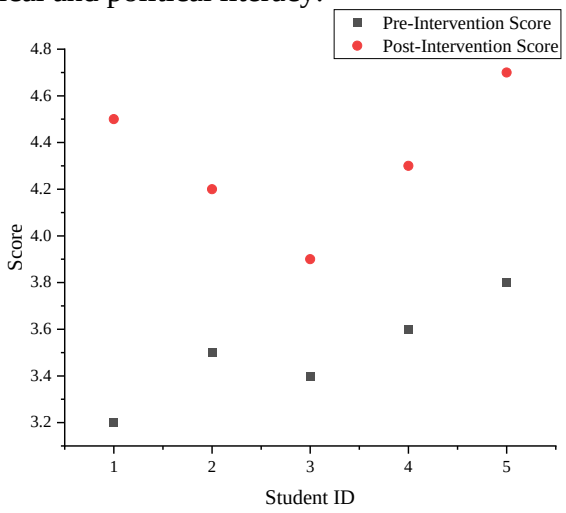

Figure 2 Changes in students' ideological and political quality under different educational models (pre- and post-test comparison)

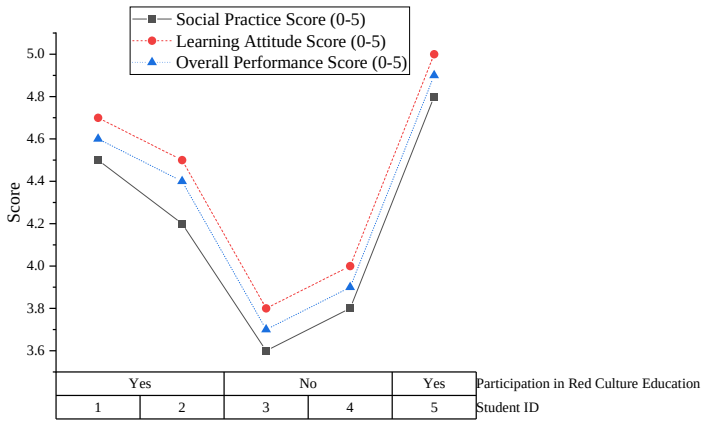

Figure 3 Comparison of social practice performance scores between students participating in red culture education and those not participating

According to the data in Figure 3, students who participate in Red Culture Education score significantly higher than those who do not in all three dimensions: social practice, learning attitude, and overall performance. Specifically, participants' social practice scores range from 4.2 to 4.8, with an average of approximately 4.5, while non-participants' scores range from 3.6 to 3.8, with an average of only around 3.7, reflecting a significant difference in their enthusiasm and performance in practical activities. Regarding learning attitude, participating students generally demonstrate greater initiative and engagement, with scores generally exceeding 4.5, significantly higher than the

non-participants' scores of 3.8-3.9. These results indicate that Red Culture Education can, to a certain extent, enhance students' social practice abilities and overall literacy, and has a positive impact on cultivating a positive learning attitude and sense of responsibility.

5. Conclusions

This study focuses on the digitization of Shaanxi's Red Culture resources and the development of an international communication system for intangible cultural heritage. Combining digital media technologies with intelligent analysis methods, it proposes an innovative model for the integration and dissemination of Red Culture resources. By building a system platform based on digital archives and multidimensional data models, systematic management and dynamic display of red cultural resources have been achieved, significantly enhancing the effectiveness of cultural heritage preservation and dissemination. However, this study still has certain limitations, such as limited digital resource coverage, a lack of long-term tracking and evaluation of some dissemination effects, and insufficient analysis of adaptability to different audience groups. Future research can further expand the breadth and depth of red cultural digital resources, integrate big data and artificial intelligence technologies, conduct more detailed user behavior analysis, and design personalized dissemination strategies to achieve precise and diversified red cultural heritage.

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