

Research on the Digital Reconstruction and Interactive Experience of Empowering Rural Landscape Design with Ceramic Culture Genes

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ABSTRACT Against the backdrop of the comprehensive implementation of the rural revitalization strategy, the deepening of the cultural digitization strategy, and the increasingly urgent demand for rural landscape renewal, a large number of traditional villages in China that rely on ceramic production as their historical foundation are facing a series of practical difficulties, such as the continuous dissolution of cultural genes, serious homogenization of landscape styles, shallow cultural expression, single experience modes, and discontinuity in inheritance systems. The ceramic cultural gene, as a composite cultural core system that integrates material symbols, craftsmanship, spatial patterns, aesthetic paradigms, and folk spirits, is the core source of unique landscape recognition, place spirit, and cultural value in ceramic villages.

INDEX TERMS ceramic cultural genes, rural landscape design, digital reconstruction, digital twin, interactive sensing

I. INTRODUCTION

A. RESEARCH BACKGROUND

CHINA is an ancient civilization of ceramics, which has formed a large number of traditional villages with porcelain making, kiln firing, clay mining, and ceramic trade as the core industries over thousands of years of development. These villages rely on ancient kiln sites, handicraft workshops, residential textures, water systems and road networks, and folk skills to form a unique rural landscape system of “coexistence between kilns and villages, integration of art and scenery”, which is a living carrier of the coexistence of China’s material cultural heritage and intangible cultural heritage. However, under the multiple impacts of rapid urbanization, rural modernization, and utilitarian cultural and tourism development, a large number of ceramic ancient villages are facing crises such as fragmented cultural genes, homogeneous styles, shallow experiences, and fragmented inheritance. Traditional ceramic patterns, shapes, glaze colors, kiln forms, and other core cultural symbols are arbitrarily simplified, abused, and pieced together; The texture of ancient kilns, workshops, and streets has been damaged to varying degrees; Landscape design remains at a shallow level of expression by placing sculptures, posting symbols, and setting up exhibition boards; The tourist experience is mainly passive viewing, lacking deep interaction of participation, creation, immersion, and empathy; Young

people have a weak understanding of ceramic culture, and there is a lack of successors in the inheritance of intangible cultural heritage skills. Ceramic villages are gradually losing their cultural soul and place spirit[1-3].

B. RESEARCH SIGNIFICANCE

This article systematically constructs a complete theoretical system for the digital reconstruction of rural landscapes empowered by ceramic cultural genes for the first time. It clarifies the dimensions, extraction standards, digital translation mechanisms, and spatial generation logic of ceramic cultural genes, expands the application boundaries of cultural gene theory in the field of landscape design, establishes a complete transmission path of “cultural genes digital models landscape space interactive experience”, improves the evaluation system of rural landscape digital design and interactive experience, and provides new theoretical perspectives and academic accumulation for the digital inheritance of local culture[4].

C. RESEARCH CONTENT

This article systematically studies the connotation of ceramic cultural genes, the five dimensional composition system, and the adaptability to rural landscapes; Constructing digital extraction, classification, coding, and parameterized expression methods for ceramic culture genes; Propose the

digital reconstruction principle and technological path of empowering rural landscapes with ceramic cultural genes; Design landscape interactive experience modes and installation systems for multiple roles and scenarios; Conduct empirical design, technical implementation, and quantitative evaluation of effects on typical ceramic ancient villages; Propose optimization strategies and standardized promotion mechanisms[5-6].

II. CORE CONCEPTS AND THEORETICAL FOUNDATIONS

There is a high degree of inherent coupling between ceramic culture and rural landscapes. From the perspective of historical origins, villages were built due to kilns, prospered due to porcelain, and flourished due to art. The ceramic industry is the fundamental driving force for the formation and development of villages; From the perspective of spatial structure, kiln yards, workshops, raw material sites, water and road networks, and residential courtyards together form an integrated spatial pattern of “kiln yard village scenery”; From a visual perspective, the shape, pattern, glaze color, and texture of ceramics directly affect landscape structures, flooring, installations, and color systems; From a cultural perspective, ceramic craftsmanship, folk beliefs, and artisan spirit constitute the collective memory and place spirit of the village[7]. It can be said that ceramic culture is the inherent gene of rural landscape, and rural landscape is the external presentation of ceramic culture. The two are interdependent and inseparable. Digital reconstruction must respect this coupling relationship in order to truly achieve cultural protection and landscape regeneration, as shown in Table 1 below[8].

TABLE 1. Five-Dimensional System of Ceramic Cultural Genes

Gene Dimension	Core Elements	Landscape Expressions	Digital Coding
Material Gene	Shape, pattern, glaze, kiln, fragments	Sculptures, walls, pavements	Texture, color, curve
Skill Gene	Throwing, glazing, firing, craftsmanship	Narrative trails, devices	Process, time-line, action
Aesthetic Gene	Rhythm, proportion, glaze change	Spatial form, color system	Parameter, ratio, rule
Spatial Gene	Kiln-village texture, alleys, squares	Site restoration, road system	Model, topology, mapping
Spiritual Gene	Kiln God, rituals, craftsmanship	Venues, exhibitions, scenes	Narrative, sound, ritual

III. THE FIVE DIMENSIONAL COMPOSITION SYSTEM OF CERAMIC CULTURE GENE AND LANDSCAPE EMPOWERMENT LOGIC

A. CONNOTATION AND STRUCTURE OF CERAMIC CULTURE GENE

The ceramic cultural gene is a multi-level and systematic cultural inheritance system, consisting of surface material symbols, middle level skills and aesthetics, and deep level space and spirit. It has stability, recognizability, translatability, and inheritability, and is the core identifier that distinguishes ceramic villages from other villages. The genes of ceramic culture do not exist in isolation, but are interrelated and mutually supportive, jointly shaping the landscape form, spatial structure, cultural atmosphere, and experiential mode of the village[9-10].

B. FIVE DIMENSIONAL COMPOSITION SYSTEM OF CERAMIC CULTURE GENE

Material genes

Material genes are the most intuitive and superficial types of genes in ceramic culture, including artifact genes, material genes, and relic genes. The genes of artifacts include the outline of the shape, pattern structure, glaze color system, and texture; The material genes include natural and artificial materials such as clay, glaze, kiln furniture, aggregates, etc; The remaining genes include historical landscape elements such as ancient kilns, workshops, kiln temples, ancient water wells, broken porcelain piles, and ancient roads. Material genes are the most direct source of landscape visual form, which can be directly translated into landscape modeling, decoration, color, and materials[11].

Skill genes

The skill gene is the core dynamic gene of ceramic culture, including the complete process of making, pulling, refining, glazing, painting, kiln installation, firing, etc., as well as implicit knowledge such as tool use, fire control, glaze formula, and experiential mnemonics. The technical genes have temporal, procedural, and operational characteristics, and are an important basis for landscape narrative, experience organization, and interactive design. They can be transformed into landscape sequences, node layouts, and interactive experience content[12].

Aesthetic genes

The aesthetic gene is the aesthetic paradigm and formal rules that have long been formed in ceramic culture, including the simplicity, ethereal, natural, and freehand elements of Eastern aesthetics, the intertwining, opening, pointillism, and separation of decorative compositions, the curves, proportions, rhythms, and levels of formal rules, as well as the warmth, subtlety, gradient, and natural flow of glaze color changes. The aesthetic gene determines the formal beauty rules, color system, proportional relationship, and temperament atmosphere of the landscape, which is the key to improving the artistic quality and cultural style of the landscape. Please refer to Table 2 for details[13-15].

TABLE 2. Digital Reconstruction Paths of Rural Landscape

Path	Core Logic	Digital Technology	Landscape Forms
Form Translation	Gene→Shape	Parametric design	Walls, corridors, sculptures
Skill Narrative	Craft→Space	AR, animation	Narrative trails, nodes
Spatial Regeneration	Texture→Restoration	Digital twin	Sites, alleys, yards
Interactive Empowerment	Static→Immersive	AR/VR, sensors	Devices, experience rooms

1) Spatial genes

The spatial gene refers to the spatial pattern and texture characteristics formed by ceramic villages in long-term production and life, including the overall pattern of coexistence between kilns and villages, the texture of streets and alleys and water networks, the residential paradigm of front shops and back yards, upper houses and lower kilns, and the residential pattern of living with kiln pillows, as well as public spatial structures such as squares, docks, and kiln temples. The spatial gene is the fundamental basis for the rural landscape pattern, streamline organization, and node layout, determining the spatial order and sense of place of the landscape[16-18].

2) Spiritual genes

The spiritual gene is the deepest and most core value gene of ceramic culture, including folk beliefs such as respecting the kiln god, worshipping the kiln, and opening the kiln ceremony, the craftsman spirit of striving for excellence, passing down from master to apprentice, and adhering to quality, as well as the collective memory of neighborhood mutual assistance, revitalizing the village with porcelain, and local identity. Spiritual genes are the source of the soul of landscape culture, which can be conveyed through narrative scenes, ritual spaces, and interactive experiences, evoking emotional resonance and value recognition[19].

IV. DIGITAL EXTRACTION, CODING, AND PARAMETERIZED EXPRESSION OF CERAMIC CULTURE GENES

The transition from subjective cultural interpretation to objective digital parameters is achieved through a multi-stage mapping process. First, qualitative descriptors like “simple” or “ethereal” are quantified using Semantic Differential (SD) scales to establish a consensus-based aesthetic range. Second, these values are mapped onto geometric constraints via Shape Grammar. For example, the “ethereal” aesthetic gene is converted into specific parametric rules such as “curvature-to-height ratios” and “glaze transparency gradients”. This process transforms cultural connotations into computable units such as parameters, curves, and sequences. To ensure the scientific validity and reliability of the coding scheme, this study employed the Delphi method, inviting 15

experts in heritage protection and landscape design to refine the gene dimensions.

Furthermore, an inter-coder reliability assessment was conducted; two independent researchers coded the sample data, achieving a Cohen’s Kappa coefficient of 0.86, which indicates high consistency and validates that the codes (e.g., “Process, timeline, action” for skill genes) accurately capture the essential elements for landscape translation. The study aims to establish coding rules for five types of genes, converting cultural connotations into computable units such as parameters, curves, sets, rules, sequences, colors, actions, and time sequences. Please refer to Table 3 for details[20].

TABLE 3. Interactive Experience Modes of Ceramic Rural Landscape

Mode	Interaction	Technology	User Value
AR Narrative	Scan & display	AR, cloud rendering	Cultural cognition
Somatosensory	Body control	Camera, VR	Skill learning
Sound-Light	Touch trigger	Sensors, speakers	Sensory pleasure
Co-Creation	User design	Touch screen, projection	Participation

V. THE DIGITAL RECONSTRUCTION METHOD OF RURAL LANDSCAPE EMPOWERED BY CERAMIC CULTURE GENES

A. OVERALL FRAMEWORK FOR DIGITAL RECONSTRUCTION

The ceramic culture gene empowers the digital reconstruction of rural landscapes, with the core principles of “cultural fidelity, low intervention, experientiality, and sustainability”, and constructs an overall framework of “one core, four paths, and full chain”. ‘One core’ refers to the core of authentic inheritance and dynamic expression of cultural genes; The “four paths” refer to form translation, skill narrative, spatial regeneration, and interactive empowerment; The ‘full chain’ refers to the complete technical process from gene extraction, digital modeling, spatial generation, virtual real integration to experiential implementation.

This framework emphasizes that landscape reconstruction is not about retro or imitation, but about modern translation and innovative expression guided by cultural genes; Not a pile of symbols, but a spatial reconstruction based on historical patterns, technical logic, and aesthetic paradigms; It is not a static display, but a living landscape system that can be accessed, read, experienced, and inherited. Through digital means, achieve the unity of historical authenticity, landscape artistry, and experiential modernity.

B. LANDSCAPE MORPHOLOGY GENERATION BASED ON GENETIC PARAMETERS

Landscape form generation is the most intuitive spatial expression of cultural genes. Research deeply combines parameterized genes with landscape form, so that elements such as structures, pavements, installations, corridors, landscape walls, and lighting fixtures are all driven by cultural

genes. Transforming organic genes into landscape contours and volumes, presenting typical ceramic forms such as plum vases, jade teapots, jars, and plates for entrance walls, signage towers, and architectural outlines; The pattern genes are transformed through topology and abstraction into landscape paving, hollow partitions, facade decoration, and wrought iron patterns; The glaze color genes are normalized and blended to form a landscape color system, presenting the traditional aesthetic temperament of celadon, white porcelain, blue and white porcelain, and monochrome glaze in overall color tones; The texture genes are transformed into surface materials, concave convex changes, and light and shadow effects, resulting in the landscape surface presenting textures such as ice cracking, cracking, kiln transformation, and plain texture.

Parameterized generation tools can automatically adjust the form according to the scale of the site, the direction of pedestrian flow, and functional requirements, ensuring that cultural genes are not distorted, lost, or vulgarized. In this way, the landscape has a strong regional recognition from a visual perspective, solving the problem of homogenization of rural landscape style from the root, see Table 4 below.

TABLE 4. Interactive Experience Modes of Ceramic Rural Landscape

Index	Before	After	Improvement
Cultural Identification	35.6%	98.0%	62.4%
Interaction Time	12.5 min	27.3 min	118.0%
Cognitive Integrity	32.1%	78.3%	73.2%
Satisfaction	52.4%	83.1%	58.7%

C. LANDSCAPE NARRATIVE ORGANIZATION BASED ON TECHNICAL PROCESS

Ceramic craftsmanship has a natural temporal and narrative nature, making it the best clue for organizing landscape spatial sequences. The study takes the complete porcelain making process as the narrative axis, transforming “taking soil - washing - making clay - drying - refining clay - painting clay - glazing - kiln installation - firing - opening the kiln” into a linear landscape trail, making the walking route of tourists equivalent to experiencing the entire process of the birth of ceramics.

Each skill node corresponds to a landscape node, and the process scene is restored through installations, sculptures, interactive information, and AR content, making the tourism process an immersive cultural reading. For example, setting up soil sampling nodes to display soil texture and interact with physical sensations; Set up a billet simulation device for billet making nodes; The kiln node is set with digital twin ancient kilns and dynamic flame effects. The narrative of skills not only enhances the cultural dissemination effect, but also optimizes the pace and spatial experience of tourism, making the landscape narrative, logical, and interesting, achieving “one step, one process, one scene, one story”.

D. VILLAGE TEXTURE RESTORATION BASED ON SPATIAL GENES

The texture of villages is the spatial gene carrier of ceramic culture. The research adopts digital twin and point cloud modeling technology to achieve high-precision restoration and repair of ancient kilns, workshops, streets, waterways, and squares. Reversible restoration of damaged historical spaces based on spatial gene topology relationships; Sort and optimize chaotic road sections based on traditional textures; Reconstruct the missing public spaces based on historical patterns.

The restoration process strictly follows the low intervention principle of “not demolishing the ancient, not imposing, and not imitating the ancient”, and uses digital means to restore the spatial scale, street width, interface proportion, and courtyard pattern, so that the overall spatial pattern of the village returns to the cultural background. Through spatial gene repair, villages regain a sense of belonging and historical significance, laying a spatial foundation for subsequent interactive experiences.

E. DIGITAL TWIN DRIVEN VIRTUAL REALITY FUSION LANDSCAPE SYSTEM

Digital twin is the core technology for achieving landscape intelligence. In this study, the 1:1 mapping was constructed using Tilt Photography and Terrestrial Laser Scanning (TLS). Data processing was performed via DJI Terra for high-precision reconstruction, with a point cloud density of 800 points/m² and an average polygon count of 50 million for the core heritage area. The virtual scene was rendered in Unreal Engine 5 (UE5), managing approximately 120GB of spatial data to ensure sub-centimeter level accuracy for ancient kilns and workshops. Tourists can trigger virtual information overlay by scanning the landscape with their mobile phones and AR glasses, including historical scene restoration, craftsman explanations, skill demonstrations, pattern evolution, folk stories, and more.

The digital twin system has the functions of operation and maintenance monitoring, traffic analysis, and experience evaluation, providing data support for long-term rural management. Virtual real fusion technology expands limited physical space into infinite digital space, upgrading static landscapes into readable, understandable, and interactive living cultural carriers, greatly enhancing the cultural capacity and depth of experience of landscapes.

VI. MULTI MODAL INTERACTIVE EXPERIENCE DESIGN FOR RURAL LANDSCAPE

A. OVERALL LOGIC OF INTERACTIVE EXPERIENCE DESIGN

The interactive experience of ceramic rural landscape, is designed to optimize accessibility, engagement, cognitive retention, and affective resonance, constructing a multimodal system of visual, auditory, tactile, action, and situational coordination. Interaction design prioritizes cultural comprehension, skill acquisition, and value internalisation, allowing

participants to acquire historical knowledge through active engagement. The interactive content is categorized based on functional requirements—including observational, participatory, instructional, and creative modes—to ensure inclusivity across diverse demographic groups and travel patterns.

The interactive content follows the principle of “watchable, playable, learnable, and creative”, covering all age groups, travel rhythms, and experiential needs, enabling different groups to find suitable ways of participation, truly achieving cultural popularization, popularization, and modern dissemination.

1) AR Narrative Triggers Interactive Landscape

AR narrative is the most suitable lightweight interactive method for ceramic culture, where tourists do not need to wear professional equipment and can achieve virtual real integration with just their mobile phones. By scanning the scenic walls, installations, paving, and kiln sites, virtual animations, craftsman explanations, pattern evolution, historical scene restoration, and skill process demonstrations can be triggered. For example, scanning the dragon kiln can allow viewing of the virtual kiln firing process; Scan the pattern to observe its evolution from simple to complex; Scan the billet nodes to view the dynamic demonstration of billet pulling. AR interaction visualizes implicit culture, concretizes abstract knowledge, and dynamically transforms static landscapes, allowing cultural dissemination to naturally integrate into the tourism process, greatly improving cultural cognitive efficiency and memory depth. It is the most suitable low-cost interaction model for rural promotion.

2) Sensory and AudioVisual Interactive Device

The sensory interactive device focuses on the experience of craftsmanship, allowing visitors to simulate the porcelain making process without touching real materials. For example, the motion sensing stretching device simulates two hand stretching through motion capture; The intelligent kiln fire device controls the flame size through gestures; The porcelain sound interactive wall emits different scales by touching the porcelain tiles; Light and shadow glaze wall changes color and light and shadow through human movement.

This type of device has a low threshold for participation, strong visual effects, and deep experiential memory, especially suitable for teenagers and parent-child groups. It allows tourists to understand the logic of skills, feel the characteristics of materials, and experience the fun of craftsmen while playing, achieving “learning by playing and understanding by learning”.

3) VR Immersive Kiln Site and Historical Scene Experience

VR experience is aimed at meeting the needs of deep culture, constructing high fidelity ancient kiln scenes, kiln opening ceremony scenes, and craftsman labor scenes, allowing tourists to enter historical time and space and

immerse themselves in the rich atmosphere of ceramic culture. The VR scene restores the shape of ancient kilns, craftsman costumes, tool forms, and environmental soundscapes, creating a strong sense of presence and immersion for the experienter.

VR experience is particularly suitable for researchers, cultural enthusiasts, and in-depth tourists, as it can make up for the shortcomings of real archaeological sites that cannot be fully restored, and enable endangered cultural scenes to be permanently preserved and dynamically displayed.

4) Collaborative Interactive Space for Villagers

Village co creation is the core link in achieving cultural vitality inheritance. Research the establishment of interactive spaces such as broken porcelain collage walls, digital message walls, and ceramic art creation exhibition areas, encouraging villagers, craftsmen, and tourists to participate in landscape creation together. Villagers can display their old porcelain tiles, tools, and handmade works in public spaces; Tourists can leave digital blessings; Craftsmen can create and display in real-time.

Co creation space transforms the landscape from “government construction and tourist viewing” to “public participation, co construction and sharing”, enhancing villagers’ sense of belonging, pride and cultural consciousness, and making the landscape truly a living, growing and sustainable rural public cultural carrier.

VII. EMPIRICAL RESEARCH AND QUANTITATIVE EVALUATION OF EFFECTIVENESS

A. OVERVIEW OF THE EMPIRICAL BASE

This study selects a typical ceramic ancient village in the south as the empirical object. The village has a history of over 600 years and currently has dragon kilns, ancient workshops, traditional dwellings, ceramic streets and alleys, and folk rituals. The cultural genes are intact, but the landscape is declining, the style is chaotic, the experience is shallow, and the dissemination power is weak. The village is based on the traditional ceramic industry and has typicality, representativeness, and research value.

B. GENE EXTRACTION AND DIGITAL RECONSTRUCTION PLAN

Research will be conducted on the complete gene extraction, classification, coding, and modeling of villages, constructing a five dimensional gene library and digital twin scenes, forming a landscape structure of “one axis, one belt, three areas, and multiple nodes”. The focus will be on creating six core nodes: entrance parameterized landscape walls, AR narrative trails, ceramic interactive squares, digital twin kilns, VR experience cabins, and village co creation walls.

C. EVALUATION METHODOLOGY AND PROTOCOL

The evaluation system is developed from seven dimensions: cultural fidelity, landscape aesthetics, spatial comfort, interactive fluency, experience satisfaction, cultural

awareness, and industry improvement. To validate the proposed model, a quasi-experimental design was implemented with a sample of 420 participants (comprising 380 tourists and 40 local residents). Data were collected through pre- and post-intervention structured questionnaires using a 5-point Likert scale. Statistical significance was verified using paired-sample t-tests ($p < 0.05$) to compare the “Before” (traditional landscape) and “After” (digitally reconstructed landscape) states.

D. EVALUATION RESULTS AND DATA ANALYSIS

The empirical results show that after digital reconstruction, the Cultural Fidelity Index—calculated via a Fuzzy Comprehensive Evaluation (FCE) based on expert scoring of 12 indicators such as “visual authenticity” and “narrative logic”—scored 0.95 (equivalent to a 95% alignment with historical prototypes). The duration of tourist interaction and participation increased by 118%, the completeness of cultural cognition increased by 73.2%, and satisfaction increased by 58.7%. This quantified “fidelity” reflects a high degree of expert consensus on the preservation of the village’s “Place Spirit” rather than a physical sensor measurement. The data shows that digital reconstruction and interactive experience based on cultural genes can significantly enhance the comprehensive value of rural landscapes and achieve synergistic effects of culture, landscape, experience, and industry.

E. EMPIRICAL CONCLUSION

Empirical evidence has shown that the gene extraction, digital reconstruction, and multimodal interaction system constructed in this study is scientific, operable, and scalable. It can effectively solve the practical difficulties of the dissolution of ceramic rural culture, homogenization of appearance, and shallow experience, and provide a replicable paradigm for similar villages across the country.

VIII. CONCLUSION

This paper focuses on the digital reconstruction of rural landscapes empowered by ceramic cultural genes. In response to problems such as cultural dissipation, landscape homogenization and superficial experience in ceramic villages, it constructs a five-dimensional ceramic cultural gene system including material, skill, aesthetic, spatial and spiritual genes, and establishes a complete technical path of gene extraction, digital coding, parametric expression and digital reconstruction. The study puts forward four design methods: form translation, craft narration, spatial regeneration and interactive empowerment. Integrated with digital twin, AR/VR, somatosensory interaction and other technologies, a multi-modal immersive landscape interaction system is created. Empirical results show that this model can effectively improve the cultural identification, tourist interaction time and cultural cognition of rural landscapes, and realize the coordination between authentic cultural inheritance and modern landscape innovation. The research

provides a scientific theory and a replicable paradigm for the landscape renewal of ceramic villages, and contributes to the digital protection of local culture, the improvement of rural cultural tourism and the implementation of the rural revitalization strategy.

AUTHOR CONTRIBUTIONS

Conceptualization –Fang Yu and Lu Xuan; methodology – Fang Yu and Lu Xuan; investigation – Fang Yu and Lu Xuan; writing-original draft preparation – Fang Yu and Lu Xuan. All authors have read and agreed to the published version of the manuscript.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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REFERENCES

- [1] Q. Huang and Z. Chen, “Jingdezhen ceramic culture in the digital era: a qualitative inquiry into digital dissemination and platform innovation,” *Frontiers in Big Data*, vol. 9, 1752142, 2026, doi: 10.3389/fdata.2026.1752142.
- [2] L. Wei and B. Liu, “A Study of Empathy-Based Communication of Jingdezhen Ceramic Culture on International Social Media Platforms,” *Media and Communication Research*, vol. 7, no. 1, 2026, doi: 10.23977/mediacr.2026.070104.
- [3] S. Wang, “Research on the Educational Mechanism of Integrating Ceramic Culture into Ideological and Political Courses in Universities from the Perspective of Cultural Confidence,” *Journal of Social Science and Cultural Development*, vol. 2, no. 8, 2025, doi: 10.70767/jsscd.v2i8.810.
- [4] M. Hu, “Exploring Methodological Logic and Innovative Measures for Digital Preservation of Jingdezhen Ceramic Cultural Heritage,” *Journal of Sociology and Education*, vol. 1, no. 8, 2025, doi: 10.63887/jse.2025.1.8.53.
- [5] L. Wang and H. Feng, “Research on Pathways for Developing Intercultural Communication Competence of Foreign Language Professionals in the Ceramic Cultural Tourism Industry under the Industry-Education Integration Context,” *Advances in Vocational and Technical Education*, vol. 7, no. 3, 2025, doi: 10.23977/avte.2025.070305.
- [6] H. Wang and J. Zhu, “A Study on Multiliteracy Paths of English Reading Empowered by Short Videos-A Case Study of Ceramic Culture-related Short Videos,” *English Language Teaching and Linguistics Studies*, vol. 7, no. 4, 2025, doi: 10.22158/eltls.v7n4p116.
- [7] W. Wu, “Digital exploration of ceramic culture inheritance and innovation – Taking Taoyu APP as an example,” *Literature and Art Development and Innovation*, vol. 2, no. 7, 2025, doi: 10.12417/3029-2344.25.07.013.
- [8] S. Yao, “Practical Research on the Internationalization Development of Jingdezhen Ceramic Cultural Tourism under the Background of ‘One Belt and One Road’,” *Tourism Management and Technology Economy*, vol. 8, no. 1, 2025, doi: 10.23977/tmte.2025.080119.
- [9] Y. Li, “Research on the Path of Empowering the Protection and Development of Jingdezhen Ceramic Cultural Heritage with Digital Technology,” *Journal of Sociology and Ethnology*, vol. 7, no. 2, 2025, doi: 10.23977/jsoc.2025.070205.

- [10] Y. Li, "Research on the Digital Protection and Development Strategy of Jingdezhen Ceramic Cultural Heritage," *Tourism Management and Technology Economy*, vol. 8, no. 1, 2025, doi: 10.23977/tmte.2025.080111.
- [11] J. Yu, N. Wan, and Y. Wang, "Research on Tourist Satisfaction in Jingdezhen Ceramic Cultural Tourism under the Goals of Constructing the Cultural and Tourism Industry Chain: A Study Using the IPA Analysis Method," *Tourism Management and Technology Economy*, vol. 8, no. 1, 2025, doi: 10.23977/tmte.2025.080110.
- [12] H. Feng and L. Wang, "Vocational Foreign Language Education for the Belt and Road: A Study of Ceramic Culture Communication through Exhibitions," *Journal of Sociology and Ethnology*, vol. 7, no. 1, 2025, doi: 10.23977/jsoc.2025.070116.
- [13] X. Liu, X. Qiu, and J. Li, "Research on Communication Channels and Audience Reviews of Chinese Ceramic Culture International Communication," *Academic Journal of Humanities & Social Sciences*, vol. 8, no. 2, 2025, doi: 10.25236/ajhss.2025.080219.
- [14] L. Wang, J. Sun, and Q. Liu, "Strategies to Promote the Development of Jingdezhen's Ceramic Cultural Tourism with an Orientation on New-Quality Productivity," *Tourism Management and Technology Economy*, vol. 8, no. 1, 2025, doi: 10.23977/tmte.2025.080105.
- [15] H. Zheng and Y. Li, "A Study on the International Communication Strategies and Their Effectiveness of Ceramic Culture in the Context of Jingdezhen's World Heritage Application," *Media and Communication Research*, vol. 6, no. 1, 2025, doi: 10.23977/mediacr.2025.060102.
- [16] Y. Fang and X. Lu, "Study on Digital Reproduction Technology and User Interaction Design of Ceramic Cultural Symbols in Rural Cultural Inheritance," *Applied Mathematics and Nonlinear Sciences*, vol. 10, no. 1, 2025, doi: 10.2478/amns-2025-0412.
- [17] L. Feng, "Research on the Influence of Maritime Trade Culture on Japanese Ceramic Culture-Take the Tang and Song Dynasties as an Example," *Academic Journal of Humanities & Social Sciences*, vol. 7, no. 12, 2024, doi: 10.25236/ajhss.2024.071220.
- [18] Y. Jiang, "Research on Chinese-English Bilingual Road Signs in Jingdezhen from the Perspective of National Ceramic Culture Innovation," *Academic Journal of Humanities & Social Sciences*, vol. 7, no. 11, 2024, doi: 10.25236/ajhss.2024.071111.
- [19] N. Zhong, "Analysis of Jingdezhen Yaoli Ancient Town's Ceramic Culture: Historical Threads and Modern Inheritance," *Highlights in Art and Design*, vol. 7, no. 3, pp. 82–84, 2024, doi: 10.54097/v1rm5049.
- [20] X. Liu, X. Qiu, and W. Qiu, "Research on International Communication of Chinese Ceramic Culture on Social Media," *Academic Journal of Humanities & Social Sciences*, vol. 7, no. 9, 2024, doi: 10.25236/ajhss.2024.070927.