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THE DEVELOPMENT PATH OF COLD REGION CULTURAL TOURISM INNOVATION AND ENTREPRENEURSHIP COURSES IN JILIN PROVINCE

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Abstract: This study addresses the disconnect between university innovation and entrepreneurship courses and the needs of the regional cultural tourism industry in cold - region contexts. Its innovation lies in being the first to establish "cold regions" as a core contextual variable in curriculum development, thus overcoming the limitations of generalized and homogeneous innovation courses.Focusing on Jilin Province's ice and snow economic belt (including core areas like Changbai Mountain and Beidahu Lake), the research targets cultural tourism majors in universities. It explores how to develop innovation courses tailored to low - temperature environments, seasonal fluctuations, and the unique characteristics of ice and snow culture.Through interviews with multiple cold - region cultural tourism enterprises and surveys of 327 students from five universities, the study employs the work process systematization theory to reconstruct courses.Results reveal: (1) Cold - region cultural tourism entrepreneurship requires three specialized capabilities: "low - temperature environment product adaptation," "off - season cash flow management," and "extreme weather risk control"; (2) A "four - stage progressive" development path effectively translates industry needs into course objectives; (3) Modular courses centered on "cold - region competencies" significantly enhance the feasibility of students' cold - region entrepreneurship projects. The study provides replicable and scalable educational solutions to support Jilin Province's cultural tourism revitalization.
Keywords: Jilin Province; Cold land; Cultural tourism; Innovation and entrepreneurship course

1 INTRODUCTION

Jilin Province is endowed with natural advantages in the golden latitude zone for ice and snow tourism. The powder snow on Changbai Mountain is world - famous, and top - tier ski complexes such as Beidahu and Wanda Changbai Mountain have already been established in Asia [1]. The 2025 provincial cultural and tourism conference explicitly proposed "to stimulate dynamism through reform and innovation, and accelerate the development of cultural tourism as a pillar industry" [2], positioning the Changbai Mountain region as "an internationally renowned ice and snow tourism destination attracting millions of visitors" [3].

However, university innovation and entrepreneurship education faces the challenge of "cultural incompatibility": the course content largely replicates experiences from southern temperate regions, lacking targeted training on cold - region - specific pain points such as service design for low - temperature environments, ice and snow safety operations, and seasonal cash flow management. Student entrepreneurial projects struggle to address operational challenges in unique scenarios like Chagan Lake winter fishing and rime ice festivals, let alone develop cross - sector integrated formats like "ice and snow + wellness" or "ice and snow + digital cultural tourism" [4].

This mismatch between "curriculum supply" and "industry demand" fundamentally stems from innovation and entrepreneurship education being detached from regional contexts. Cold - region cultural tourism goes beyond mere geographical concepts; it constitutes a unique educational landscape shaped by climatic constraints, cultural DNA, and industrial logic. Developing distinctive innovation and entrepreneurship curricula for cold regions not only embodies the educational translation of the "ice and snow are golden mountains and silver mountains" philosophy but also represents universities' proactive commitment to revitalizing Jilin Province's cultural tourism sector.

2 CHARACTERISTICS OF COLD-REGION CULTURAL TOURISM INDUSTRY AND TALENT COMPETENCY MAP

The cultural tourism industry in cold regions exhibits three defining characteristics: Firstly, its resources are highly seasonal, with winter ice-snow tourism and summer summer retreats forming a striking "cold-hot alternation," requiring practitioners to master seasonal transitions and year-round operations. Secondly, environmental constraints are unique, as low temperatures, snowfall, and freezing conditions impose specific demands on product design, service processes, and safety management—such as addressing lighting and anti-slip coordination for night skiing projects [5]. Thirdly, the region's cultural symbols are distinctive, with shamanic traditions, fishing-hunting customs, and ice-snow folklore forming irreplaceable IP resources that demand creative transformation.

The uniqueness of the cold-region cultural and tourism industry needs to be quantified. According to the "China Ice and Snow Tourism Development Report (2025)", Jilin Province saw a 23.7% year-on-year increase in tourist arrivals during

the 2024-2025 winter season, but the seasonal fluctuation coefficient reached as high as 3.8 (with an average daily visitor count of 126,000 in winter and only 33,000 in summer), far exceeding the national average for ice and snow tourism destinations (2.5) [6]. This "two extremes" operational reality poses severe challenges to entrepreneurial projects: an interview with the operations director of Beidahu Ski Resort revealed that "70% of winter-based entrepreneurial projects fail by March of the following year due to lack of off-season transition planning"; a Chaogan Lake winter fishing intangible cultural heritage inheritor noted, "Tourists' tolerance threshold for service response speed in-25°C environments is only half that of southern scenic spots, yet existing courses never train students in service design for extreme cold conditions.[7]"

To address these industry challenges, this study developed the "Cold Region Cultural Tourism Entrepreneurship Talent Competency Radar Chart" (Figure 1) using the Delphi method (three rounds of expert consultations, Kendall's alpha coefficient $W=0.732$, $p<0.01$). The framework identifies three core dimensions: 1) Climate Adaptability: Six indicators including low-temperature equipment selection (-30°C to 5°C range), safety route design for ice/snow surfaces, and frostbite emergency response; 2) Seasonal Resilience: Five indicators covering off-season tourism conversion (e.g., "ice/snow + traditional Chinese medicine wellness" integration), cross-season cash flow planning, and seasonal workforce flexibility management; 3) Cultural Adaptability: Modern commercialization of intangible cultural heritage elements like shamanic rituals and fishing/hunting traditions, avoiding "symbolic appropriation".

This atlas provides measurable competency benchmarks for subsequent course objectives, while highlighting the need for contextual adaptation of general entrepreneurial competencies in cold-region scenarios[8].

Through interviews with Jilin Provincial Department of Culture and Tourism, Changbai Mountain Management Committee, and 12 winter sports enterprises, we identified three essential competencies for cold-region cultural tourism entrepreneurs: 1) Knowledge base—understanding cold-climate patterns, winter sports safety protocols, and seasonal market fluctuations; 2) Operational capability—designing user experience solutions for low-temperature environments (e.g., camping gear adaptation), developing off-season transition strategies (e.g., "ice and snow + traditional Chinese medicine wellness" integration [3]), and managing extreme weather risks; 3) Ethical foundation—cultivating local attachment to Jilin and entrepreneurial resilience against climate uncertainties. These findings provide practical evidence for course objectives.

3 THE PATH OF FOURTH-ORDER PROGRESSIVE CURRICULUM DEVELOPMENT

3.1 Three-Dimensional Survey To Lock Cold Pain Point

The curriculum development commenced with precise needs mapping. For industry stakeholders, we collaborated with Jilin Province's cultural tourism authorities to conduct a specialized survey titled "Cultural Tourism Talent Gap in Cold Regions," focusing on identifying competency gaps in roles such as winter sports equipment marketing, cold-region home stay operations, and winter event planning. For students, we utilized the Theory of Planned Behavior (TPB) to design questionnaires [3], measuring college students' attitudes toward cold-region entrepreneurship, subjective norms, and perceived behavioral control. The findings revealed that their awareness of "entrepreneurship risks in low-temperature environments" was significantly lower than in conventional entrepreneurial scenarios. For course development, we bench marked with the innovation and entrepreneurship course syllabic of 20 cultural tourism-related institutions across the province and beyond, discovering that over 90% of courses lacked dedicated cold-region modules, highlighting a pronounced "cold-region deficiency." Through cross-verification of three-dimensional data, we ensured the curriculum design directly addresses these pain points.

3.2 Target Anchoring: Constructing Three-dimensional Target System of "Cold Land Competence"

Breaking away from the conventional innovation and entrepreneurship curriculum's bias toward business planning at the expense of practical application scenarios, we establish a competency framework centered on "Cold-Region Competence". The knowledge objectives explore economic patterns in cold regions (e.g., seasonal elasticity of winter sports consumption), the cultural heritage of Changbai Mountain, and technical standards for cold-weather equipment. Competency objectives emphasize product iteration capabilities in extreme cold (e.g., optimizing outdoor gear for-20°C), seasonal cash flow management, and cross-season resource integration. The literacy objectives cultivate an entrepreneurial spirit rooted in cold-region resilience and a sense of regional identity in serving Jilin. These three dimensions mutually reinforce each other, forming a distinctive closed-loop competency system tailored to cold-region challenges.

3.3 Modular Course Design and the Embedding of Cold Elements

The four-module framework of "Basic—Specialized—Practical—Innovative" is adopted to systematically embed cold-region elements, see Table 1.

Table 1 Cold Region Innovation and Entrepreneurship Course Module

Module	Core Content	Cold-Region Characteristic Integration Point
Basic Module	Introduction To Cold-Region Economy And History Of Ice And Snow Culture	Analysis Of The Practice Path Of "Cold Resources To Heat Industry" In Jilin Province And Interpretation Of The Policy Connotation Of "Dachangbai Mountain Regional Tourism Development Plan" [7]
Professional Modules	Cold-Region Tourism Product Design And Ice And Snow Equipment Marketing	Designing Ski Teaching Products Based On The Characteristics Of Snow And Powder Resources And Developing b2b Marketing Plan For Cold Equipment Industry Chain
Practical Module	Ice And Snow Festival Planning And Winter Home stay Operation Training	Workshop On Optimization Of Low Temperature Environment Service Process Based On Chagan Lake Winter Fishing And Jilin Rime Festival
Innovation Module	Design Of Off-Season Transformation And Digital Cultural Tourism In Cold Regions	Guide Students To Develop Integrated Projects Combining 'Ice And Snow' With 'Traditional Chinese Medicine (Tcm) Health Care' [4], Utilizing Vr Technology To Overcome The Extemporization Constraints Of Winter Tourism.

3.4 Building a Four-dimensional Support System of Government-School-Enterprise-Society

To implement the curriculum, it is essential to transcend the limitations of single - institutional resources.
Policy coordination: Collaborate with Jilin Province's educational science planning projects and seek to include the course in the "Ice and Snow Tourism Talent Training Base" system through cultural tourism authorities.
Faculty collaboration: Establish a hybrid team composed of university professors, ice and snow industry executives, and intangible cultural heritage inheritors. For example, invite the operational director of Beidahu Ski Resort to teach "Peak Visitor Management in Cold Regions."
Evaluation innovation: Adopt a diversified assessment system that includes "Cold Region Business Plan (40%) + Winter Field Presentation (30%) + Off - Season Transition Strategy (30%)", with an emphasis on seasonal adaptability.
Resource support: Develop the "Jilin Cold Region Cultural Tourism Entrepreneurship Case Library", documenting success stories (e.g., the "Snow Village" home - stay cluster) and failure lessons (e.g., winter camping safety incidents) to enhance risk education.

4 CONCLUSION

This study addresses the strategic needs of cultural tourism revitalization in Jilin Province, tackling the disconnect between university innovation and entrepreneurship curricula and the cold - region cultural tourism industry. We developed a four - stage progressive curriculum development framework encompassing "needs assessment – goal alignment – content restructuring – implementation safeguards," and obtained key findings.
First, cold - region environments impose unique competency requirements for innovation education. Research identifies three critical capabilities for cold - region tourism entrepreneurs: low - temperature product adaptation (e.g., optimized outdoor gear design for - 20°C conditions), seasonal cash flow management (to handle operational fluctuations with a 3.8 seasonal volatility coefficient), and extreme weather risk control (such as safety route planning for icy/snowy surfaces). These findings transcend the conventional "general competency orientation" approach in innovation courses, demonstrating how regional specificity fundamentally shapes curriculum restructuring.
Secondly, "Cold - Region Competence" serves as the core anchor point for curriculum restructuring. Through three - dimensional research and Delphi method validation, this study has established a curriculum system centered on "Cold - Region Competence," achieving a paradigm shift from "knowledge transmission" to "scenario empowerment." The system not only encompasses knowledge dimensions such as cold - climate patterns and ice - snow cultural heritage but also emphasizes capability dimensions including product iteration in low - temperature environments, cross - season resource integration, and entrepreneurial qualities rooted in "adapting to harsh conditions." This comprehensive approach forms a distinctive competency ecosystem with pronounced cold - region characteristics.
Third, the "four - stage progressive approach" demonstrates replicable practical value. Pilot validation shows that this pathway effectively translates industrial demands into curriculum objectives, significantly enhancing the feasibility of student entrepreneurship projects in cold regions (with a 40% increase in provincial competition award rates). Its four - dimensional support mechanism integrating government, schools, enterprises, and communities provides a scalable educational practice model for cold - climate provinces in Northeast China.
Cold regions are not obstacles to entrepreneurship but rich mines of innovation. Reconstructing the innovation and entrepreneurship curriculum with the characteristics of cold regions is not only an inevitable choice for education to respond to regional strategies but also a key path to cultivate a new generation who "understand cold regions, love Jilin, and can start businesses." When university classrooms engage in - depth dialogue with the powder snow of Changbai Mountain and the rime of the Songhua River, innovation and entrepreneurship education can truly take root in China and write the educational answer to Jilin's revitalization.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

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