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AI Empowering Tourism Education Reform: Reconstruction of Teaching Objectives and Redesigning of Teaching Processes

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Abstract: Artificial intelligence technology is driving tourism education to undergo a profound transformation from the traditional "experience inheritance" model to a precise "data-driven decision-making" model. Based on multidisciplinary practical cases such as smart scenic area management, cultural tourism IP incubation, and cross-cultural service design, this paper creatively proposes a three-dimensional empowerment model of "objective reconstruction-process redesign-evaluation innovation." Through empirical research that integrates AI virtual tour guide training, intangible cultural heritage digitization, and hotel revenue management simulation, the paper systematically demonstrates the disruptive transformation that artificial intelligence technology brings to the paradigm of tourism talent cultivation. This paper aims to provide a systematic theoretical framework and actionable practical pathway for the digital transformation of tourism education in the new era, with the goal of cultivating compound industry elites who possess both cultural foundation and technological literacy.

Keywords: AI Empowerment, Tourism Education, Core Pathway, Cultural Tourism Integration.

1. Introduction

With the vigorous rise of the global smart tourism trend and the deep integration of the digital economy, the tourism industry is experiencing unprecedented structural changes. These changes directly transmit to the front end of talent cultivation-the field of tourism education, giving rise to a profound transformation from the traditional "experience-driven" to the modern "data-driven" approach. For a long time, the tourism education system has faced two core contradictions: first, the contradiction between standardized curriculum settings and the industry's growing demand for personalized and customized talent; second, the conflict between relatively fragmented disciplinary teaching (such as management, geography, cultural studies) and the comprehensive literacy and cross-border integration capabilities required by the industry. The traditional teaching model, which often relies on the personal experience of mentors, finds it difficult to respond to the challenges brought by new technologies such as big data analysis, intelligent algorithm recommendations, and virtual reality experiences.

Against this background, how to organically integrate artificial intelligence technology into the entire process of tourism education has become a key proposition concerning the future development of the industry. This paper constructs a three-dimensional empowerment model of "objective reconstruction-process redesign-evaluation innovation." This model systematically explores the innovative applications of AI technology in the layered setting of teaching objectives, the intelligent embedding of teaching processes, and the dynamic innovation of evaluation mechanisms, providing support for promoting the digital transformation of tourism education in China and improving the quality of talent cultivation.

2. Reconstruction of Teaching Objectives: From Knowledge Transfer to Scenario Capabilities and Cross-border Integration

Traditional tourism education objectives often focus on memorizing knowledge and mastering theory, while tourism talents in the AI era must possess the ability to solve problems in complex and dynamic real-world scenarios. Therefore, the reconstruction of teaching objectives primarily involves shifting from "knowledge-centered" to "capability-centered" approaches, breaking down disciplinary barriers and achieving cross-border integration.

2.1. Construction of a Layered Capability Framework

This paper constructs a progressive capability framework consisting of three levels-cognitive, operational, and practical-ensuring the systematic development of student abilities.

2.1.1. Cognitive Level: Data Insight and Cultural Decoding Capabilities

This level requires students to go beyond surface observations of tourism phenomena and deeply understand the underlying data logic and cultural connotations. For example, in the "Tourism Destination Management" course, students not only learn scenic area carrying capacity theory but also master how to use AI algorithms to analyze tourist mobile signaling data and consumption card data to accurately predict peak visitor flows and identify popular tour routes and potential congestion points. In the "Cultural Tourism" course, students need to understand the digital translation logic of cultural symbols, such as learning how to encode the totems, colors, and patterns of Miao embroidery into AI design models, laying the foundation for subsequent

cultural and creative product development. The core of this stage is to cultivate students' ability to discover patterns from data and extract value from culture [1].

2.1.2. Operational Level: Proficient Application of Intelligent Tool Chains

This level emphasizes "human-machine collaboration," requiring students to master and apply a series of industry-mainstream AI tool chains to transform creative concepts into technically feasible solutions. Specifically, this includes: proficiently using the API interfaces of Trip.com, Ctrip, and other platforms for data crawling and automated itinerary planning; mastering voice synthesis and recognition technologies from platforms such as Baidu AI and iFLYTEK to develop multilingual intelligent guide scripts; using AIGC tools like Midjourney and Stable Diffusion to quickly generate tourism promotional posters and concept designs; and utilizing the AI modules of hotel revenue management systems (RMS) for dynamic pricing and room status prediction. Through operational training with these tools, students can seamlessly connect abstract service concepts with technical expression, achieving efficient implementation of creative ideas [2].

2.1.3. Practical Level: Comprehensive Cross-Industry Project Planning Capability

This is the highest level of capability cultivation, requiring students to integrate and apply what they have learned in the previous two levels to complete comprehensive cross-industry projects in highly simulated real business environments. For example, students need to plan a three-in-one solution themed around "smart city cultural tourism integration," encompassing scenic area digital upgrades, online transmission of intangible cultural heritage, and hotel intelligent service innovation. In project execution, students must first use the data analysis capabilities from the cognitive level to identify the consumption preferences and behavioral patterns of target customer groups; then, through the tool chains at the operational level, complete specific tasks such as virtual scenic area modeling, AI translation of intangible heritage elements, and dynamic simulation of hotel revenue; and finally form a complete planning proposal including a technology roadmap, cost budget table, and risk assessment report. This "cognitive-operational-practical" closed-loop training can effectively enhance students' comprehensive project management capabilities, cross-industry resource integration capabilities, and decision-making abilities in complex business scenarios.

2.2. Interdisciplinary Literacy Infusion

AI technology provides an unprecedented opportunity to break down disciplinary barriers and achieve interdisciplinary integration.

2.2.1. History + Tourism - Dynamic Activation of "Along the River During the Qingming Festival"

In the "Tourism Cultural Studies" course, the Northern Song dynasty masterpiece "Along the River During the Qingming Festival" was introduced. Traditional teaching was limited to artistic and historical appreciation of the painting. In AI-empowered teaching, students first use image recognition technology to label and classify more than 500 characters, dozens of shops, and various means of transportation in the painting. Then, through spatiotemporal data analysis, they simulate the action trajectories of the characters in the painting, constructing a urban vitality heat map of Bianjing (present-day Kaifeng) in the Northern Song Dynasty. Based on this, students design upgrade plans for the "Qingming Riverside Garden" smart scenic area in groups, including an "AR role-playing" guide. Tourists can choose to play the roles of merchants, boatmen, officials, and other characters in the painting through a mobile APP, and complete tasks following the optimal routes recommended by AI, deeply experiencing Song dynasty urban life. This process deeply integrates historical research, data analysis, and tourism experience design, greatly stimulating students' learning interest and innovation ability [3].

2.2.2. Management + Data Science - Hotel "Emotional Service" Matrix Design

In the "Hotel Management" premium course, students are guided to break free from the constraints of standard SOP (Standard Operating Procedures) and explore "emotional service." Through learning, students have constructed a three-dimensional data matrix of "service touchpoints-emotional index-response efficiency." They use customer historical data from the hotel PMS system, combined with guest comment texts on social media, to label different customer groups (such as business travelers, families, couples) with emotional tags like "prefer efficiency," "attention to detail," and "pursuit of romance" through an AI sentiment analysis model. Furthermore, they train a simple AI recommendation model so that when specific guests book their stay, the system can automatically recommend personalized service plans, such as preparing high-speed Wi-Fi and late-night snacks for business travelers, or arranging special room decorations for couples. This case not only cultivates students' data analysis capabilities but also deepens their understanding of the essence of service-"people-centered" [4].

3. Redesigning of Teaching Processes: Deep Integration of Intelligent Technology into All Teaching Links

AI empowerment is not just an update of teaching tools but a systematic redesign of the entire teaching process, making it more intelligent, efficient, and personalized.

3.1. AI Empowerment in Practical Aspects

3.1.1. Resource Integration: Building Dynamic Knowledge Graphs

AI technology can break down information silos and automatically associate and integrate massive teaching resources. For example, when conducting the "Tourism Planning and Development" course design, students no longer need to manually collect scattered materials. By introducing an AI teaching assistant, it can automatically associate official policy documents of National Cultural Parks, historical literature from local chronicle databases, topographic data from geographic information systems, and tourist review data from OTA platforms based on the project theme (such as "Grand Canal Cultural Belt Tourism Development"), forming a dynamically updated, multi-dimensional project knowledge graph, greatly enhancing the breadth and depth of preliminary research [5].

3.1.2. Creative Stimulation: Generating Personalized Task Chains

For differences in student interests and abilities, AI can generate personalized learning tasks. For example, in the "Exhibition Management" course, the AI system will push different exhibition planning themes based on students'

grades in previous courses, interest tags (such as "tech enthusiast," "art youth"), and career planning. Students interested in technology might receive the task of "planning a metaverse online tourism expo," while those interested in arts might be responsible for "designing a city music festival tourism package." The system will further break down major tasks into sub-task chains such as "market research-supplier screening-budget preparation-promotion," and recommend corresponding learning resources and tools, achieving "personalized teaching for each individual" [6].

3.1.3. Tool Enhancement: Lowering Barriers to Professional Practice

Many tourism professional skills, such as video editing, professional guide script writing, and multilingual translation, have relatively high learning barriers. The introduction of AI tools effectively lowers these barriers, allowing students to invest more energy in creative and strategic thinking. For example, students are encouraged to use "CapCut" AI intelligent editing features to quickly generate travel vlogs; use AI translation tools like "DeepL" to assist in writing high-quality English narrations; and create music for their tourism promotional videos through AI composition tools like "Sponge Music." These tools act as "creativity accelerators," allowing even students without technical backgrounds to easily produce professional-level work [7].

3.2. Classroom Implementation Innovation

This paper designs a series of AI deeply integrated classroom teaching modules that run through task generation, scenario construction, and collaborative optimization stages.

In the task generation stage, large language models represented by DeepSeek have been introduced, achieving dynamic and personalized teaching tasks. In the "Tourism Marketing" classroom, teachers no longer issue unified inquiry topics. Instead, the AI system generates a highly customized inquiry question for each student in just three seconds, based on their knowledge weak points from previous learning, interest preferences, and classroom interaction performance. For example, for a student who has strong data analysis capabilities but relatively weak cultural sensitivity, the system might generate: "For Generation Z tourists, how can AI technology reshape the marketing narrative of the Forbidden City to balance technological sense and cultural depth?" For a student who excels in creativity but lacks market knowledge, it might propose: "Design a low-cost, high-dissemination publicity plan using AIGC tools for a newly discovered industrial heritage site." This classroom implementation innovation significantly stimulates students' critical thinking and problem-solving abilities.

In the scenario construction stage, VR/AR and 3D modeling technologies have been extensively applied, aiming to create immersive, highly realistic learning environments for students. In the practical training course of "Tour Guide Business," on-site field trips are costly, opportunities are limited, and some precious cultural heritage sites (such as the Mogao Caves) are not suitable for frequent opening. To address this, high-precision reproductions of core scenes such as the Mogao Caves and the Terracotta Army have been developed in collaboration with technology companies. Students wearing VR equipment feel as if they are truly on-site and can practice their presentations in the virtual environment an unlimited number of times. The built-in AI coach in the system tracks students' gaze focus in real-time (judging whether their explanations synchronize with the exhibits), language fluency, and speech rate changes, and generates a detailed feedback report after the practice, pointing out shortcomings in knowledge accuracy, emotional expression, and interactive guidance.

In the collaborative optimization stage, a collaborative platform integrating AI multimodal generation functions has been introduced to enhance the creative efficiency and quality of interdisciplinary projects. In the comprehensive project of "Cultural Tourism IP Incubation," a team typically includes students with different backgrounds such as planning, copywriting, design, and technology. In the past, communication costs between them were high, and it was difficult to quickly unify creative ideas. Now, they can work on a unified platform. When the student responsible for copywriting inputs a story outline and keywords, AI can automatically generate multiple styles of illustrations and background music options for team discussion and selection; when the student responsible for design adjusts the visual style, AI can intelligently recommend matching fonts and color schemes. This "human-machine co-creation, team co-discussion" model greatly accelerates the collision and fusion of creative ideas.

4. Evaluation Mechanism Innovation: From Result Quantification to Process Tracking and Intelligent Feedback

Traditional teaching evaluation mainly relies on final papers and exam scores, making it difficult to comprehensively reflect students' comprehensive abilities. AI technology makes it possible to track and evaluate the learning process in detail.

4.1. Dynamic Data Evaluation System

4.1.1. Multi-dimensional Indicators: Uncovering Implicit Competencies

Using AI analysis tools, a set of multi-dimensional indicator systems capable of measuring students' implicit competencies has been established. For example, when evaluating a student's "Smart Scenic Area Guide APP" prototype, in addition to functional completeness, AI code review tools are used to analyze the standardization of their code; sentiment analysis models are used to detect the emotional temperature and cultural accuracy of their guide scripts; and user behavior simulation is used to evaluate the usability of their UI design. These new indicators, such as "symbolic node density" and "emotional polarity fluctuation," can more scientifically assess students' implicit competencies such as cultural sensitivity and user experience thinking.

4.1.2. Contribution Visualization: Avoiding "Free-riding" Phenomena

In group projects, how to fairly evaluate each person's contribution has always been a challenge. By introducing a Git version-based collaborative platform, the AI system can automatically track the number of modifications each member makes to project documents, the quality of modified content, the frequency of effective proposals initiated in the discussion area, and the timeliness of completing assigned tasks. All data is visually presented on a contribution dashboard, providing teachers with objective and fair grading references, effectively avoiding "free-riding" phenomena and encouraging genuine team collaboration.

4.2. AI Feedback-Driven Iteration

One of AI's greatest advantages is its ability to provide immediate, continuous, and personalized feedback, driving students to constantly optimize their work. After multiple rounds of AI-driven iteration, the quality of students' work will be significantly improved. In tourism education scenarios, AI feedback mechanisms run through the entire process of creative conceptualization, prototype design, and testing optimization. For example, in the "Cultural Tourism Short Video Creation" project, a student's first submitted script might have issues such as unclear narrative logic and improper use of cultural elements. The AI system will conduct intelligent analysis from three dimensions: content innovation, cultural adaptation, and audience attraction, not only pointing out specific problems, such as "The transition in the third act is too abrupt, it is recommended to use a gradual transition from historical images to modern street scenes," but also providing optimization suggestions, such as "Add an on-site demonstration section of local intangible cultural heritage skills to enhance the sense of cultural depth." After the student revises based on feedback, AI will assess again and generate new improvement plans, forming a closed loop of "creation-feedback-optimization." This dynamic iterative process allows students to quickly accumulate practical experience and gradually form high-level works that meet industry requirements. At the same time, AI feedback data is recorded by the system, forming a personal capability growth profile, providing a scientific basis for teachers' precise guidance and students' self-improvement.

5. Risk Warning and Institutional Safeguards

While embracing the opportunities brought by AI, we must also clearly recognize its potential risks and establish corresponding institutional safeguards.

5.1. Core Challenges

5.1.1. Tool Dependency Syndrome and Cognitive Laziness

Many teachers tend to simplify AI as an advanced "electronic teaching aid" or "answer generator" in teaching, such as directly asking students to write a tour guide script using AI, while neglecting to guide them on the underlying cultural logic and critical thinking. This may lead students to develop cognitive laziness, losing their ability to think independently and conduct in-depth research, ultimately becoming "operators" rather than "creators" of technology [7].

5.1.2. Creative Homogenization and Cultural "Flattening"

The output quality of AIGC tools is highly dependent on input keywords. If students' designed "keyword matrices" lack depth and individuality, it can easily lead to homogenization of output content. For example, in a tourism promotional poster design task, if all students use broad keywords such as "beautiful scenery," "long history," and "cultural heritage," the AI-generated images may present similar visual elements (such as uniform combinations of ancient architecture and natural landscapes), leading to convergence of creativity. More seriously, some students may overly rely on AI's preset templates, directly applying stylized labels such as "Chinese style" or "tech feel," while neglecting to explore the uniqueness of regional culture. For example, when planning a "Jiangnan Watertown" project, if only keywords like "ink painting" and "small bridges and flowing water" are used, AI may generate images that conform to public perception but lack detailed differences, failing to reflect the subtle differences between different watertowns (such as Zhouzhuang, Wuzhen, Xitang) in building forms, folk activities, and commercial formats. This phenomenon of "cultural flattening" essentially simplifies complex cultural connotations into symbol stacking, weakening the cultural identifiability and attractiveness of tourism products. Additionally, when students become accustomed to quickly obtaining AI content through "keyword optimization," they may gradually lose the ability to deeply observe cultural phenomena and express unique perspectives, ultimately leading tourism creativity to regress from "a thousand faces for a thousand people" to "one face for a thousand people."

5.2. Breakthrough Paths

5.2.1. Building a Layered Faculty Training System

The key to breakthrough lies with teachers. A set of "AI literacy maps" has been designed to provide layered training for teachers. The first layer is the basic operation layer, ensuring that all teachers can skillfully use mainstream AI teaching tools. The second layer is the data interpretation layer, training teachers on how to understand AI analysis reports and transform them into teaching guidance. The third layer is the curriculum design layer, cultivating the ability of key teachers to deeply integrate AI with professional courses and design innovative teaching models. Through a combination of "point-line-surface," the AI literacy of the teaching staff is comprehensively improved.

5.2.2. Restructuring Teaching Management Systems

The boundaries and norms of AI use must be clearly defined at the institutional level. In core aspects involving cultural interpretation and value judgment, human critical thinking must be the main driver, with AI serving only as an auxiliary tool. A closed-loop management mechanism of "creation-feedback-iteration" has been established, requiring students to submit detailed AI usage logs and reflection reports with their works, explaining which stages AI was used in, why it was used, and how they critically modified and optimized AI outputs. This aims to guide students to establish a correct view of technology, ensuring they "use it for their own purposes" rather than "being dominated by it" .

6. Conclusion and Recommendations

The essence of AI empowerment in tourism education is "using technology to release cultural value." Its core objective is to liberate teachers and students from repetitive, mechanical labor through intelligent means, allowing them to focus more on areas with greater human value such as cultural inheritance, service innovation, and emotional care, ultimately driving the transformation of tourism talent cultivation models from standardization and homogenization to personalization and characterization. Research shows that through the coordinated advancement of the "objective-process-evaluation" three-dimensional model, the dual improvement of teaching efficiency and student innovation capabilities can be fully achieved.

Lightweight, scenario-based AI application modules should be prioritized for implementation. Institutions should avoid building "large and comprehensive" technical platforms, and instead prioritize pilot testing of lightweight application modules closely integrated with core courses, such as "AI

Intangible Cultural Heritage Digitization," "Multilingual Intelligent Guiding," and "Hotel Revenue Management Simulation," to quickly show results, lower application thresholds, and accumulate successful experiences. Adaptive design of key systems should be promoted. Education authorities and institutions should accelerate the revision of credit recognition rules and comprehensive quality evaluation systems, clearly incorporating students' high-quality AI creative achievements (such as smart tourism solutions and digitalized cultural and creative products) into the evaluation scope, and explore connections with industry certification systems to stimulate students' innovation drive. A solid ethics and technical protection network should be constructed. When using AI to process tourist data and student data, advanced technologies such as federated learning and differential privacy must be adopted to ensure data security and privacy protection. At the same time, AI ethics education should be integrated into the curriculum, guiding students to think about the boundaries of technology application and balance the relationship between technological empowerment and the protection of cultural authenticity.

In conclusion, we must continuously deepen the integration of "AI + humanities," and remain vigilant about the potential erosion of cultural originality and artistic uniqueness by technology. The ultimate goal is to construct a new paradigm of creative thinking cultivation that involves human-machine collaboration and complementary advantages, cultivating the next generation of tourism leaders who understand both technology and culture, who can both look up at the stars and keep their feet on the ground.

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