Received: 5 Jun. 2025 | Revised: 11 Jun. 2025 | Accepted: 14 Jun. 2025 | Published online: 25 Aug. 2025

RESEARCH ARTICLE

Journal of Global Humanities and Social Sciences
2025,Vol. 6(5)158-165
DOI: 10.61360/BoniGHSS252018410501

Application of Virtual Reality Technology in the Training of Master of Tourism Administration Students

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Abstract: This paper conducts an in-depth exploration of the application of virtual reality (VR) technology in the training of Master of Tourism Administration (MTA) students. It analyzes the demand for innovative talents in the tourism industry in the digital era, emphasizing the important value of VR in expanding tourism education theories, promoting interdisciplinary research, exploring new learning models, and addressing the bottlenecks of traditional training approaches. Based on the analysis of the current application status of VR technology in tourism management education both domestically and internationally, the paper discusses the shortcomings of J College in terms of curriculum system, teaching faculty, and practical teaching. It proposes several application strategies including strengthening faculty development, optimizing curriculum design, improving the practical teaching system, developing VR-based teaching materials, and leveraging the technical potential while tracking teaching outcomes. The aim is to assist J College and other institutions in innovating their MTA training models through VR, cultivating high-quality talents for the tourism industry, and promoting the synergy between tourism education and industry development.

Keywords: master of tourism administration, virtual reality technology, innovative talents, J college

1. Introduction

In the digital era, rapid technological advancements have profoundly transformed various fields. The emergence of virtual reality (VR) technology, in particular, has brought unprecedented opportunities and changes to many industries. As one of the key drivers of global economic growth, the tourism industry is actively seeking deep integration with cutting-edge technologies to achieve more efficient and innovative development. With the increasing complexity and diversification of the tourism market, and the rising demand among tourists for personalized and high-quality experiences, traditional models of tourism management education can no longer meet the industry's need for high-level talent (Yan & Du, 2025). The demand from tourism enterprises for professionals with innovative thinking and the ability to utilize emerging technologies to solve practical problems has driven the adoption of VR in the training of Master of Tourism Administration (MTA) students (Lv et al., 2025).

Tourism enterprises are eager to recruit MTA graduates who can skillfully apply VR in tourism product innovation and enhance visitor experiences, thus addressing the market demand for high-quality, customized travel products (Sinha, 2025). VR uses computer-simulated, visualized, interactive, and multi-scenario three-dimensional virtual environments to create highly realistic immersive learning settings for students. Integrating VR into the curriculum system of MTA programs allows students to experience various tourism scenarios firsthand, engage in hands-on practice and simulations within a virtual environment, and ultimately enhance their problem-solving capabilities (Zhu et al., 2024).

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Classic theories have defined experiential learning as an experience - based process. It involves creating knowledge through the transformation of experience. This is achieved by conceptualizing novel experiences and integrating them with existing knowledge and experience, ultimately forming new understandings, skills, and attitudes. Experiential learning emphasizes a learner - centered approach, highlighting the importance of active learner participation and personal experience. In contrast to the traditional teacher - centered education model focused on knowledge transmission, experiential learning calls for educators to fully respect learners' subject status. Its aim is to stimulate learners' enthusiasm and creativity, create more opportunities for practice and reflection, assist them in transforming knowledge into practical abilities and qualities, and thereby accomplish more comprehensive and in - depth learning outcomes (Kolb, 1983).

The model proposed integrates motivation and learning methods based on research evidence to construct a comprehensive framework for immersive virtual reality (IVR) learning. It indicates that the general advantages of IVR learning are presence and agency. Presence refers to learners' feeling as if they were in the virtual environment, and agency refers to learners' ability to interact with the virtual environment and influence events within it (Bicalho et al., 2025).

Therefore, incorporating VR into MTA training is a necessary response to industry development trends and enterprise needs, offering the following significant values:

Expanding the scope of tourism education theory research. Traditional research in tourism education primarily focuses on the construction of knowledge systems, optimization of teaching methods, and evaluation of learning outcomes. It tends to overlook the transformation of teaching paradigms driven by technological innovation. The introduction of VR technology pushes "technology-empowered teaching" to the forefront, prompting researchers to reconsider how teaching content is presented, learning contexts are created, teacher-student interaction takes place, and educational effectiveness is evaluated.

Promoting innovation in interdisciplinary research paradigms. The deep integration of VR technology with tourism management knowledge effectively fosters interdisciplinary collaboration between tourism studies and fields such as computer science (e.g., human-computer interaction, graphics), education (e.g., immersive learning theory, constructivism), and psychology (e.g., user experience, cognitive load) (Kieanwatana & Vongvit, 2024). This not only provides diverse theoretical perspectives and methodological support for MTA training—such as VR-based behavioral data analysis and quantitative evaluation of learning outcomes—but also catalyzes the emergence of new cross-disciplinary research areas, such as "tourism education technology."

Exploring new learning theories and models. The immersive and interactive environments created by VR offer experimental settings for applying and developing theories such as situated learning and experiential learning. Studying how tourism management knowledge is constructed, skills are acquired, and competencies are cultivated in VR contexts can help establish immersive learning models specifically tailored to MTA programs.

Addressing key bottlenecks in traditional training models. VR breaks through spatial and cost limitations by creating highly realistic, repeatable, and controllable immersive simulation environments, significantly enhancing the accessibility, safety, and effectiveness of practical teaching. VR environments provide MTA students with platforms to systematically develop innovation and design thinking as well as complex problem-solving abilities through "trial and error" iterations. Furthermore, VR technology can simulate diverse global tourist destinations, cultural contexts, and business environments, offering students high-quality training in cross-cultural communication and collaboration, thereby strengthening their international vision,

intercultural competence, and global competitiveness (Papadakis et al., 2023).

2. The Application Status and Effects of VR in MTA Training

2.1. Current application status

Internationally, some well-known institutions offering tourism management programs have actively integrated VR into their teaching practices and achieved notable results. These institutions are generally equipped with advanced VR equipment and supported by professional technical teams to provide students with high-quality virtual reality learning experiences. For example, some universities have developed virtual tourism site management simulation systems that immerse students in on-site scenarios (Zheng et al., 2024). Through these systems, students can inspect various departments of tourist attractions, learn about daily operational processes, handle emergencies, and manage peak tourist flows and facility maintenance. This kind of simulation-based practical training not only offers students more intuitive learning experiences beyond theoretical knowledge but also greatly enhances their operational competencies, enabling them to better adapt to real-world job requirements upon graduation.

Domestically, although the application of VR in MTA education is still in its early stages, some forward-looking universities have begun active exploration. These institutions typically apply VR in basic course instruction to increase engagement and clarity. For instance, in tourism geography courses, instructors use VR to guide students through famous global destinations, helping them gain deeper understanding of local geographic environments, cultural characteristics, and the distribution of tourism resources.

However, overall, the depth and breadth of VR application in domestic tourism education still have significant room for improvement. Most current uses are limited to simple virtual scene displays and fail to fully leverage VR's potential in teaching. Applications in advanced courses such as complex tourism project planning, destination development, and tourism enterprise strategic management are still lacking and require further enhancement.

2.2. Observed effects of VR application

2.2.1. Enhancing teaching effectiveness

VR's unique immersive experience can transform abstract and complex tourism management theories into vivid and intuitive virtual scenes, thereby greatly improving teaching outcomes. In tourism marketing courses, for instance, teachers can use VR to create a variety of simulated marketing scenarios, such as off-season promotion campaigns for scenic spots or product launches for new hotel services. VR transforms students from passive recipients of knowledge into active participants and explorers. Within virtual scenarios, they can independently analyze problems and test different solutions, deepening their understanding and retention of knowledge and improving their mastery and application capabilities.

2.2.2. Strengthening practical competence

Practical competence is a crucial quality for MTA students. VR provides a safe, low-cost, and efficient environment for experiential learning. In real-life tourism settings, students often face limitations and risks due to the complexity and diversity of the industry. For example, VR can simulate various tour route scenarios, allowing students to conduct detailed assessments, evaluate advantages and disadvantages, and optimize itinerary designs. In hotel operation simulations, students can use VR to practice workflows in front office, housekeeping, and food & beverage departments. They can quickly acquire skills related to staff coordination and process optimization, identify potential issues, and propose improvements, thereby enhancing their overall management abilities.

2.2.3. Promoting research innovation

Research and innovation are vital components of MTA education. VR provides graduate students with new tools and methodologies for scientific inquiry, stimulating creative thinking and supporting innovative research. In tourism planning studies, VR can be used to construct virtual models of different

planning proposals, assisting in evaluating their feasibility and effectiveness. In tourism experience research, VR enables precise recording and analysis of tourists' physiological and psychological responses within virtual environments, offering valuable references for improving tourism products and services. Additionally, VR can be applied in areas such as cultural heritage preservation by virtually reconstructing historical sites, helping explore the balance between heritage conservation and tourism development, and offering new approaches and methods for heritage transmission and sustainable development.

3. Current Status and Problem Analysis of MTA Training at J College

3.1 Current status of MTA training

J College, located in eastern China, is an application-oriented undergraduate institution that has long upheld the educational philosophy of integrating theory with practice in its MTA program. The college is committed to cultivating high-quality, practice-oriented professionals. The curriculum includes essential theoretical courses covering economics, marketing, strategic management, and planning and development. To enhance students' practical abilities, the college has also arranged internships and hands-on projects in cooperation with well-known local tourism enterprises and scenic destinations, helping students accumulate valuable real-world experience.

Despite these initial achievements, J College's MTA program still shows insufficient attention to VR technology and its applications. The current curriculum lacks a systematic arrangement of VR-related courses. Only a few classes sporadically introduce relevant concepts and basic applications, making it difficult to meet the comprehensive learning needs of graduate students. Moreover, the practical training component lacks structure and completeness. The content and formats of practical teaching require further enrichment and optimization to better align with the ongoing transformation of the tourism industry.

3.2 Major challenges faced

3.2.1 Weakness in faculty expertise

The current MTA teaching team at J College has a relatively low proportion of faculty members with VR-related backgrounds or hands-on experience. Most instructors come from traditional tourism management disciplines and have limited familiarity with VR technologies. This makes it difficult for them to deeply integrate VR into tourism management instruction. As a result, they struggle to deliver in-depth lessons on practical applications, operational techniques, and case studies, which in turn affects the quality of instruction and hinders students' ability to effectively learn and apply VR in practice.

3.2.2 Incomplete curriculum structure

The curriculum lacks coherence and systematization, failing to establish a comprehensive educational framework for VR. Students are currently unable to systematically study advanced applications of VR, such as virtual tourism product innovation or destination virtual marketing. This limits their understanding of emerging tourism business models and restricts their capacity for exploration and innovation in this domain.

3.2.3 Insufficient practical training capacity

The existing infrastructure for practical training is relatively outdated and lacks advanced VR equipment, such as high-quality headsets and motion capture systems. This deprives students of realistic and immersive VR experiences. In addition, practical training resources are limited. Most projects and case studies are still focused on conventional tourism operations, with little emphasis on innovative applications of VR in the tourism sector. As a result, students often engage in only basic exercises during practical sessions and are unable to participate in more challenging and innovative projects. This significantly hinders the development of their practical competencies.

4. Application Strategies of VR in MTA Training at J College

4.1 Strengthening faculty development

J College should actively arrange for tourism management faculty to participate in VR training programs and academic exchange activities. For example, teachers can attend seminars hosted by professional VR organizations or invite technical experts to deliver workshops. These opportunities allow instructors to learn about the latest developments in VR, new teaching methodologies, and best practices in application. The college should also encourage faculty to participate in national and international conferences related to VR and tourism education to exchange experiences with peers, broaden their academic horizons, and improve their ability to deliver VR-enhanced instruction (Lampropoulos & Papadakis, 2025).

Furthermore, teachers should be encouraged to collaborate with both tourism and VR enterprises. The college can cooperate with nearby tourism companies to develop VR tourism projects in which faculty members can be involved in planning, implementation, and evaluation. This hands-on experience helps teachers accumulate practical knowledge. Similarly, J College can partner with VR companies to allow instructors to participate in industry internships and learn about technical development processes and market demands. These insights can then be brought into the classroom to enrich instruction and enhance its practical relevance.

4.2 Optimizing curriculum design

The MTA curriculum at J College should include a series of specialized VR-related courses. For instance, a course titled "VR Fundamentals and Applications in Tourism" can be established to systematically introduce basic VR principles, development history, and use cases in the tourism industry. Another course, "Virtual Tourism Product Design and Development," can help students cultivate creative design and technical skills to produce engaging virtual tourism experiences.

The college should also design diversified VR learning modules based on MTA training goals and student interests. In tourism marketing courses, for example, a "VR Marketing Strategy Simulation" module could enable students to explore different marketing tactics in simulated scenarios and implement personalized strategies. In tourism planning courses, a "Virtual Destination Planning and Evaluation" unit could use VR to create virtual models of destinations, allowing students to conduct planning practice and outcome assessments in immersive settings. These targeted course enhancements will help build a more robust MTA curriculum that meets students' growing demand for VR knowledge and skills.

4.3 Improving the practical training system

J College should increase investment in practical training facilities and establish a dedicated Virtual Reality Tourism Lab. The lab should be equipped with state-of-the-art VR equipment, such as high-performance headsets, motion capture systems, 3D scanners, and relevant educational software and development platforms. For example, students can use headsets to immerse themselves in virtual tourism scenes to experience and test virtual products. With motion capture tools, they can simulate visitor behaviors in scenic spots to generate data that supports the optimization of tourism products (Lucie et al., 2022).

The college should also develop a blended online-offline practical training model. Online, instructors can assign tasks through a VR teaching platform, allowing students to complete exercises such as virtual tour route design or hotel management simulations and submit reports. Offline, students should engage in fieldwork at tourism enterprises, where they can apply their VR training in real tourism operations—such as promoting virtual tourism products or managing VR-based tourism projects. This combination of theory and practice will significantly enhance students' comprehensive capabilities.

4.4 Developing VR-Based teaching materials

J College should organize collaborative teams of tourism management faculty and VR experts to jointly develop teaching materials tailored for MTA students. These materials should emphasize the integration of theory and practice, covering both fundamental VR principles and technical methods, as

well as case studies and practical operation guides. For instance, the textbooks could illustrate how VR is used in destination marketing, product innovation, and tourism training. Practical guides should teach students how to use VR equipment for tourism-related simulations to improve hands-on skills (Docter et al., 2024).

The college should also establish a mechanism for regularly updating these teaching materials. Based on the latest advancements in VR and feedback from instructional practices, outdated content should be removed and new developments—such as those in extended reality (XR)—should be incorporated. This ensures that the materials remain cutting-edge, relevant, and highly applicable (Lavidas et al., 2024).

4.5 Leveraging technical potential and tracking educational outcomes

J College should explore the diversified potential of VR applications in MTA training. For example, VR can simulate ecotourism environments and activities to cultivate students' awareness of ecological responsibility and sustainable development (Duan, 2024). It can also be used in online education and remote teaching for MTA students, offering more flexible and accessible learning formats. To verify VR's impact on student learning outcomes, one should clarify the research purpose, select and group subjects properly, design experiments scientifically, use appropriate teaching tools for intervention, collect and analyze data comprehensively, consider ethics and limitations, and write a report to summarize the findings, thereby building a rigorous empirical verification or support system.

Additionally, the college should establish a long-term tracking and evaluation mechanism for teaching outcomes. Surveys, student performance assessments, and employer feedback should be used to gather data on the effectiveness of VR in instruction. By regularly analyzing and comparing student outcomes in VR-based and traditional teaching environments—focusing on academic performance, practical ability, and innovation capacity—the college can identify the strengths and limitations of VR instruction. These findings should then inform timely adjustments to VR integration strategies, ensuring optimal educational quality and talent development results. It is essential to emphasize that ethical considerations regarding the use of VR in educational settings are necessary. If human subjects or student participants are involved in VR - based training or pilot programs, an ethics statement is indispensable. This clarifies the safeguards taken for participant consent, data protection, and well - being.

5. Conclusion

This paper has thoroughly explored the application of virtual reality (VR) technology in the training of Master of Tourism Administration (MTA) students at J College. Starting from the background and significance of the topic, it analyzed the support from national policy, the demands of the tourism industry, and the theoretical and practical value of integrating VR into MTA education. By examining the current status of VR applications in both international and domestic tourism education, the study highlighted the advanced practices abroad and identified the shortcomings within J College's approach.

Through a detailed analysis of the current situation in J College’s MTA program, this study identified several issues—such as deficiencies in curriculum design, lack of faculty expertise, and insufficient practical training resources. In response, it proposed a set of targeted application strategies: strengthening faculty development, optimizing the curriculum, improving the practical training system, developing specialized VR teaching materials, and exploring the full potential of VR technology while monitoring its educational outcomes.

The findings suggest that applying VR in MTA training has significant practical implications and great developmental potential. Strengthening faculty development can improve instructors’ teaching capabilities and ability to provide effective practical guidance. Optimizing the curriculum will offer

students more comprehensive and systematic VR training. Improving the practical training system helps students gain hands-on experience and apply VR in real-world problem-solving. Developing teaching materials ensures access to authoritative and practical learning resources, while tracking teaching outcomes allows for continuous optimization of VR integration to align with educational objectives and students' evolving needs.

As the digital transformation of the tourism industry accelerates, the integration of VR and MTA education is becoming an inevitable trend. We hope this study will provide useful references for J College and other similar institutions in innovating and improving their MTA training models. By doing so, more high-level talents with solid professional knowledge, rich practical experience, and strong innovation capabilities can be cultivated for the tourism industry, promoting the coordinated development of tourism education and the broader industry.

Looking ahead, with continued technological advancement and the evolution of educational philosophies, VR is poised to play an increasingly crucial role in MTA education, injecting new vitality into the prosperity and innovation of the tourism sector.

Conflict of Interest

The authors declare that they have no conflicts of interest to this work.

Acknowledgement

This research was funded by: Academic Degree and Postgraduate Education Reform Project of Jiangsu Province （JGKT24_C053）

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How to Cite: Tang, S. & Zhang, W. (2025). Application of Virtual Reality Technology in the Training of Master of Tourism Administration Students. *Journal of Global Humanities and Social Sciences*, *6*(5), 158-165
https://doi.org/ 10.61360/BoniGHSS252018410501