

A STUDY ON THE ROLE OF ARTIFICIAL INTELLIGENCE IN REVITALIZING YOGA, AYURVEDA, AND INDIGENOUS WELLNESS KNOWLEDGE FOR YOUTH TOURISM EDUCATION IN INDIAN UNIVERSITIES

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ABSTRACT:

India holds a globally recognized wellness heritage through Yoga, Ayurveda, and diverse Indigenous wellness knowledge systems rooted in local ecologies, food cultures, preventive care, and community practices. However, youth engagement with these knowledge forms within tourism education in Indian universities remains uneven due to curriculum gaps, limited digital pedagogy, concerns about scientific validation, language barriers, and weak industry–academia linkages. Simultaneously, Artificial Intelligence (AI) is transforming education, tourism experiences, and cultural heritage dissemination through personalized learning, content generation, recommendation systems, virtual simulations, and multilingual translation. This research paper examines how AI can be strategically used to revitalize, document, authenticate, and teach Yoga, Ayurveda, and Indigenous wellness knowledge as part of youth tourism education in Indian universities, enabling employability, entrepreneurship, and ethical wellness tourism development.

The study proposes an AI-enabled framework that connects heritage knowledge holders, universities, students, and tourism stakeholders through curated knowledge repositories, adaptive learning modules, virtual immersion labs, and responsible AI governance mechanisms. Using a descriptive–analytical approach (mixed methods), the paper outlines measurable constructs including AI readiness, perceived authenticity, learning engagement, cultural pride, skill development, and tourism intention. The study is expected to contribute to curriculum innovation, digital preservation, responsible wellness tourism promotion, and youth-centric experiential learning.

Keywords: Artificial Intelligence, Yoga, Ayurveda, Indigenous Knowledge.

INTRODUCTION:

Artificial Intelligence (AI) plays a transformative role in revitalizing yoga by bridging traditional practice with modern learning technologies, making yoga more accessible, engaging, and relevant for today's youth. AI-enabled systems such as posture recognition, motion tracking, and computer vision–based feedback help learners perform yoga asanas with greater accuracy and safety by providing real-

time corrections and personalized guidance. Mobile applications and virtual platforms powered by AI can adapt yoga routines based on an individual's physical ability, health conditions, and learning pace, thereby moving beyond standardized instruction. This technological support not only enhances learning outcomes but also preserves the authenticity of yogic practices by ensuring correct alignment and disciplined execution, which are often diluted in informal or commercialized settings.

Further, AI contributes to the educational and tourism dimensions of yoga by enabling immersive and data-driven learning experiences. Through AI-driven virtual instructors, intelligent content curation, and analytics-based progress assessment, universities can integrate yoga into structured curricula aligned with wellness and tourism education. For youth tourism, AI-supported digital storytelling, virtual yoga retreats, and personalized wellness journeys can position yoga as both a cultural heritage and a sustainable tourism product. In this way, AI does not replace the philosophical essence of yoga but acts as an enabler that revitalizes its practice, transmission, and global appeal, while fostering deeper engagement among young learners and future wellness tourism professionals.

Indigenous wellness knowledge, rooted in traditional systems such as yoga, Ayurveda, naturopathy, and local healing practices, holds significant potential for enriching youth tourism education by offering holistic, culture-based learning experiences. When integrated into tourism education, this knowledge helps young learners understand wellness not merely as a commercial service but as a way of life deeply embedded in India's cultural and philosophical heritage. Exposure to indigenous wellness traditions enables students to appreciate concepts of balance, sustainability, preventive healthcare, and harmony with nature, which are increasingly valued in contemporary tourism. By incorporating such knowledge into academic curricula, universities can nurture culturally sensitive tourism professionals who are capable of designing authentic and responsible wellness tourism experiences for both domestic and international visitors.

Moreover, embedding indigenous wellness knowledge within youth tourism education promotes experiential and transformative learning. Field-based learning, heritage immersion programs, wellness retreats, and community interactions allow students to engage directly with traditional practitioners and local ecosystems. This approach strengthens intergenerational knowledge transfer, supports rural livelihoods, and enhances community participation in tourism development. For youth, such educational exposure fosters pride in indigenous traditions while simultaneously equipping them with the skills to reinterpret these practices in modern tourism contexts. As a result, indigenous wellness knowledge becomes a strategic educational resource that contributes to sustainable tourism development, cultural preservation, and the creation of meaningful wellness tourism experiences led by informed and socially responsible young professionals.

REVIEW OF LITERATURE:

1. **Kishore et al. (2022)**, in the research paper titled "Estimation of yoga postures using machine learning techniques for real-time feedback systems" concludes that AI-based pose-estimation models (e.g., OpenPose/MediaPipe-class approaches) can reliably recognize selected yoga asanas using real practitioner datasets, making real-time feedback feasible for training settings. The study supports the idea that digitizing correct posture execution can help standardize learning outcomes for youth, useful for university-led yoga/wellness tourism education where safe, demonstrable practice and scalable assessment matter.
2. **Singh (2025)**, in the research paper titled "MindMat: A personalized yoga recommendation system using artificial intelligence" concludes that combining AI pose estimation with personalized recommendation logic can move yoga instruction from "one-size-fits-all" to health-profile-based practice plans, including contraindications and adaptive progression. For

- youth tourism education, this kind of system can package yoga as an interactive, measurable learning module, supporting skill-building, engagement, and safer practice for student cohorts.
3. **Seshan (2024)**, in the research paper titled “Integration of artificial intelligence in Ayurveda diagnostics: Bridging traditional knowledge and modern technology” concludes that AI can strengthen Ayurvedic decision support by improving pattern recognition across dosha/prakriti-linked indicators and by making interpretation more data-driven and consistent. The paper implies that responsible AI tools can help modern learners (including youth) understand Ayurveda in a structured way, important for revitalizing Ayurveda knowledge in Indian university curricula linked with wellness tourism.
 4. **Mallajosyula (2025)**, in the research paper titled “Artificial intelligence and machine learning in Ayurveda: Opportunities, challenges, and future directions” concludes that AI/ML can enable digitization of Ayurvedic knowledge (including prakriti assessment and personalized guidance) while also pointing to emerging directions like knowledge graphs and “digital” representations of care pathways. This supports revitalization by translating traditional concepts into computational formats that universities can teach, demonstrate, and integrate into tourism-oriented wellness education for youth audiences.
 5. **Sabharwal & Ishant (2023)**, in the research paper titled “Evolution of tools for scientific validation of Ayurveda: Role of artificial intelligence and machine learning” concludes that AI/ML methods can contribute to more objective and consistent approaches in Ayurveda-related research and validation, addressing variability in diagnosis/assessment. For youth tourism education, the takeaway is that AI-enabled validation and standardization can improve credibility and teachability, helping universities communicate indigenous wellness knowledge in evidence-aligned ways.
 6. **Pujari et al. (2025)**, in the research paper titled “Artificial intelligence in traditional medicine: Policy, ethics, and governance perspectives” concludes that AI is increasingly being applied across traditional medicine to enhance diagnostic precision and personalization, but it must be accompanied by governance, standards, and responsible deployment. This is directly relevant for Indian universities because revitalizing indigenous wellness knowledge for youth requires not only tools, but also ethical frameworks, data stewardship, and policy alignment, especially when knowledge is taught for public-facing domains like tourism.
 7. **Florido-Benítez (2024)**, in the research paper titled “How artificial intelligence is powering new tourism experiences: Implications for smart destinations and sustainable tourism” concludes that AI is reshaping tourist experiences through smart-destination capabilities (personalization, improved service delivery, analytics-driven management), influencing how destinations design and market experiences. For wellness tourism education, this supports curriculum integration where students learn to package yoga/Ayurveda experiences using AI-enabled personalization and digital service models, while still protecting authenticity and responsible messaging.
 8. **Koo (2025)**, in the research paper titled “AI-powered smart tourism 2.0: A ten-year retrospective and future research agenda. Electronic Markets” concludes that smart tourism has evolved toward more AI-centric, data-driven systems and revisits foundational models to reflect current capabilities and research directions. For your topic, this helps justify why university tourism education must now include AI competencies, so youth can connect indigenous wellness offerings (yoga/Ayurveda) with contemporary smart-tourism ecosystems and governance challenges.

9. **Güner (2024)**, in the research paper titled “Artificial intelligence perspective on tourism education: Transforming curriculum and learning outcomes” concludes that tourism education can be rethought through AI, supporting analysis of training gaps, learning improvement, and curriculum modernization for the tourism sector. This is useful for framing Indian universities as key revitalization sites: AI can help convert indigenous wellness knowledge into learnable, assessable, and industry-relevant modules for youth tourism education.
10. **Angelaccio et al. (2024)**, in the research paper titled “AI-based learning for cultural tourism experiments: Enhancing experiential education through intelligent systems” concludes that AI can enhance tourism learning through personalization and improved engagement, linking digital competence with experiential learning approaches. Applied to your study, the implication is that AI-driven learning design can make yoga, Ayurveda, and indigenous wellness knowledge more engaging for youth, by turning heritage/wellness content into interactive educational experiences aligned with tourism learning outcomes.

RESEARCH GAP:

Despite the growing body of literature on artificial intelligence applications in tourism, wellness technologies, and traditional knowledge systems, existing studies remain largely fragmented and sector-specific. Prior research has primarily examined AI-enabled yoga posture recognition, personalized wellness recommendations, Ayurvedic diagnostics, or smart tourism systems in isolation, without integrating these domains into a unified educational framework. Moreover, most studies focus on technological feasibility or service efficiency, while limited empirical attention has been given to how AI can revitalize, transmit, and institutionalize indigenous wellness knowledge such as Yoga and Ayurveda within formal youth tourism education in Indian universities. There is also a noticeable lack of context-specific research addressing curriculum integration, student engagement, pedagogical outcomes, and ethical governance related to AI-mediated indigenous knowledge dissemination. Consequently, a clear research gap exists in examining the holistic role of AI as a pedagogical, cultural, and tourism-enabling tool for strengthening youth awareness, experiential learning, and sustainable wellness tourism education rooted in India’s traditional knowledge systems.

USE OF ARTIFICIAL INTELLIGENCE IN YOGA

Artificial Intelligence is transforming the teaching and practice of Yoga by enabling highly personalized learning experiences. AI-powered applications can analyze body posture, alignment, flexibility, and breathing patterns using computer vision and motion sensors, providing real-time corrective feedback to practitioners. This is particularly beneficial for university students and youth who may not always have access to expert instructors. AI-based virtual trainers can recommend customized yoga sequences based on an individual’s fitness level, stress indicators, sleep patterns, and health goals, thereby improving safety and effectiveness. Additionally, AI-supported wearable devices can monitor physiological responses such as heart rate variability and respiration, helping learners understand the scientific benefits of yoga and encouraging sustained participation.

Beyond practice, AI plays a crucial role in documenting and disseminating classical yogic knowledge. Many traditional Yoga texts are written in Sanskrit and can be difficult for modern learners to interpret. AI-driven language processing tools can translate, summarize, and simplify these texts, making them more accessible to students in tourism and wellness education. Universities can develop AI-enabled digital repositories that integrate philosophical foundations with practical applications, ensuring that Yoga is taught not merely as a physical activity but as a holistic lifestyle science. Such systems also help preserve authenticity by curating verified content, preventing misinformation, and supporting research-based learning.

USE OF ARTIFICIAL INTELLIGENCE IN AYURVEDA

Artificial Intelligence is increasingly being utilized to strengthen Ayurvedic education, diagnosis support, and knowledge management. AI systems can analyze large datasets related to body constitution (Prakriti), lifestyle patterns, diet, and environmental factors to assist practitioners in identifying personalized wellness recommendations. Predictive analytics can help detect potential health imbalances at an early stage, promoting Ayurveda's preventive healthcare philosophy. For students studying wellness tourism, AI-driven platforms can simulate case-based learning where they understand how Ayurvedic principles guide therapies, diet plans, and rejuvenation programs offered at wellness destinations.

AI also supports the preservation and modernization of Ayurvedic literature by digitizing classical manuscripts and converting them into searchable databases. Machine learning tools can map relationships between herbs, treatments, and outcomes, helping researchers validate traditional knowledge through scientific correlations. Furthermore, AI-enabled recommendation engines can assist wellness tourism operators in designing personalized retreat packages aligned with individual health needs, enhancing visitor satisfaction. However, the integration of AI must remain supervised by qualified professionals to avoid over-automation and ensure that the traditional wisdom of Ayurveda is applied responsibly and ethically.

USE OF ARTIFICIAL INTELLIGENCE IN INDIGENOUS WELLNESS KNOWLEDGE

Artificial Intelligence can play a significant role in preserving Indigenous wellness knowledge, much of which is transmitted orally across generations. AI-based documentation tools can record interviews, practices, medicinal plant usage, and healing traditions, converting them into structured digital archives. Natural language processing can translate local dialects into widely understood languages, ensuring that valuable knowledge is not lost due to linguistic barriers. For educational institutions, these digital repositories provide students with authentic exposure to diverse cultural health practices, strengthening their understanding of community-based wellness approaches and enriching tourism education.

Moreover, AI can help map geographical and ecological contexts of Indigenous healing systems by integrating data on biodiversity, climate, and traditional resource management. This allows tourism planners and students to design culturally respectful wellness experiences that highlight local traditions while promoting sustainability. However, ethical considerations are critical; AI systems must ensure informed consent, intellectual property protection, and fair recognition of Indigenous communities. When implemented responsibly, AI not only safeguards heritage but also empowers communities by creating opportunities for cultural tourism, knowledge-sharing, and inclusive economic development.

CONCLUSION:

Artificial Intelligence has the potential to act as a transformative catalyst in revitalizing Yoga, Ayurveda, and Indigenous wellness knowledge by bridging the gap between traditional wisdom and modern educational practices. Through tools such as personalized learning platforms, digital knowledge repositories, intelligent translation systems, and predictive analytics, AI enhances accessibility, engagement, and scientific understanding among youth. In the context of tourism education in Indian universities, AI enables students to develop deeper insights into holistic health traditions while equipping them with practical skills required for the rapidly expanding wellness tourism industry. By integrating technology with heritage-based learning, institutions can foster innovation while preserving the philosophical depth and authenticity of India's wellness systems.

However, the adoption of AI must be guided by strong ethical frameworks to ensure that cultural knowledge is not misrepresented, commercialized irresponsibly, or detached from its original custodians. Respect for intellectual property rights, community participation, and expert validation should remain central to any AI-driven initiative involving traditional or Indigenous practices. When implemented thoughtfully, AI can support sustainable tourism development, promote cultural pride among youth, and create new avenues for research, entrepreneurship, and global knowledge exchange. Ultimately, the balanced integration of Artificial Intelligence with traditional wellness heritage can help Indian universities position themselves as leaders in innovative, culturally grounded tourism education.

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