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Journeying Beyond Classroom Walls: Investigating the Impact of 360-Degree VR Videos in Fostering Experiential Learning in Tourism Education

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Abstract. Given the increasing importance of experiential learning in contemporary educational paradigms, this research addressed the persistent need to explore the efficacy of 360-degree virtual reality (VR) videos in augmenting tourism education. The aim was to investigate the impact of 360-degree VR videos in enhancing experiential learning outcomes, specifically in bridging the gap between classroom instruction and real-world tourism experiences. The research employed a qualitative approach and adopted in-depth interviews to thematically analyze the perceptions and experiences of students who used 360-degree VR videos for tourism education. A purposive sampling strategy was employed, resulting in a diverse sample of 40 undergraduate travel and tourism management students. The data collection included in-depth interviews, participant observations, and self-evaluation feedback questionnaires. The findings indicate the potential benefits of 360-degree VR videos in tourism education. This study underscores the importance of integrating VR technologies into educational settings to enrich learning experience and prepare students for careers in the tourism industry. This study contributes to the growing discussion on the potential of immersive technologies in education and highlights the need for continued exploration and innovation to leverage VR for experiential learning.

Keywords: 360-degree; virtual reality; real-world tourism experiences; tourism education

1. Introduction

The convergence of technology and pedagogy has redefined traditional teaching and learning paradigms in contemporary education, especially in specialized fields such as tourism education (Çınar, 2020). As the tourism industry evolves continuously, the methods of preparing future professionals must adapt to

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navigate its complexities. Virtual reality (VR) is an essential pedagogical tool for enhancing students' experiential learning in various subject areas, providing personal experience and sense of presence (Asad et al., 2021). Effective pedagogy in tourism education emphasizes immersive, practical experiences through experiential learning. By using 360-degree VR content in undergraduate education, students can engage in more focused, immersive, and interesting learning experiences, which enhance their cognitive abilities and perceptions of the learning process (Kim et al., 2022). However, the challenge lies in providing authentic and engaging experiences beyond conventional classroom settings.

The tourism industry has undergone significant transformations with the advent of immersive technologies, offering unprecedented opportunities for experiential learning. Researchers and professionals in the tourism industry should learn more about VR to equip themselves better to meet challenges and seize the opportunities that VR offers. VR has many applications in the industry, and its implications are profound (Guttentag, 2010). However, despite the promises of VR and 360-degree videos in enhancing tourism education, a gap exists between expected outcomes and the current realities. This disparity underscores the urgency of research to understand these technologies' impact on educational outcomes. The research problem concerns understanding how VR can enhance experiential learning in tourism education and bridge the gap between theoretical knowledge and practical application.

VR technology, as described by Bryant et al. (2022) and Orr et al. (2021), immerses users in a three-dimensional environment via a head-mounted display and controllers, providing multisensory feedback for interaction. This immersive experience has generated interest in various fields (Talwar et al., 2022), including VR tourism or 'VR travel' (Kim et al., 2018), where tourists explore computer-generated environments.

VR tourism has gained popularity amid the COVID-19 pandemic (Chinazzi et al., 2020), providing a safe and environmentally sound alternative to travel experiences (Gößling et al., 2020). In addition, VR's integration into education and training has burgeoned in recent years, with researchers exploring the possibility of enhancing teaching and learning using VR (Heinemann et al., 2023). Soliman et al. (2021) highlighted how VR's ability to transport students to virtual realms ignites their interest, demonstrating its ability to enhance learning and engagement.

In addressing pedagogical considerations, Oje et al. (2023) highlighted the importance of understanding the role of VR in education. This study adopted a qualitative research design to explore learners' subjective experiences and perceptions of engaging with 360-degree VR videos in tourism education. While some studies examine the broader applications of VR in education, limited research focuses specifically on its role in tourism education and experiential learning. VR tourism has garnered attention but there is a dearth of qualitative studies examining students' perceptions and experiences with 360-degree VR videos, particularly in the context of tourism education. Addressing this research

gap is crucial for informing educational practices and advancing the understanding of how immersive technologies can enhance experiential learning in tourism education. This research explored VR technology's potential within tourism education, and aimed to establish a new era of immersive, student-centered learning experiences that enable learners to navigate the complexities of an industry in constant flux.

1.2 Research Objectives

1. To explore the impact of 360-degree VR videos on experiential learning in tourism education.
2. To investigate the perceptions and experiences of students regarding the use of 360-degree VR videos in tourism education.

1.3 Research Questions:

1. How do 360-degree VR videos contribute to experiential learning in tourism education?
2. What are students' perceptions and experiences regarding the use of 360-degree VR videos in tourism education?

2. Literature Review

Immersive technologies are revolutionizing various fields, such as healthcare, education, journalism, and urban planning. This literature review synthesizes key findings from recent studies, highlighting the profound impact of immersive experiences on patient care, learning outcomes, media consumption, and urban development. From enhancing emotional engagement in healthcare interventions, to fostering immersive storytelling in journalism, and enriching educational experiences to redefining urban design assessments, immersive technologies are reshaping the way individuals perceive and interact with the world, offering innovative solutions to various contemporary challenges.

2.1 Healthcare Applications

Immersive technologies are making a significant impact on healthcare. They are used to improve patient care, medical training, and therapy interventions. A study by Appel et al. (2020) showed that immersive VR experiences can benefit older adults with cognitive and physical impairments. Similarly, Filter et al. (2020) examined the effects of VR nature experiences involving wolves on YouTube and found that immersive environments can influence emotions and attitudes. Toet et al. (2020) introduced an immersive self-report tool for the effective appraisal of 360-degree VR videos to understand the emotional engagement with VR content better.

2.2 Educational Innovations

Educational institutions are adopting immersive technologies to enrich learning experiences and involve students in new and innovative ways. Ferrari and Medici (2017) compared multiple techniques and tools for experiencing cultural heritage virtually, demonstrating VR's potential in preserving and displaying historical sites. Snelson and Hsu (2019) conducted a scoping review of research on educational 360-degree videos, emphasizing their role in enhancing student engagement and comprehension. Shadieiev et al. (2021) conducted a review of the

research on educational 360-degree videos in VR and discovered their potential for teaching, as well as some challenges. Evens et al. (2022) reviewed the literature on 360-degree video as an educational tool, leading to the identification of design guidelines for effective implementation. Walshe and Driver (2019) explored the use of 360-degree videos to develop reflective practice among trainee teachers, indicating its potential for enhancing pedagogical skills.

2.3 Journalism and Media

Immersive technologies are transforming journalism and media consumption, providing audiences with novel ways to engage with content. Shin and Biocca's (2017) research delved into immersive experiences in journalism, examining the effects of VR on audience engagement and storytelling practices. Martínez et al.'s (2021) analysis focused on the trend of 360-degree videos on YouTube, highlighting changes in consumption and production patterns prior to and during the COVID-19 pandemic. Suh et al.'s (2018) experimental study explored the enhancement of audience engagement through immersive 360-degree videos, providing insights into the effectiveness of immersive content in captivating viewers. Furthermore, Laws (2017) explored the potential of immersive journalism to increase empathy, emphasizing its role in promoting understanding and emotional connection with news stories.

2.4 Urban Planning and Design

Immersive technologies offer innovative approaches to evaluating and improving urban environments in urban planning and design. Silvennoinen et al. (2022) used VR to assess the impact of urban design guidelines on walkability in public housing estates, providing valuable insights for urban planners. Kuliga et al. (2015) investigated VR as a research tool, comparing user experiences in real and virtual environments to understand user perceptions and behaviours.

The reviewed literature highlights that immersive technologies have various applications and impacts across various fields. From healthcare and education to journalism and urban planning, immersive technologies transform how we perceive and interact with the world around us. However, they also pose several limitations. In healthcare, challenges include the high cost of implementing VR systems and concerns about patient safety during immersive interventions. In education, access to VR equipment and technical expertise present barriers to widespread adoption, limiting its reach and effectiveness. In journalism and media, issues such as the potential for misinformation in immersive content and the need for specialized training for content creators hinder its full potential. Additionally, in urban planning and design, the complexity of creating accurate virtual representations of urban environments and the limited accessibility to VR tools for community engagement pose significant challenges.

3. Methodology

3.1 Research Design

The study adopted a phenomenological research design to explore the lived experiences and perceptions of participants regarding the use of 360-degree VR videos in tourism education. Phenomenological research design was selected because it is suitable for exploring participants' lived experiences and perceptions of 360-degree VR videos in tourism education. Phenomenology allows for an in-

depth examination of individuals' subjective experiences, providing valuable insights into the phenomenon under investigation. By investigating the narratives and perspectives of students, the study uncovered the underlying essence of their engagement with VR-enhanced learning environments in the context of tourism education.

3.2 Sampling and Participants

A purposive sampling strategy was utilized to select 40 participants from undergraduate tourism education programs. The selection process ensured that participants were chosen from various educational settings, including universities and colleges, to capture a range of perspectives on tourism education. A total of eight students were chosen from five institutions, resulting in 40 participants. The study intentionally included undergraduate students to understand learners' perspectives, as they are the primary beneficiaries of VR-enhanced learning experiences.

3.3 Research instruments

The study employed the following research instruments to capture comprehensive insights.

Table 1: Research instruments

S No	Research Instrument	Description
1	Meta Quest 2 Gadgets	Used to facilitate immersive learning through VR; eight gadgets were provided to participants.
2	Self-Evaluation Feedback Questionnaire	Created in Google Forms and shared via WhatsApp, participants analyzed their performance using a rating scale.
3	Audio Recorder	Utilized to record audio during interviews for transcription and analysis.
4	Checklist	Employed to ensure the completion of necessary tasks and adherence to research protocols.

3.4 Data Collection

The participants in this study were informed about the course, purpose, and objectives of the study during the data collection phase. They were guaranteed anonymity and provided documented consent for data collection through written and oral communication. The primary method utilized was in-depth interviews, which provide a platform for participants to express their thoughts, emotions, and insights regarding their VR-enhanced learning experiences. These interviews were semi-structured (refer to Appendix 1), allowing for flexibility in probing deeper into emergent themes while maintaining a focus on predefined research objectives. This also helped participants express themselves authentically and contributed to a holistic understanding of their engagement with VR technology in an educational context.

Participant observations during VR-enhanced learning sessions offered real-time insights into student engagement, educator strategies, and the practical implementation of immersive technologies. This observational aspect enhanced the depth of the study, providing context-rich data on participants' interactions with the VR environment.

To complement the interview data, a self-evaluation feedback questionnaire was administered to participants. This questionnaire, distributed via Google Forms, enabled individuals to reflect on their speaking activity experiences during the VR sessions. The questionnaire was designed to assess their experiences during the speaking activity in the VR-enhanced learning environment and consisted of 10 questions tailored for their self-evaluation. The participants were asked to rate their speaking skills and communication effectiveness using a scale of 1 to 5, where 1 indicated the lowest rating, and 5 indicated the highest.

Member checking was also conducted, which allowed participants to review and validate the accuracy of their interview transcripts, ensuring that their perspectives were accurately represented. The triangulation of data sources, including interviews, participant observations, and self-evaluation feedback questionnaires, helped corroborate findings and enhanced the overall reliability of the study. Regular discussions and peer debriefing sessions were also held to validate interpretations and ensure methodological rigor throughout the data analysis process.

3.5 Timeline and Procedures

The research was carried out for approximately three months and divided into distinct phases. In the first week, the participants were introduced to the navigation controls and features of the VR platform and they then spent a week watching 360-degree VR videos showcasing various historical places. Subsequently, in a language assessment exercise, they watched the muted videos and were prompted to speak as if they were tour guides. This activity helped them to self-evaluate their speaking skills and communication effectiveness using a feedback questionnaire. The process was designed to be straightforward and directly aligned with assessing the impact of VR-enhanced learning on students' speaking abilities in a tourism context.

After that, two weeks were dedicated to interviews. This allowed ample time for in-depth discussions and reflections on participants' experiences with virtual tourism. Additionally, it accommodated participants who expressed interest in watching specific videos again to explore their impressions and perspectives further. The timeline was structured to facilitate thorough exploration and analysis of participants' experiences while ensuring adequate time for data collection and reflection. The phased approach enabled the researcher to understand the impact of virtual tourism on travel and tourism management (TTM) education.

3.6 Participants' Observations

The researcher observed how participants engaged with VR videos to study their visual engagement and interaction with the content. By casting the videos on to cellular telephones viewed by the participants in the virtual tourism platform Meta Quest 2, the researcher was able to assess not only the content but also the participants' navigational patterns and focus within the virtual environment in real time. This method allowed for a more nuanced understanding of the participants' reactions and behaviors during the VR tourism experiences, enhancing the study's depth. The insights gained from this observational aspect complemented the thematic analysis of interviews and the self-evaluation feedback questionnaire, contributing to a comprehensive examination of the impact of 360-degree VR videos on experiential learning in tourism education.

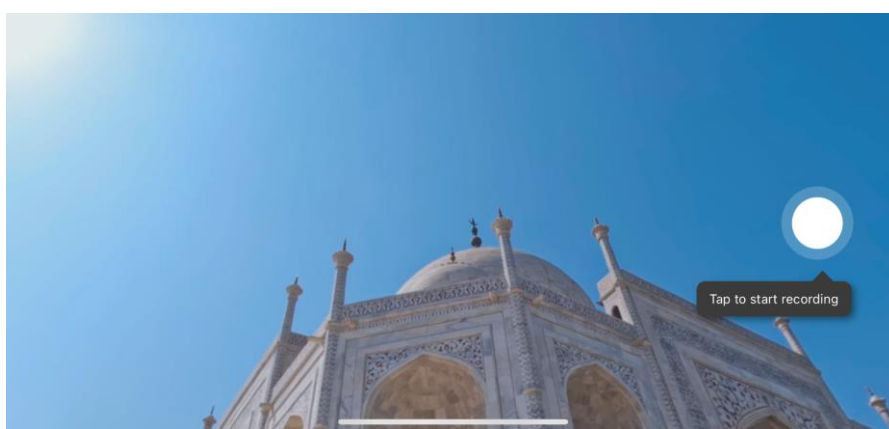


Figure 1: Taj Mahal (Screenshot) Source: YouTube VR



Figure 2: Taj Mahal (Screenshot) Source: YouTube VR

3.7 Data Analysis

Through investigating the qualitative data within the framework of a phenomenological research design, the analysis process aimed to uncover the essence of participants' experiences with 360-degree VR videos in tourism education. Unlike traditional coding methods, which may prioritize structured categorization, the phenomenological approach emphasizes immersing deeply into the data to extract meaning from participants' lived experiences.

Initially, a process of familiarization was undertaken to gain a holistic understanding of the qualitative data collected from interviews, discussions, and observations. This immersion allowed the researcher to grasp the intricacies and contextual nuances embedded within participants' narratives, aligning with the phenomenological tradition's focus on exploring subjective realities.

Thematic analysis emerged as the primary analytical tool, facilitating the identification of recurring patterns, themes, and connections across participants' accounts. Rather than imposing predefined codes, this approach encouraged flexibility and openness to the richness of the participants' experiences, allowing themes to emerge organically from the data. Through iterative cycles of analysis, themes were refined and organized into overarching patterns, capturing the essence of participants' engagement with 360-degree VR videos in tourism education.

Additionally, the integration of a self-evaluation feedback questionnaire provided valuable supplementary insights into participants' reflections on their speaking activity, enriching their overall understanding of their experiences. By embracing the phenomenological perspective, the analysis delved beyond surface-level descriptions to uncover the deeper meanings and essences embedded within participants' subjective experiences with 360-degree VR videos in tourism education.

4. Results and Discussion

The immersive nature of VR tours prompted discussions regarding the genuineness of experiences as participants considered the trade-off between the ease of virtual exploration and the sensorial richness of physical travel. The emotional connections that VR encounters with revered landmarks highlight technology's ability to foster empathy and comprehension across varied cultural contexts. The effectiveness of interface design and interactive features in enhancing immersion and engagement became the focus of evaluation as participants assessed technological engagement and the user experience.

Various perspectives and insights surrounding the intersection of technology, cultural appreciation, emotional connection, and educational value became evident through exploring participating students' narratives. Each participant's story uniquely contributed to understanding how virtual tourism impacts TTM education. The thematic analysis of the emergent themes captured the essence of participants' experiences and perspectives, providing valuable insights into the potential of virtual exploration.

Integrating experiential learning, as put forth by David Kolb's experiential learning theory (ELT), can enhance participants' experiences with 360-degree VR videos in tourism education. David Kolb's ELT is a framework that describes how individuals learn through experience (Kolb, 1984). This theory posits that learning is a cyclical process involving two dialectically-related modes of grasping experience—concrete experience and abstract conceptualization—and two

dialectically-related modes of transforming experience—reflective observation and active experimentation (Kolb & Kolb, 2013).

The ELT emphasizes that learning is most effective when all four stages (experiencing, reflecting, thinking, and acting) are actively engaged. In this research, Kolb's ELT has been used as a framework to understand how individuals interact with virtual environments to gain knowledge and insights about cultural and historical landmarks. The immersive aspect of 360-degree VR videos provides participants with a personal experience of virtual travel, which is a foundation for their learning. Such concrete experiences enable them to construct knowledge effectively. As participants explore virtual landscapes and interact with historical sites, they engage in reflective observation, thoughtfully evaluating their experiences and synthesizing new information. This reflective phase allows them to connect their virtual encounters with existing knowledge, fostering abstract conceptualization. As a result, participants may actively experiment with their newfound understanding, applying it to real-world contexts or refining their perceptions through further exploration. This experiential learning process enables participants to deepen their understanding of global heritage, enhance cultural sensitivity, and develop cross-cultural competence.

By incorporating Kolb's ELT, this research highlighted the potential of experiential learning through virtual tourism experiences. It underscored the significance of providing learners with immersive, practical opportunities to engage with educational content, fostering more profound levels of understanding and appreciation. Moreover, it emphasized the crucial role of reflection and active experimentation in the learning process, encouraging learners to apply their knowledge in meaningful ways and continually refine their understanding.

4.1 Sense of Presence and Immersion

The participants expressed a profound sense of immersion and presence while engaging with 360-degree historical places videos in Meta Quest. "I felt as if I were standing right in front of the Taj Mahal, with all its intricate details surrounding me," noted one participant, underscoring the immersive nature of the virtual experience. Another shared, "I was in awe of how the videos captured the scale and ambience of the historical sites; they made me feel like I was actually there at the time."

As a result of the immersive qualities of the virtual tours, participants were able to gain a greater appreciation for the architectural marvels and cultural significance of the various locations. Through virtual tours of iconic landmarks, students were able to engage emotionally and gain a deeper understanding of historical contexts as a result of the sensation of virtually 'stepping' into them.



Figure 3: Taj Mahal (Screenshot) Source: YouTube VR

4.2 Educational Value and Cultural Appreciation

Virtual tourism experiences provided valuable educational insights and stimulated a sense of cultural appreciation among the participants. “I really enjoyed the 360-degree videos that I watched, as they provided me with a new perspective on historical events and kind of added a new dimension to them,” remarked a participating student, highlighting the visual context that enriched their comprehension. As another participant stated, “The experience of cultural heritage virtually provided me with a deeper understanding of the diversity of civilizations that textbooks cannot, and the nuances that came with it were extraordinary.” Several participants expressed the importance of virtual encounters as a means of fostering empathy, respect, and an appreciation of the world’s rich cultural heritage. Their discussion focused on how virtual tours allowed them to explore historical artifacts and architectural wonders from different perspectives, facilitating a more immersive and engaging learning experience.



Figure 4: Buckingham Palace (Screenshot) Source: YouTube VR



Figure 5: Buckingham Palace (Screenshot) Source: YouTube VR

4.3 Emotional Connection and Impact

Exploring historical sites virtually evoked solid emotional connections and profound impacts on participants. “I was awe-struck; as I stood there, taking in my surroundings. I couldn’t help but feel a sense of wonder and amazement. It was as if I had been transported back in time, and I was walking through a living, breathing piece of history,” expressed one student, reflecting on the deep sense of wonder. Another participant shared, “These virtual tours brought history to life, creating emotional connections to cultures I had only read about. The best part of it all was the emotional connection that was created. I could form a deeper understanding and appreciation for cultures that I had only read about in books, and it felt like a truly enriching experience.” During the discussion, participants highlighted the positive impact of virtual encounters in promoting empathy and cultural understanding. Another participant expressed, “Oh, it is an escape from reality, feeling as if I’m present right there.”

They expressed how these encounters enabled them to connect with different backgrounds and time periods, leading to a transformative experience. The participants also emphasized the significance of virtual tourism in shaping their perceptions of global history and cultural identity. Through this, they were able to establish a sense of connection with their own heritage and the shared human experience.

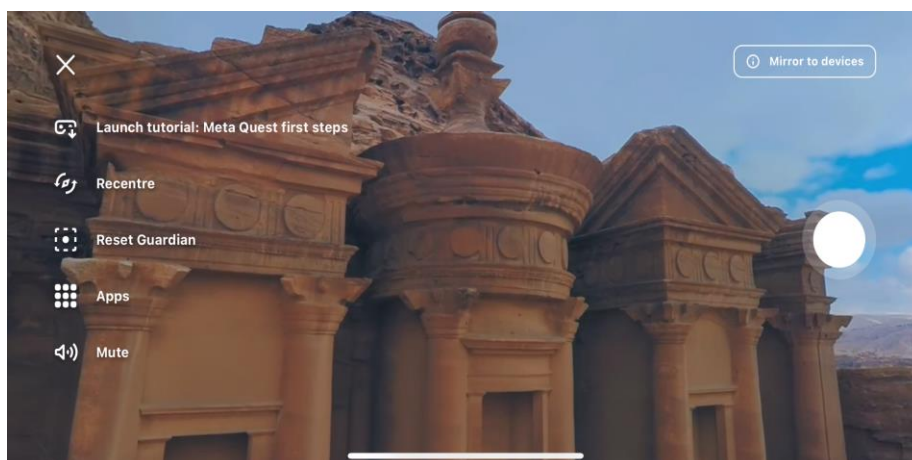


Figure 6: Ancient city of Petra (Screenshot) Source: YouTube VR

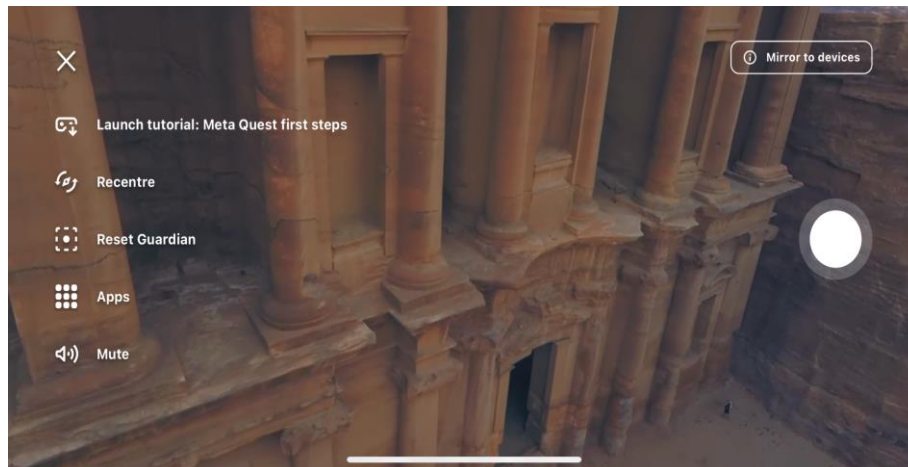


Figure 7: Ancient city of Petra (Screenshot) Source: YouTube VR

4.4 Technological Engagement and User Experience

Students critically evaluated the technology and user experience of virtual tourism in Meta Quest to determine how well it worked and how easy it was to use. “The interface was intuitive, making the navigation smooth and enjoyable,” said one participant, highlighting the positive aspects of the platform. Another participant stated, “I found the interface to be very user-friendly and easy to navigate. The design was intuitive and made it simple to find the features I needed. The smooth and enjoyable navigation experience made my overall interaction with the interface very pleasant.”

However, a student expressed, “I experienced motion sickness at times, affecting my overall experience.” One more participant stated, “During certain moments, I felt a sensation of motion sickness that made me feel nauseous and dizzy. This experience affected my overall enjoyment of the activity as I had to take breaks and could not fully immerse myself in the experience.”

Participants shared their preferences, with one stating, “I enjoyed interactive exhibits; they made the experience more engaging, especially hands-on was amazing.” During their conversation, the participants talked about how effective various features and functionalities were in improving their immersion and enjoyment of the virtual tours. They also shared their thoughts on how emerging technologies could enhance the realism and interactivity of virtual tourism experiences and suggested areas for innovation and improvement in the future.

4.5 Cultural Understanding and Cross-Cultural Competence

Virtual tourism experiences have been found to enhance cultural understanding and cross-cultural competence among participants. “It challenged my preconceptions and broadened my cultural perspectives,” one student mentioned, highlighting virtual encounters’ transformative impact. Another participant emphasized, “My understanding and appreciation of other cultures increased, and I gained a newfound respect for diversity. Also, it provides understanding across borders, contributing to a more interconnected world.”

During the discussion, various strategies were proposed to promote inclusive tourism practices. The participants emphasized the need for authentic representation and community engagement. They also explored the complexities of preserving cultural identity and heritage in an increasingly globalized world. The importance of respectful and equitable interactions between tourists and host communities was highlighted. Additionally, the participants recognized the role of virtual tourism in promoting empathy, respect, and appreciation for diverse cultures. This, in turn, can contribute to more sustainable and responsible tourism practices.

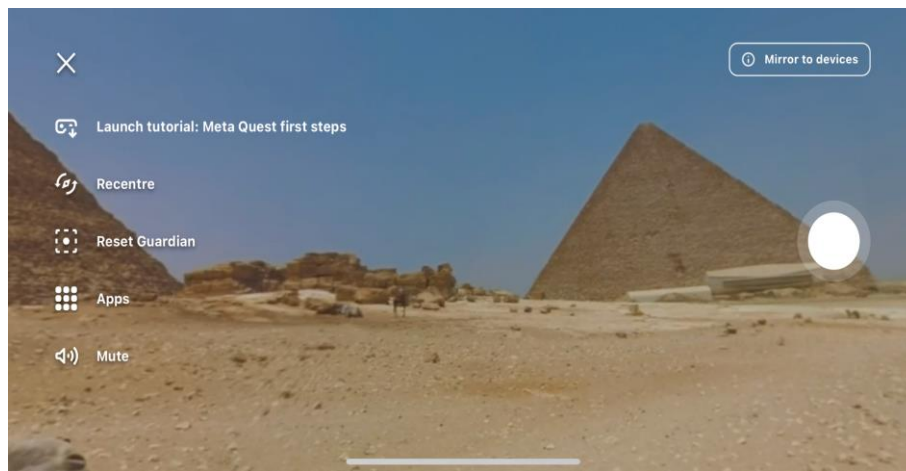


Figure 8: Egyptian pyramids (Screenshot) Source: YouTube VR

4.6 Desire for Authenticity and Physical Exploration

While virtual tourism offers immersive experiences, the participants longed for authentic, sensory-rich travel adventures beyond the virtual realm. “Virtual tours are educational, but nothing compares to the feeling of walking through historic streets,” remarked one participant, underscoring the unique richness of physical exploration. Another stated, “There’s an irreplaceable authenticity in experiencing cultures firsthand; virtual encounters can’t replicate that.” Another student said, “While virtual tours may be useful, they cannot replace the richness and complexity of a real-life walking tour.”

During the discussion, the participants reflected on the sensory cues and tactile sensations associated with physical travel. They emphasized preserving physical heritage sites and cultural landscapes for immersive, practical exploration. The participants also discussed the intrinsic value of authentic cultural encounters and spontaneous discoveries. They highlighted the transformative power of travel experiences that engage all the senses. The participants acknowledged the need for responsible tourism practices that prioritize environmental sustainability and cultural preservation. They emphasized the importance of ensuring that future generations can continue to explore and appreciate the world’s diverse cultural heritage.

The participant statements offered nuanced insights into the diverse perspectives and experiences of individuals engaged in virtual tourism. They provided a more personalized and context-rich understanding of the themes. Through their

reflections, the participants clarified the multifaceted impacts of virtual tourism on education, cultural awareness, technological innovation, and sustainable tourism practices within the TTM field.

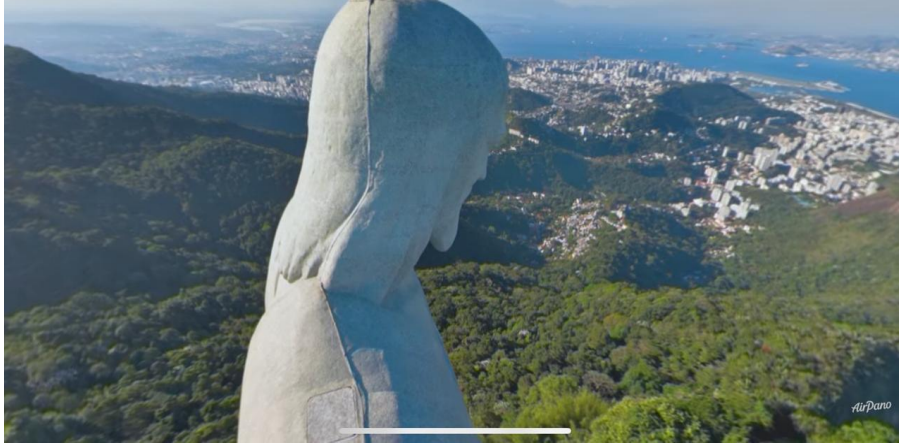


Figure 9: Rio De Janeiro (Screenshot) Source: YouTube VR



Figure 10: Rio De Janeiro (Screenshot) Source: YouTube VR

Table 2: Tabular representation of the number of participants who rated each self-evaluation feedback questionnaire on a scale of 1 to 5

Question	Rating 1	Rating 2	Rating 3	Rating 4	Rating 5
1. On a scale of 1 to 5, how comfortable do you feel when speaking as a tour guide?	2	5	8	12	13
2. On a scale of 1 to 5, how confident do you feel about communicating effectively in English?	3	6	9	10	12
3. On a scale of 1 to 5, how confident do you feel in using vocabulary and phrases relevant to tourism?	1	4	11	14	10
4. On a scale of 1 to 5, rate your pronunciation during the activity.	2	3	7	15	13
5. On a scale of 1 to 5, rate how effective you found the activity in assessing your speaking skills.	4	7	6	11	12
6. On a scale of 1 to 5, rate how much the activity helped you understand language use in real-world tourism scenarios.	1	6	8	13	12
7. On a scale of 1 to 5, rate the level of challenge you experienced during the activity overall.	3	4	9	10	14
8. On a scale of 1 to 5, rate how likely you are to recommend similar language assessment activities to your peers.	2	8	5	12	13
9. On a scale of 1 to 5, rate your satisfaction with the clarity of the instructions provided for the activity.	1	5	10	13	11
10. On a scale of 1 to 5, rate how useful the activity was in improving your English language skills.	3	7	8	11	11

The self-feedback questionnaire, administered via Google Forms, provided valuable insights into participants' perceptions of their speaking activities within the VR-enhanced learning environment. Participants were asked to rate their experiences on a scale of 1 to 5, with 1 indicating the lowest rating and 5 indicating the highest. The analysis of the responses revealed varying degrees of comfort, confidence, and effectiveness perceived by the participants.

Notably, participants generally rated themselves moderately to highly in terms of comfort ($M = 3.6$) and confidence ($M = 3.8$) when acting as tour guides, with the majority giving ratings of 4 or 5. Similarly, confidence in communicating effectively in English ($M = 3.8$) and using relevant vocabulary and phrases in tourism contexts ($M = 3.8$) garnered higher ratings. Pronunciation received a

slightly lower average rating ($M = 3.7$), indicating some perceived opportunities for improvement.

The activity was largely perceived as effective in assessing speaking skills ($M = 3.8$) and aiding in understanding language use in tourism scenarios ($M = 3.8$). The participants also reported a moderate level of challenge ($M = 3.8$) during the activity, indicating an appropriate level of engagement. Furthermore, a majority expressed willingness to recommend similar language assessment activities to their peers ($M = 3.8$), highlighting a positive overall experience.

However, satisfaction with the clarity of instructions ($M = 3.0$) and perceived usefulness in improving English language skills ($M = 3.8$) showed more variability among participants. Overall, the self-evaluation feedback questionnaire provided nuanced insights into participants' experiences, indicating areas of strength, as well as opportunities for enhancement within the VR-based learning context.

Based on the findings of the study, virtual tourism experiences can have a profound impact on students' learning, cultural appreciation, and language development in a VR-enhanced environment. By integrating Kolb's ELT, this study highlighted the importance of practical, reflective, and active learning processes. VR technology can play a pivotal role in higher education as a tool to enhance professional competence, as well as learn subject content, transform teaching practices, and influence educational transformation processes (Larsen, 2023). Using VR in education allows for immersive, interactive, and collaborative learning experiences, preparing students for a technologically advanced future (Leong, 2020).

Overall, participants reported a high level of comfort and confidence during their performances as virtual tour guides, their ability to communicate in English, and their ability to use relevant tourism vocabulary, with average ratings indicating a positive experience. The activity was considered effective in assessing speaking skills and aiding in the understanding of real-world tourism language use. The use of immersive VR in education significantly increases student engagement and motivation, with the greatest differences in presence and motivation (Makransky & Lilleholt, 2018). Additionally, VR with scenery enhances knowledge retention and vocabulary use for English for tourism purposes' speaking skills (Lin et al., 2021).

However, there are nuanced areas for improvement that warrant deeper exploration. The challenges related to the motion sickness experienced by some participants highlight the need for a thorough understanding of individual user experiences and potential physiological responses to immersive technologies. Addressing these challenges could involve not only refining interface design and navigation but also considering personalized settings or warnings to mitigate discomfort effectively.

5. Implications of Findings

The reflections of participants on virtual tourism experiences have revealed significant themes that have implications for education and the TTM industry. The sense of presence and immersion observed in virtual tourism suggests that such experiences can effectively serve as educational tools, providing engaging ways for students to explore historical and cultural landmarks. A sense of presence in VR social environments is enhanced when participants experience genuine cognitive, emotional, and behavioral responses and create their own narratives (Riches et al., 2019). Immersion in VR technology creates a sense of presence, allowing users to experience unique experiences and transfer skills learned in the virtual world to the real world (Mestre & Vercher, 2011). Incorporating such virtual experiences into educational curricula can enhance students' understanding and appreciation of global heritage.

The themes of emotional connection and impact highlight the potential of virtual tourism to evoke genuine emotions and foster a deeper connection to cultural and historical contexts. VR, augmented reality, and artificial intelligence can stimulate emotional responses to heritage and culture, leading to decision-making and learning (Guazzaroni, 2021). Educators and tourism professionals can leverage these emotional aspects to design experiences that resonate with individuals and enhance their cultural sensitivity.

Innovative digital technologies, such as artificial intelligence, virtual and augmented reality, and blockchain, can improve efficiency, personalize offers, and open new niches in the tourism industry (Shamakhov et al., 2023). Technological engagement and user experience considerations suggest that ongoing advancements in virtual tourism platforms, such as Meta Quest, could further optimize the user interface, addressing challenges such as motion sickness. This underscores the importance of continuous technological innovation in ensuring a seamless and enjoyable virtual tourism experience.

The themes cultural understanding and cross-cultural competence emphasize the role of virtual tourism in promoting a more interconnected and globally aware society. Virtual heritage experiences enhance students' understanding of sociocultural values and help them connect historical events to present political situations (Schaper & Pares, 2022). Virtual interaction can foster higher-level cultural learning among tourism students, leading to a frame of reference shift and a move toward cultural competence (Durko & Martens, 2021). This has implications for tourism professionals who must navigate diverse cultural landscapes, emphasizing the need for cross-cultural training and sensitivity.

The desire for authenticity and physical exploration indicates that virtual tourism offers valuable educational experiences, but it partially replaces the authenticity of physical travel. A balanced approach is necessary, encouraging a blend of virtual and physical experiences to provide comprehensive learning opportunities. Finally, the themes touch upon social and environmental responsibility, hinting at the potential of virtual tourism to contribute to sustainable tourism practices by reducing the carbon footprint associated with

travel. Sustainable tourism involves environmental, health, and safety aspects, and VR offers opportunities and challenges in those regards (Meristö, 2021). This insight has implications for the industry's efforts to mitigate environmental impacts while offering meaningful travel experiences.

Overall, the implications suggest that integrating virtual tourism into educational programs and industry practices can contribute to a more informed, culturally sensitive, and sustainable approach to TTM. As technology advances, leveraging virtual experiences responsibly can enhance learning outcomes, promote global understanding, and contribute to a more sustainable future for the tourism industry.

6. Practical Implications

The integration of virtual tourism has significant implications for educators, tourism professionals, and technology developers. Incorporating virtual tourism into education can help students better understand historical and cultural landmarks, emphasizing emotional resonance and making educational content more engaging. From a technology perspective, optimizing virtual platforms for user experience is crucial to address concerns about motion sickness and interface design. Tourism professionals can benefit from incorporating virtual experiences into their training to improve cross-cultural competence. A balanced approach to travel which combines virtual and physical experiences offers a comprehensive approach, while virtual tourism also presents opportunities for sustainable practices. These practical implications highlight the potential for a more inclusive, impactful, and sustainable integration of virtual tourism into education and industry practices.

7. Conclusion

The integration of 360-degree VR videos in tourism education plays a pivotal role in reducing disparities between theoretical knowledge and practical application. Immersive experiences provide students with opportunities to engage in virtual tours of historical landmarks and cultural sites, fostering a deeper understanding and appreciation of global heritage. Through these virtual encounters, students are not only able to visualize and comprehend complex cultural and historical contexts but also develop emotional connections that enhance cross-cultural competence.

The overwhelmingly positive perceptions and experiences reported by participants underscore the potential of VR videos, supporting Kolb's notion of learning through experience. The profound sense of immersion and presence experienced by users indicates that virtual platforms, such as YouTube VR, accessed through Meta Quest, are effective in creating meaningful and impactful educational encounters with global heritage sites.

The thematic analysis revealed a wide range of insights, from the emotional connections established through virtual exploration, to the nuanced considerations of authenticity and sustainability in tourism practices. Participants appreciated the opportunity to explore cultural landmarks and historical sites

virtually, emphasizing the significant emotional and educational value of these experiences. Educators also recognized the potential of VR videos to enhance teaching and learning practices, promoting active engagement and cultural understanding among students. The integration of VR technology in tourism education not only enriches the learning experience but also prepares students to engage thoughtfully and sustainably with global heritage.

Immersive 360-degree historical place videos can be included in the curricula of educational institutions to provide students with opportunities to explore iconic landmarks and gain a deeper understanding of global heritage. The travel and tourism industry can use virtual tours as a complementary tool for marketing and destination promotion. Businesses can offer virtual travel packages, allowing individuals to explore destinations before committing to physical travel and enhancing the decision-making process. The practical implementations of virtual tours align with the identified themes and demonstrate the potential for virtual tourism to unite educational and industry contexts, ultimately enhancing the overall landscape of TTM. The discourse surrounding virtual tourism highlights the need for responsible stewardship of cultural and environmental resources to ensure future generations can explore and appreciate the world's diverse heritage. Virtual tourism experiences can promote empathy, understanding, and cross-cultural dialogue, which are powerful factors for fostering a more inclusive and sustainable approach to tourism management in the digital age.

Participants found the self-evaluation feedback questionnaire valuable in evaluating their speaking skills during virtual experiences. The study recommends that educational institutions integrate VR experiences into their existing curricula, enabling students to learn through immersive experiences that integrate theory and practice. Taking advantage of this emerging technology and leveraging its capabilities can enable educational institutions to provide students with immersive learning experiences that inspire curiosity, critical thinking, and lifelong learning. Additionally, continued research and innovation in virtual tourism technologies has the potential to redefine the boundaries of experiential learning and global connectivity, ultimately leading to a more inclusive and sustainable approach to TTM in the digital age.

8. Limitations

The study has provided valuable insights into the experiences of participants in virtual tourism, but it is important to acknowledge several limitations. First, the sample size, although diverse, was limited to a specific group of TTM students. Second, only eight VR gadgets were available, which might have limited the generalizability of the findings. Third, the reliance on self-reported data introduces the possibility of response bias, as participants may have provided socially desirable responses. Finally, the research did not investigate the long-term impacts of virtual tourism experiences on the attitudes and behaviours of the participants.

9. References

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Appendix 1

Interview Questions

1. Can you describe your experience with engaging in 360-degree virtual tours using Meta Quest?
2. How did you feel while exploring historical landmarks through virtual reality?
3. Did you feel immersed in the virtual environment? If so, could you elaborate on that experience?
4. Can you recall a specific moment during the virtual tour where you felt particularly immersed or present in the environment? What made that moment stand out to you?
5. How do you think virtual tourism experiences contribute to your understanding of historical and cultural landmarks?
6. Do you feel that virtual encounters offer a unique perspective on cultural heritage that traditional learning methods cannot provide?
7. How did engaging in virtual tourism experiences evoke emotions or connections with the historical sites?
8. What were your impressions of the Meta Quest platform for virtual tourism? Did you find it user-friendly?
9. Were there any aspects of the virtual experience that hindered your engagement or enjoyment?
10. Did you face any technical issues or challenges while navigating the virtual tours?
11. How do you think overall advancements in virtual reality technology could improve the overall user experience of virtual tourism?
12. While virtual tourism offers immersive experiences, do you believe it can fully replace the authenticity of physical travel?
13. How do you think virtual encounters complement or supplement physical travel experiences in tourism education?
14. What do you believe are the unique benefits of physical exploration compared to virtual encounters, and vice versa?

The following interview questions are designed to probe the participants' perceptions, experiences, and reflections regarding the use of 360-degree VR videos in tourism education.

Observation Protocols

1. Participant Behavior:

- Recorded engagement levels and emotional responses.
- Noted interaction with the virtual environment.
- Documented reactions to specific landmarks.

2. Technical Performance:

- Assessed platform performance.
- Noted any technical issues encountered.

3. Engagement and Interaction:

- Noted interaction patterns.
- Monitored navigation within the virtual space.

4. Feedback and Reflection:

- Documented participant feedback.
- Recorded suggestions for improvement.

List of videos that participants were requested to watch in MetaQuest 2 on YouTube VR.

S No	Name	Channel	Duration	Link
1	Taj Mahal	AirPano VR	3.40 mins	https://youtu.be/2aJ9cOwbzxo?si=5GmIyF9kV5xUu_ii
2	Rio De Janeiro	AirPano VR	11.01 mins	https://youtu.be/KkSzad253o0?si=LLYavET1IyasDMhl
3	Ancient city of Petra, Jordan.	AirPano VR	6.57 mins	https://youtu.be/xSiv4TkfSOE?si=wyUkF_9UAWwgXwgl
4	Buckingham Palace Tour	BBC London	2.15 mins	https://youtu.be/FtGN2wK9g_s?si=2bMXBVKaZKy4y11k
5	Egyptian pyramids	AirPano VR	2.16 mins	https://youtu.be/dyBkgncVc6g?si=7-5eYtW9XjoHhe_H