Knowledge Retention of a 360 Virtual Reality Tour of a Traveling Team Sport Complex

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Introduction
The main objective of this project is to examine short and long term knowledge retention after using 360 Virtual Reality (VR) content to teach sport venue management at a major research university in the United States. VR is heavily promoted in the American marketplace today. Faculty and students should be exposed to this medium and understand its capability when studying sports facility management and operations. Specifically, this project will utilize 360 VR to take the students on a virtual fieldtrip to examine components of a travelling team sport facility. The students will be taken on the VR “tour” and then examined for short and long term knowledge retention of the various components within this baseball facility.

Sport management students need a better understanding of facility development and revenue generation as it applies to the rapidly growing field of travelling team sport competition. The presenters have selected one of the largest travelling team sport complexes in the southeastern United States to exhibit VR capability. The primary users of this complex are traveling teams participating in basketball, volleyball, soccer, lacrosse, beach volleyball or baseball competitions.

While 360 VR has been discussed in education since the 1960s, it has begun to gain momentum as a viable, engaging, immersive education delivery mechanism as the technology advances and the cost of viewing devices decreases. This project explores the development and use of VR content captured with a Ricoh Theta S 360 camera and rendered on a computer and a Samsung Galaxy S7 smartphone in VR goggles.

Literature Review
Chen (2009) stated constructivism theory emphasized the combination of inputs from the senses, existing knowledge, and new information to develop a better and deeper understanding through active authentic and immersive learning activities. Jonassen, Hernandez-Serrano and Choi (2000) believed that virtual reality was well suited for providing exploratory learning environments which enabled students to learn through experimentation.

This project’s content creation is justified since Time magazine author Sean Gregory (2017) reported that traveling sports teams have grown to a USD$15.5 billion industry and “rivals the size of the USD$14 billion NFL” (WinterGreen Research, 2017). WinterGreen Research (2017) further predicted that this market may reach USD$41.2 billion in 2023. Its importance in the lives of American families was personified with a 10 year old travel team baseball player gracing the cover of Time on September 4, 2017. This growth of traveling sport teams requires new facility construction. As such, there is a significant growth in the construction and management of travelling team sports facilities that can sustain large scale youth and adult competitions. NYU Professor David Hollander, quoted by Koba (2014) stated that “youth sport tourism wasn’t even a travel category four years ago, but now is the fastest growing segment in travel.”

The educational challenge is how to have today’s sport and entertainment management students experience these mega travelling team sports facilities when visiting these locations is impractical or too costly. Thus, the authors have produced VR content of a rural sports complex to provide students an immersive experience of these facilities from anywhere.

Methodology and Analysis
A Ricoh Theta 360 camera was used to capture content at a large multi-sport complex and its supporting infrastructure such as hotels and restaurants. The camera produced spherical images which were uploaded to a
computer, processed with audio descriptions added and posted for viewing. Content can be rendered and manipulated as a 360 image via YouTube on a classroom projected screen or by using a smartphone app with 360 VR goggles. Students viewing images on either platform can move around the scenes, concentrating on areas of interest to understand topics such as relative location of revenue generating services, spectator flow and facility amenities.

The authors will display a 7 minute VR film to students in an Introduction to Sport and Entertainment Management class in the fall of 2017 and spring of 2018. After viewing this VR “facility tour” a single time in class, students will be asked to immediately recall and identify 1. “What opportunities for revenue generation did you observe?” 2. “What amenities to enhance the fan experience did you observe?” 3. “What vendor’s name is on the box above the concession stand?” and 4. “Would you like to view other sport and entertainment venues in 360?” Student responses then will be graded for accuracy. Later in the semester, the above 4 questions again will be asked to all students to ascertain long term knowledge retention. Results will then be analyzed across the two semesters and presented.

Results, discussion and implications
The 360 VR images offer a virtual tour of the facilities and views of competition as if the viewer were present at the event. The VR tours provide a cost effective option for studying a venue without physically being present. However, no live or 360 VR educational tour of travelling team sport facilities is effective if students have no long-term knowledge retention. Students need long-term knowledge retention to apply these concepts to facilities management, especially in the area of amenities designed to enhance a fan’s experience that, in turn, can drive revenue generation to pay for the debt service for facilities that can cost the public taxpayer or private sector venture capitalist over USD$1 billion to construct (King, 2016).

By using 360 VR technology, either with viewing goggles or projected on a screen, students will be able to, from the dorm room or classroom, better understand the facilities required to host a travelling team baseball tournament with over 100 teams, 1,500 athletes and thousands of parents and college scouts.