

Chapter 8

Immersive Virtual Reality in Sports: Coaching and Training

Trone Jackson II
Capella University, USA

ABSTRACT

This chapter aims to show how immersive virtual reality headsets can impact sports by providing an immersive virtual learning environment that implements immersive learning, learning by doing, and immediate feedback to ensure the development of coaches and players in sports. This chapter will describe how immersive virtual reality simulations are used on virtual reality headsets and discuss the learning theories that lead to transferring skills from a virtual world to the real world. Immersive learning simulations require coaches and player to recreate live sporting events to make split decisions. This chapter will examine how creating virtual coaching and playing environments that mirror real in-game emotions, real in-game immediacy, and the pressures to make the correct split-second decisions. Additionally, the chapter reviews research of the cognitive sciences to understand how AR simulations can accelerate new skills acquisition.

INTRODUCTION

Immersive virtual reality (VR) headsets used for sports training are designed based on learning by doing model. These simulations and virtual environments use science, psychology, and technology to enhance learning and accelerate skill development. This chapter will define the core learning theories and key training concepts that make immersive virtual reality headsets an efficient way to design a simulation for sports and look at future immersive virtual reality sports trends.

Learn by doing is a learning method that allows the brain to build connections through experiences that coaches and players will face during the game. Learn by doing is a concept proven to work both in and out of the sports realm. Immersive virtual reality immerses the user into an environment where quick active decisions must be made based on the virtual environment's circumstances. The virtual environ-

DOI: 10.4018/978-1-7998-4222-4.ch008

ment must mimic the real world in-game situations that coaches experience without the risk of losing the game. Lave and Wenger (1991) refer to this as legitimate peripheral participation. The simulations of the users' experience can transfer to the real game after its completion.

Immersive virtual reality headsets have become more popular over the last few years due to technological advancement. While in immersive virtual environments three components must be adopted including,

1. Observational learning
2. Contextual interface
3. Feedback and reinforcement.

These three concepts work as the foundation during immersive simulations to create an authentic learning environment where users experience the accelerated development of new skills.

The learning that takes place during sports requires the gathering of information under a variety of conditions. Virtual environments must mimic the specific sport and skill and the environmental conditions that occur during the game. Immersive VR provides players and coaches an opportunity to transfer skills from the virtual environment to the real game. AR simulations using VR headsets are based on immersive learning concepts including learn by doing, embodiment, retrieval-based learning, transferable Training, and learning in the zone of proximal development. These aspects are critical to developing coaches and players who can respond to the immediacy of sports (Casale, 2018). This chapter aims to show how immersive virtual reality headsets used with the correct learning techniques and methodologies can lead to skill acquisition enhancement in players and promote new ways to enhance coaches' self-efficacy in-game defying moments.

BACKGROUND

Immersive learning allows the user to experience a realistic simulation. VR headsets provide 360-degree immersion with an avatar to ensure the simulated experience appears as realistic as possible. Russell (2019) found that immersion can enhance learning by allowing multiple perspectives, along with situated learning and development of the transfer of learning. Immersion works in sports as it allows coaches and athletes to be active in the learning experience. Customized virtual simulations put the users in situations that resemble the game. Immersive learning environments result in functional training.

For athletes and coaches to acquire new skills, the immersive virtual learning environment has to simulate the different movements and emotions that may occur during the game. Each learning environment requires

1. The athlete to make movements consistent with the movements made in the real-world setting.
2. Ensure that movements performed happen in various situations that all apply to the specific sport or coaching situation.
3. Provide sensory and timely feedback to encourage or correct behavior.

Interactions in virtual learning can predict the outcomes of virtual training experience. Higher levels of engagement in the virtual world lead to a higher percentage of the transfer from virtual to reality. The collaboration in a live training simulation provides a place to practice the demanding visual and

14 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/immersive-virtual-reality-in-sports/272147

Related Content

Tech Transition: An Exploratory Study on Educators' AI Awareness

Jasdeep Singh Walia and Pawan Kumar (2022). *International Journal of Virtual and Personal Learning Environments* (pp. 1-17).

www.irma-international.org/article/tech-transition-exploratory-study-educators/295310

Interactive Multimedia and AIDS Prevention: A Case Study

José L.R. Illera (2005). *Interactive Multimedia in Education and Training* (pp. 271-288).

www.irma-international.org/chapter/interactive-multimedia-aids-prevention/24545

Collaborative Learning Experiences in Teaching of e-Business Management

Wael Assaf, Gianluca Elia, Ayham Fayyoumi and Cesare Taurino (2010). *Cases on Interactive Technology Environments and Transnational Collaboration: Concerns and Perspectives* (pp. 281-302).

www.irma-international.org/chapter/collaborative-learning-experiences-teaching-business/42542

Using a Classification of Psychological Experience in Social-Networking Sites as a Virtual Learning Environment

Joseph Onibokun and Paul van Schaik (2012). *International Journal of Virtual and Personal Learning Environments* (pp. 27-40).

www.irma-international.org/article/using-classification-psychological-experience-social/74839

The Impact of Personal Learning Environments on Chinese Junior High School Students' Spoken English Narrative Competence

Menglin Zhang, Xiaoshu Xu and YunFeng Zhang (2023). *International Journal of Virtual and Personal Learning Environments* (pp. 1-23).

www.irma-international.org/article/the-impact-of-personal-learning-environments-on-chinese-junior-high-school-students-spoken-english-narrative-competence/329599