# Chapter 14
# Applying Virtual Reality (VR) to the Detection and Treatment of Clinical Problems in Educational Settings

**José A. Carmona**
*University of Almería, Spain*

**Adolfo J. Cangas**
*University of Almería, Spain*

**Luis Iribarne**
*University of Almería, Spain*

**Moisés Espínola**
*University of Almería, Spain*

## 1. ABSTRACT

*In recent years, thanks in part to advances in computer technology, there has been a renewed interest in using Virtual Reality (VR) to improve the traditional intervention procedures used in educational and clinical settings. A growing number of researcher teams, and three-dimensional (3D) simulations, are oriented toward the detection and treatment of school-related problems such as violence in the classroom, hyperactivity, eating disorders, and drug abuse. In this chapter, the authors highlight the major advantages of using VR in clinical assessment and intervention programs. They also discuss some of the virtual tools that have been developed, as well as the results obtained with these tools.*

## 2. USEFULNESS OF 3D SIMULATION IN EDUCATIONAL/CLINICAL SETTINGS

The use of 3D computer simulation or virtual reality has multiplied in recent years. The reasons for this increase include reduced costs and improved technology, and the tremendous popularity of videogames among today's youth. As pointed out by Kim, Pack and Baek (in press), the popularity of 3D technology has made its applied use very attractive and contributed to its wide acceptance, especially among adolescents.

Moreover, as is clear from studies that have evaluated VR and its clinical applications, this technology boasts a number of features that make it highly valuable for use in educational/clinical settings (Adams, Finn, Moes, Flannery & Rizzo, 2009; Perpiñá, Botella & Baños, 2003; Schultheis, Himelstein & Rizzo, 2002; Botella, García-Palacios, Baños & Quero, 2007):

*VR simulates real life quite accurately.* With the latest advances in graphic design, modern computer systems can simulate reality considerably well. This characteristic permits, for the purpose of clinical assessment or intervention, immersing the client in an environment similar to what the client might encounter in his or her own life. Using VR in an intervention program thus increases the program's ecological validity, overcoming one of the biggest limitations of traditional paper-and-pencil tools.

*Control over the stimulus presentation.* Another important advantage of VR is that it gives the designer full control over the type, quantity, and intensity of stimuli that are presented to a client. This has several possible benefits. For instance, with VR, a therapist can manipulate the features of threatening or aversive stimuli, or ensure that certain stimuli are (or are not) presented. This capacity, in turn, may make patients more motivated to undergo therapy and become actively involved in the treatment. From an assessment standpoint, VR permits collecting data in a more objective and uniform manner, since they may be collected automatically while the therapist controls the stimulus presentation. In short, VR makes it possible to carry out clinical assessment and treatment that is more flexible than what traditional procedures allow, treatment that can be adapted to the characteristics of each client.

*The virtual world is safe.* Situations presented in virtual reality are not physically dangerous or threatening to users. Hence, users can freely interact in the virtual environment without any of the risks that abound in normal life. With VR, patients may view therapy as a protective environment, a safe setting that allows them to experience and react to situations without directly suffering negative consequences. This fact makes VR very helpful for therapists treating patients unwilling to experience certain stimuli or events in real life. For such individuals, VR may provide an intermediate step between behaviors learned in therapy and their generalization to the outside world. With regards to assessment, again, VR has the advantage over traditional methods in that VR allows the patient to experience a potentially harmful situation (e.g., being offered drugs) without any real risk, allowing the therapist to observe the patient's response and gain valuable information for use in treatment.

*How we react in a virtual world.* Numerous studies have revealed similarities in the way people react (behaviorally, cognitively, and emotionally) to virtual and real situations. Findings suggest VR makes its users feel as if they were truly experiencing the simulated events, allowing them to feel, think, and respond to any virtual situation as they would in real life. Essentially, the way people respond to situations presented virtually appears to be a valid indicator of how they would respond to the corresponding real situations.

*Presenting situations at any moment.* Therapists often struggle with the fact that they cannot control what the patient experiences outside of therapy. Using VR as a supplement to existing therapy, however, helps to overcome this limita-

## Related Content

A Formative Analysis of Interactive Classroom Communication Systems Used in Secondary School Classrooms
Robin Kay (2009). *Handbook of Research on New Media Literacy at the K-12 Level: Issues and Challenges (pp. 720-742).*
www.irma-international.org/chapter/formative-analysis-interactive-classroom-communication/35947

Stereoscopic 3D: Going Beyond Texas Tech University Libraries' 3D Animation Lab
Ian Barba, James Brewerand Brenda Swinford (2013). *Cases on 3D Technology Application and Integration in Education (pp. 258-287).*
www.irma-international.org/chapter/stereoscopic-going-beyond-texas-tech/74413

Theory of Mind in Autistic Children: Multimedia Based Support
Tariq M. Khan (2011). *Technology Enhanced Learning for People with Disabilities: Approaches and Applications  (pp. 167-179).*
www.irma-international.org/chapter/theory-mind-autistic-children/45509

Integrating the Arts into Early Childhood Teacher Education Through Technology: A Puppetry Arts Project
Kevin Hsiehand Melanie Davenport (2014). *Transforming K-12 Classrooms with Digital Technology (pp. 208-218).*
www.irma-international.org/chapter/integrating-the-arts-into-early-childhood-teacher-education-through-technology/88972

Computer-Based Mathematics Education: Historical Excursus
 (2021). *Computer-Based Mathematics Education and the Use of MatCos Software in Primary and Secondary Schools (pp. 28-51).*
www.irma-international.org/chapter/computer-based-mathematics-education/260134