

Chapter 27

Virtual Reality as a Tool for Enhancing Learning in At-Risk Students and Increasing School Inclusion

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ABSTRACT

The contribution aims at exploring previous and current practices of use of virtual environments, 3d Virtual Worlds also, for inclusion in education. There are many experiences of developing and using virtual environments for the inclusion of disabled and problematic students (autistic student, Asperger Syndrome students, dyslexic students, etc.). The majority of the experimentations gave important beneficial results. In particular, the essential technological characteristics of VR that are beneficial for inclusion are: immersion, presence, interaction, transduction and conceptual change. The design of those environments is sometimes conceived together with the final users, applying participatory design techniques. Virtual environments and Virtual Worlds are being used also in the management of drop-out rates and school failure, by using it for curricular diversification classroom with students in a situation of educational exclusion or academic failure. The contribution will discuss 7 cases of successful use of Virtual Reality at school, ranging from primary to secondary education.

INTRODUCTION

Virtual Reality (VR) is considered to be a promising tool in numerous and different areas of therapy and intervention, as literature suggests, especially in people with neurological injuries because of its advantages: it provides individualized, task-specific training, offers realistic, safe and motivational setting in which complex motor activities can be practiced and guarantees immediate feedback to the users (Ortiz-Catalan, Nijenhuis, Ambrosch, Bovend'Eerdt, Koenig, & Lange, 2014).

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This contribution aims at exploring previous and current practices of the use of virtual environments for inclusion in education, especially of Special Education Needs (SEN) and at-risk students, which is rather recent as a field of application compared to the medical one.

Before describing the practices, however, some definitions are needed.

Definitions of SEN students vary widely across countries as they are specific to each country's legislation. In Italy, SEN students are made up of three main groups: disabled students (i.e. deaf or blind students), students with learning disorders (i.e. dyslexia), students with socio-cultural disadvantages. The definition is provided by the Italian Ministry of Education in a dedicated Note, namely Note No. 8 issued on March 6th 2013. Since it is a wide definition, it has been taken for the scope of this study as an operational definition.

As for the definition of "students at risk", some cautionary considerations must be given. In fact, it is to be noted that the term is vague, has no consistent definition, can be viewed as stigmatizing certain groups and does not specifically indicate what children/students are at risk of. Some (Moore, 2006) argue that the phrase is often used vaguely to refer to poor life outcomes, and in school setting this refers to poor - when not catastrophic - school achievements.

Therefore, the operational definition used here is that an at-risk student is one that is considered to be in danger of not graduating, not being promoted, not meeting other education-related goals and of leaving the school earlier than expected.

Finally, as for Virtual Reality, the operational definition provided by Lorenzo, Pomares, & Lledò (2012) was the adopted definition, talking of VR as a term that applies to computer-simulated environments that can simulate physical presence in places in the real world, as well as in imaginary worlds. Most current virtual reality environments are visual experiences displayed on a computer screen. By using the term immersive VR, instead, the general meaning is that the user is also given additional technology (oculus, gloves, etc.) that gives him/her the impression that s/he has stepped into this "synthetic world". Furthermore, it is assumed, in line with Goodwin's (2008) thought, that the goal of VR is not to evade real-world interactions but to provide extra material that the teachers can use to improve both content and social skills.

BACKGROUND

Another preliminary remark is needed as for the methodology that has been followed to select the cases that are going to be presented hereof. Another preliminary remark is needed as for the methodology that has been followed to select the cases that are going to be presented hereof.

In fact, there are many experiences of developing and using virtual environments for the inclusion of disabled and problematic students (autistic student, Asperger Syndrome students, dyslexia, etc.) but in order to have a panorama of the recent and sound research works on the use of virtual reality in education, with particular reference to the most weak groups (at-risk students and SEN students), the following criteria were adopted to look up in literature:

1. **Time Coverage:** Only recent publications have been taken into accounts, that is those referring to the period 2006-2016.
2. **Publication Type Coverage and Inclusion Criteria:** The main source were peer-reviewed articles, written in English, since research works are usually described there. However, description of experi-

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