

Chapter 5

Social Orthotics for Youth with ASD to Learn in a Collaborative 3D VLE

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ABSTRACT

Online systems, especially 3D virtual environments, hold great potential to enrich and expand learning opportunities for those who are challenged by traditional modes of instruction and interaction. In the process of developing a 3D Virtual Learning Environment to support the development and practice of social competence for individuals with Autism Spectrum Disorders, the iSocial project explored and advanced ideas for social orthotics in virtual environments. By social orthotics the authors mean structures in the environment that overcome barriers to facilitate social interaction and social learning. The vision of social orthotics in a 3D world is to be both assistive and adaptive for appropriate social behavior when the student, peers and guide are represented by avatars in a 3D virtual world designed to support learning and development. This chapter describes the formulation of social orthotics for avatar orientation and conversational turn-taking and describes experiences and lessons from early tests of prototype orthotics.

INTRODUCTION

A multi-disciplinary team including special educators and learning technologist at the University of Missouri are developing a 3-Dimensional Virtual

Learning Environment (3D-VLE) to assist youth with autism spectrum disorders (ASD) in their development of targeted social competencies. The project, iSocial (<http://isocial.rnet.missouri.edu/>), seeks to take a successful face-to-face program delivered over a 10-week period by a trained guide to groups of 4 to 5 youth and deliver the program online via a

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3D Internet-based virtual world (Laffey, Schmidt, Stichter, Schmidt, Oprean, Herzog, & Babiuch, in press; Laffey, Schmidt, Stichter, Schmidt, & Goggins, 2009; Schmidt, Laffey, Stichter, Goggins, & Schmidt, 2008). A key goal of building an online program is to increase access to the program. To engage in iSocial the youth must work cooperatively in the online environment, including following directions from an online guide and collaborate on many online learning activities with other youth with ASD.

While a key goal of iSocial is for the youth to transfer lessons and competencies learned in the online environment to their traditional face-to-face settings with parents, teachers, friends and classmates, in planning for iSocial, the developers recognized a need for design features to help the youth interact and be social during the online learning processes. Youth who do not readily take turns, attend to social cues and expectations nor cooperate effectively in face-to-face settings are also likely to struggle with social practices in the online setting. The challenge, of course, is to assist youth with ASD, who have traditional social performance deficiencies, to be social while learning social performance competencies. This is a key feature of the face-to-face curriculum and an essential requirement in the translation to the online environment. We articulated a concept of social orthotics to represent types of structures that might be needed to facilitate social interaction and social learning in iSocial. The vision of social orthotics in a 3D VLE is to be both assistive and adaptive for appropriate social behavior when the student, peers and guide are represented by avatars in a 3D virtual world designed to support learning and development. This chapter describes how we are thinking about and developing early implementations of social orthotics. The chapter also shares what we are learning about these ideas and their potential to support appropriate online behavior. Additionally we discuss some key challenges for design and development of social orthotics.

BACKGROUND

Literature

As a collaboration of researchers in the field of Special Education with researchers in the field of Learning Technologies we consider the role of technology in assisting social performance as an integration of both traditions. In special education, assistive technology refers to devices that increase, maintain, or improve capabilities of individuals with disabilities for those performances. Learning technologies are generally seen as a means for augmenting human capabilities. Donald Norman, a noted human interface guru, wrote a book about “Things that make us Smart” (Norman, 1994), articulating the view that the design quality of devices impacts human capability both for good and for worse. These two world views of technology assisting individuals to overcome disabilities and augmenting individuals to enhance their abilities combine to sensitize the design of iSocial to the general impact of all design decisions on human capability and the specific potential of a class of devices that may shape targeted social behavior.

Researchers in the field of assistive technology for individuals with ASD pay particular attention to communication functions and have asserted the value of augmenting language input through visual devices (Hodgdon, 1995; Quill, 1997; Miranda, 2001). Miranda’s (2001) review of literature from prior to 1999 showed the potential of visual cues to support comprehension of speech, managing activity and choice making. Methods to stimulate language production with symbols and augment language by using voice generation devices also showed some evidence of support for communication. Two conclusions seem apparent from the review: (a) communication-related behaviors can be augmented and visual cues seem especially promising for individuals with ASD and (b) the benefits of any assistive technology is highly dependent on the fit between the form of the technology intervention and the individual’s needs

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