World Academy of Science, Engineering and Technology
International Journal of Educational and Pedagogical Sciences
Vol:9, No:07, 2015

Interventions for Children with Autism Using Interactive Technologies

Authors : Maria Hopkins, Sarah Koch, Fred Biasini

Abstract : Autism is lifelong disorder that affects one out of every 110 Americans. The deficits that accompany Autism Spectrum Disorders (ASD), such as abnormal behaviors and social incompetence, often make it extremely difficult for these individuals to gain functional independence from caregivers. These long-term implications necessitate an immediate effort to improve social skills among children with an ASD. Any technology that could teach individuals with ASD necessary social skills would not only be invaluable for the individuals affected, but could also effect a massive saving to society in treatment programs. The overall purpose of the first study was to develop, implement, and evaluate an avatar tutor for social skills training in children with ASD. “Face Say” was developed as a colorful computer program that contains several different activities designed to teach children specific social skills, such as eye gaze, joint attention, and facial recognition. The children with ASD were asked to attend to FaceSay or a control painting computer game for six weeks. Children with ASD who received the training had an increase in emotion recognition, $F(1, 48) = 23.04$, $p < 0.001$ (adjusted Ms 8.70 and 6.79, respectively) compared to the control group. In addition, children who received the FaceSay training had higher post-test scored in facial recognition, $F(1, 48) = 5.09$, $p < 0.05$ (adjusted Ms: 38.11 and 33.37, respectively) compared to controls. The findings provide information about the benefits of computer-based training for children with ASD. Recent research suggests the value of also using socially assistive robots with children who have an ASD. Researchers investigating robots as tools for therapy in ASD have reported increased engagement, increased levels of attention, and novel social behaviors when robots are part of the social interaction. The overall goal of the second study was to develop a social robot designed to teach children specific social skills such as emotion recognition. The robot is approachable, with both an animal-like appearance and features of a human face (i.e., eyes, eyebrows, mouth). The feasibility of the robot is being investigated in children ages 7-12 to explore whether the social robot is capable of forming different facial expressions to accurately display emotions similar to those observed in the human face. The findings of this study will be used to create a potentially effective and cost efficient therapy for improving the cognitive-emotional skills of children with autism. Implications and study findings using the robot as an intervention tool will be discussed.

Keywords : autism, intervention, technology, emotions
Conference Title : ICEIT 2015 : International Conference on Educational and Instructional Technology
Conference Location : Stockholm, Sweden
Conference Dates : July 13-14, 2015