

Chapter 8

Educational Activity Suggestion System of Children With Pervasive Developmental Disorder for Guiding Education and Training Staff Activities

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ABSTRACT

Individuals with pervasive developmental disorders should be supported with special education programs that are planned according to the type and degree of the disorder, age, characteristics, and needs of the individual. Search over internet resources may provide suitable educational material and methods (and associated activity/game). However, syntactic search in today's static-based internet is insufficient to offer desired relevant results. An intelligent system able to identify the needed educational methods and material with the help of semantic web-based agents will not only contribute to the development of individuals with disorders, and support education specialists in this process, but also be extremely useful for the families of these individuals in assisting and monitoring their child's developmental progress. In this chapter, an agent-based educational activity suggestion system of children with pervasive developmental disorder for guiding education and training staff activities is proposed.

INTRODUCTION

Pervasive developmental disorders (PDD) are spectrum disorders of children which include delays in the development of multiple basic functions such as socialization and communication. These disorders are known by various names such as Autistic Spectrum Disorder (ASD), Rett Syndrome, Disintegrative Disorder of Childhood, Asperger's Syndrome, and "not otherwise specified" (Atypical Autism) (McPart-

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land & Volkmar, 2012). Early childhood education and adulthood business and professional training of the individuals with PDD should be supported with special education programs that are planned according to the type and degree of the disorder, and age, characteristics and needs of the individual. Once these education programs are executed properly, significant progress is gained in terms of acquisition in individual skills and social integration.

PDD is a general diagnostic group containing multiple disorders; it is a state of insufficiency in social interaction, language development, and behavior problems starting at early childhood. Behavior issues include repetitive limited interest and interaction. Such conditions affect several aspects of childhood development, and lead to permanent and chronic dysfunctions (Nordenhof & Gammeltoft, 2007).

The momentum in the rise of such cases reached very high levels especially in the previous decade. This situation led governments to develop educational activities. Awareness of parents, increase in social awareness, and developments in fields such as medicine and psychology, and additional financial resources devoted to the solution of related problems have contributed to achieving better statistics. In order to develop social, physical and cognitive skills of the individuals with PDD, and to integrate them into the society, both parents and institutions are under financial and moral obligations. In addition, insufficient number of qualified staff and high price of services isolate individuals with PDD and their parents from society. Furthermore, people with PDD may also have physical or psychological problems just like others. Special educational methods are needed for the individual to learn how to act according to the cultural norms in his/her society (Jordan, 2003; Aydın, 2008). Special educational solutions can be developed by employing recent contemporary technologies on the current acknowledged and applied educational activities that are crucial in shaping the personality, imagination, and social development of the children suffering PDD.

It is admitted today that applying scientific methods starting from the pre-school education is vital in identifying individuals with PDD and helping them adapt to society. In other words, preventing a child from playing games limits his/her healthy development (Sevinç, 2003). Choosing the right methods is important at this point because people with PDD have their own way of communicating and often they cannot understand other people's attitudes. That's why they might have problems in adapting to the society, and have difficulty to participate in educational games which are the first steps to become a member of the society (Koçak, 2002). For example, individuals with ASD generally prefer sensory-motor activities (Sucuoğlu, 2005). In the next section, a literature review is given about recent contemporary Web technologies and current smart device systems and solutions such as mobile apps for the children suffered from ASD. In third section, the proposed Instructive Activity Suggestion System (IASS) is being dealt with and then fourth section elaborates on the system architecture. A case study of using the designed system and the obtained results are mentioned in the fifth section. This chapter concludes with a summary and findings.

LITERATURE BACKGROUND

Internet and domain-related software are the most important means of deciding on the choice of educational activity for the individuals with PDD to help them adapt to society. Yet, often wrong or imperfect educational methods or activities are offered to parents and specialists because the current Web system and its search engines are designed for human understanding instead of machine understanding. Therefore, they are not conducive to semantic search of the data (Holmes & Willoughby, 2005).

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