

Chapter 7

Assistive Technology for Children With Learning Disabilities as an Artificial Intelligence Application

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ABSTRACT

The Assistive Technology for Children with Learning Disabilities (ATCLD) is a computer software program developed for upper primary education learners of Eros Girls School (EGS) situated in Eros, Windhoek, Namibia. The notion of the development of ATCLD initiated from the idea of improving the occurrence of teaching and learning since the time the traditional methods applicable to mainstream classes were used at EGS. The ATCLD was implemented to improve academic performance of learners with dyslexia in EGS and will be implemented across various needy schools around Namibia. The specifications of this application follows from the fact that people with dyslexia have problems related to English language and mathematics (dyscalculia). ATCLD technologies improve dyslexia learners' capabilities through repetition to aid the learners developing specific skills. ATCLD can be generalised to accommodate other learning deficiencies such as language processing disorder and audio processing disorder.

DOI: 10.4018/978-1-7998-4736-6.ch007

INTRODUCTION

An Assistive Technology (AT) is referred to as, piece of equipment, software program, or product system that is used to increase, maintain, or improve the functional capabilities of persons with disabilities (Assistive Technology Industry Association Inc., 2017). Assistive Technology for Children with Learning Disabilities (ATCLD) can be classified as assistive technology and hence for than intellectual system. Over the years, there has been a technological development trend in Instructional Technology, Assistive Technology, Medical Technology and Technology of Teaching (Edward, 2000). For example, text to speech, and athematic calculations are amongst features of ATCLD: these simulation features are integral components of artificial agents. Artificial intelligence programming methods permit more realistic and robust simulation models and help a user develop, run, and interpret simulation experiments. Simulation algorithms permit expert systems to reason about complex models that change over time or include interacting stochastic elements (Interfaces Artificial Intelligence, Simulation, and Modeling, 1990). According to (Palchik, & Gaab, 2016), tackling the ‘dyslexia paradox’ and early warnings by reading brain and behavioral characteristics can be a remedy for the developmental dyslexia. In the context of developing countries, assistive technologies are not widely available and used, specifically for learners with dyslexia and most often the expertise of the technologies sourced from developed countries do not reside locally, which is equally a challenge. The research and technological deficit need to be addressed in order to realize the emancipation of economies. Helping children with learning disabilities is amongst the array of reasons for developing ATCLD.

LITERATURE REVIEW

Handling of Preferences and Needs Within AAL (X) Systems

Assistive Technology is perceived in academic circles as a viable option to enhance quality of life of individuals affected with impairments, in addition AAL systems is an acronym for Ambient Assisted Living systems as stipulated by (Augusto, 2014). The success of this technology hugely depends on the effective satisfaction of the final users. AAL is as well-known as an intelligent environment. AAL is based on 9 main principles listed below:

- Healthcare. To be intelligent to recognize a situation where it can help.
- To be sensible to recognize when it is allowed to offer help.

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