WorldTour: Towards an Adaptive Software to Support Children with Autism in Tour Planning

Felipe Rodrigues Monteiro Sousa and Thais Helena Chaves de Castro
Institute of Computing, Federal University of Amazonas, UFAM
Manaus, Brazil
{rms.felipe, thais.helena}@gmail.com

***Abstract*—Usability and communicability are fundamental to the process of software development and the developer has to be aware of the intelligibility, apprehensibility, ease of use, ease of communication and attractiveness of the software. In assistive software, it is necessary to adjust the development process in order to give the software adaptability to adjust its interface to each user's specific needs. This paper proposes software rudiments within their adaptive interfaces to support cognitive development in autistic children through ludic activities involving planning. Autism is a complex syndrome which compromises social abilities and communication. Therefore, affected children have different behavior issues, requiring adaptive software with adaptive interfaces to accommodate their specific needs identified via interviews with their caregivers, parents and therapists. The adaptive software we propose in this paper was partially developed after consecutive semiotic evaluations and usability inspections on other similar software, considering HCI recommendation for assistive software for children.**

Keywords-usability; communicability; adaptability; autism; interface; software assistive;

I. INTRODUCTION

Autism is a developmental disorder that affects the affected person's ability of socialization and communication and it may cause mental and behavioral deficits. To help affected persons in the learning process and social inclusion software and hardware that facilitate their interaction and promote their deficit skills acquirement are very useful. However, there is not a diversity of software appropriate to children on the autism spectrum; moreover professionals working with these children have great difficulty in selecting the most appropriate software for them.

Having that in mind, this paper proposes the development of adaptive software with adaptive interfaces able to suit the different needs of an autistic child, in addition to several ludic activities for the purpose of exploring children's curiosity in planning walks through several continents. It is expected that such activities will help them to organize their thoughts with a clear and exciting purpose.

II. METHODOLOGY

It was adopted as the initial approach, in the process of developing the tool, a systematic study of the entire autistic spectrum, for a better understanding of the syndrome. After that study, we carried out a survey on existing software for autistic children to be able to identify their needs. As a concluding remark for the theoretical background, a comparison was made about the particularities that must be observed in software for typical children and autistic children.

Based on that preliminary research, it was observed that there is a less software than necessary for autistic or typical children with some level of adaptive interface. Each person manifests the syndrome in a different way, and if the software is unable to suit one's special needs, it will not succeed in helping him acquiring the desired skill.

III. WORLDTOUR

WorldTour, presents a highly adaptive interface, capable of adapting to different types of needs that an autistic child can manifest. Moreover, it is very important that software for that purpose contains a theme that will hold children's attention. For this reason, WorldTour explores the curiosity of autistic children for different places around the world. Such interest was identified by interviews with affected children's parents and therapists, bringing up as a central theme a ride across continents. Based on this theme, the software must encompass many ludic activities e.g. tracing routes, puzzles and scripts writing among others that are subdivided into levels of difficulty to suit the different profiles and, furthermore, the activities must address the recognition of patterns the children's everyday life, the identification of sounds, images and words that support autistic children cognitive development..

WorldTour was developed following the fundamental concepts of usability, communication and HCI (Human Computer - Interaction). Preliminary tests were already carried out. We used the semiotic inspection method and usability inspection because they are effective for identifying usability flaws and in keeping track of systems development.

IV. CONCLUSION AND FUTURE WORK

The semiotic inspection method and heuristic evaluation were the two types of tests applied in WorldTour initial prototype. Preliminary tests were carried out using those approaches and as far as interfaces are completed, they are considered good interfaces by usability and adaptability point of view. Therefore, by the results obtained so far, we are developing more activities within the software focusing on the improvement of its adaptability and diversity of activities.

REFERENCES

[1] de SOUZA, C. S. ; LEITAO, C. F. . Semiotic Engineering Methods for Scientific Research in HCI. 1. ed. San Francisco, California: Morgan & Claypool, 2009. v. 1. 122 p.