An ICT-based Application to Support Deaf Children's Reading Comprehension Skills

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Abstract

As several studies report, deaf children have specific literacy problems. In particular, they are poor readers, a fact that causes them difficulties in managing everyday activities. In our contribution we describe an ICT-based web application proposing children's stories and comprehension exercises, whose aim is to support deaf children's reading comprehension skills and, in particular, their understanding of the temporal relations between the events happening in the plot. Three are the innovative aspects of our proposal: the exploitation of ICT potential, the "ad hoc" text simplification and the game-like approach in order to create a didactic tool which meets deaf children's special needs. Giving that deaf children seem to be visual learners, we opted for an animated graphical presentation of the stories. This solution helped to create an engaging learning application. We designed and developed our system following a user-centered design approach: deaf and hearing children, teachers, speech therapists and psychologists were involved during all the design process steps. An extensive evaluation session was organized at the Istituto dei Sordi of Torino. Deaf and hearing children had to read three stories: one in its original version (1), one in its simplified version (2) and one in its simplified and illustrated version (3). The goal of the experiment was to check if deaf children's understanding of the plot improves from (1) to (3). As a general remark, we observed that both groups enjoyed the stories and did not have any difficulties in using the graphical interface. Analyzing the answers to the comprehension exercises, we have verified that the simplified story with animated illustrations is more comprehensible to deaf children as compared to stories (1) and (2). As future work, we are planning to measure the effectiveness of our tool at the end of an utilization session of some weeks.