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The Relationship between Psycho-pedagogical and Usability Data in the TERENCE Evaluation Methodology

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Abstract. The TERENCE project was an European FP7 project that improved reading comprehension of its primary users, namely, 7–11 years old children, hearing and deaf¹, from primary schools, with deep text comprehension problems. The project developed an adaptive learning system (ALS) delivering learning material and tasks in an adaptive fashion, according to the profiles of its learners. The paper describes the TERENCE evaluation methodology, its innovative aspect (i.e., the parallel investigation of psycho-pedagogical effectiveness and usability), and focuses on the relationship between usability and psycho-pedagogical data. The study shows that precision in smart games is linearly related to comprehension.

Keywords: effectiveness, usability, evaluation.

1 Introduction

Developing the capabilities of children to comprehend written texts is key to their development as young adults. From the age of 7-8 until the age of 11, children develop as independent readers (novice comprehenders). Nowadays, more and more children in that age range turn out to be poor comprehenders, i.e., they have well developed low-level cognitive skills (e.g. vocabulary knowledge [1,2]), though they have difficulties in deep text comprehension (e.g. inference making [3]). “Poor comprehenders” are estimated to be 5% to 10% of novice comprehenders [4]. The estimate dramatically increases when the whole population of hearing-impaired children is considered. For instance [5], estimates that only 19% out of 504 hearing impaired 7-20 old have reading comprehension scores above the third grade level. The consequences of unremediated reading comprehension difficulties extend beyond literacy skills, and can have a negative impact, for instance, on motivations to reading, performances in science curricula and a child's self-esteem [6]. However finding

¹ Improvement in reading comprehension for deaf learners was statistically significant only in the Italian case.