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Effectiveness and Usability of TERENCE Adaptive Learning System: The First Pilot Study with Children with Special Educational Needs

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Abstract Early school leaving (ESL) is caused by a number of factors, including learning difficulties, social exclusion, lack of motivation, and scarce guidance and support from the school system. However, in Italy some progress was made to improve school quality and outcomes. In this context, we have run a project in an Italian primary and secondary school to test the psycho-pedagogical effectiveness and the usability of a compensatory technological tool, i.e., the TERENCE software, to support the learning process of students with Special Educational Needs (SENs), i.e., students that need particular attention due to biological, social and/or environmental factors. Specifically, we tested the TERENCE software to improve reading comprehension skills and stimulate learning motivation of 16 Italian students with SENs due to cultural, linguistic and socio-economic factors. Children used TERENCE in 8 interactive sessions, for 2.5 hours per session. Their comprehension skills were analyzed via MT standardized test at the beginning and at the end of the stimulation plan. Also usability data was gathered by adopting user-based methods like observational evaluation and semi-structured interviews. The results of the experiment were: (i) students' reading comprehension skills were significantly improved, (ii) students were highly involved and motivated and they learned how to interact with TERENCE very quickly. The pilot study with students with SENs suggested that TERENCE can be easily and effectively used to improve the learning experience of learners with SENs.

Keywords Effectiveness · Usability · Special educational needs

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