

ZMATH 2016d.00966

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Closing the gaps – improving literacy and mathematics by ICT-enhanced collaboration.

Comput. Educ. (Exeter) 99, 68-80 (2016).

Summary: Literacy and mathematics are necessary skills that for different reasons unfortunately not everybody acquires sufficiently. In OECD countries there is also a gender gap; boys lag behind girls in literacy but often outperform girls in mathematics. ICT (Information and communication technologies) may contribute useful tools to address both these problems but in order to effectively create better educational conditions there is yet a need to develop effective methods that combine ICT with key factors for learning. This research contributes to this by measuring effects of the “Write to Learn” (WTL) method. WTL lets children from 1st grade use several ICT tools to write texts and subsequently discuss and refine them together with classmates and teachers using digital real-time formative feedback and assessment. The central learning factor addressed, in mathematics as well as in literacy, is the written communication allowing the learners to interact with peers and teachers. WTL draws on methods from socio-cultural theory, including continuous social interaction and written real-time formative feedback among peers, using shared electronic forums for collaboration, thereby providing social meaning and increased learning of literacy and mathematics, among both boys and girls. The study uses quantitative methods and two control groups, one using *traditional method* (no ICT) and one *using technology individually* (without integrated social interaction and formative feedback), to compare results from 502 students in grade 3 national tests in mathematics and literacy. WTL yields by far best results; higher average score both in literacy and mathematics, smaller gender gap, and significantly better results for the under-achievers. The ITU method performs worst, which shows that ICT use must be well integrated into the pedagogy to be useful.

Classification: U72 C62 D62 C32

Keywords: collaborative learning; ICT; formative feedback; assessment; gender gap

doi:10.1016/j.compedu.2016.04.004