“I Didn’t Understand, I´m Really Not Very Smart”—How Design of a Digital Tutee’s Self-Efficacy Affects Conversation and Student Behavior in a Digital Math Game

# Details

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## Sample

"In total, 166 fourth graders (83 girls and 83 boys) participated in the data collection. They were recruited from four schools and nine classes in Southern Sweden in areas with relatively low socio-economic status and school performance below average." (Authors, in 2.3. "Participants")

## Implications For Educators About

# Abstract

How should a pedagogical agent in educational software be designed to support student learning? This question is complex seeing as there are many types of pedagogical agents and design features, and the effect on different student groups can vary. In this paper we explore the effects of designing a pedagogical agent’s self-efficacy in order to see what effects this has on students´ interaction with it. We have analyzed chat logs from an educational math game incorporating an agent, which acts as a digital tutee. The tutee expresses high or low self-efficacy through feedback given in the chat. This has been performed in relation to the students own self-efficacy. Our previous results indicated that it is more beneficial to design a digital tutee with low self-efficacy than one with high self-efficacy. In this paper, these results are further explored and explained in terms of an increase in the protégé effect and a reverse role modelling effect, whereby the students encourage digital tutees with low self-efficacy. However, there are indications of potential drawbacks that should be further investigated. Some students expressed frustration with the digital tutee with low self-efficacy. A future direction could be to look at more adaptive agents that change their self-efficacy over time as they learn.

# Outcome

"A tentative conclusion from our previous paper [37] was is that it is more beneficial to design a digital tutee with low self-efficacy than one with high self-efficacy. Our present analysis shows that this, all in all, is a good guideline, and that the underlying reason can be that a digital tutee with low self-efficacy boosts the protégé effect more, and also promotes a reversed role modelling where the student can boost herself through boosting the digital tutee. However, we have seen some indications that some students can find a digital tutee with low self-efficacy frustrating." (Authors, in Conclusions)