Social Motivation and Goal Orientations with a Teachable Agent: Implications for Improving Test Performance

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based on collaborative work by Agneta Gulz, Magnus Haake, Lena Pareto, Annika Silvervarg, Betty Tärning

Background: Using a Teachable Agent (TA) in an elementary mathematics learning game

Students typically learn in one context... ...and are tested in a different context.

Our first experiment [1]
pretest – gameplay – posttest

(a) 49 students (9-10 years) played a TA-based math game for 7 sessions * 30 min.

Present hypotheses and predictions

- Students relate to the TA as a social character, thus the TA exercises some social influence during the interaction.
- Low-performers and high-performers differ with regard to how they approach social factors of a test situation.
- Motivations for performing well in school can be described in terms of goal orientations [2]:
  Social goals – gaining approval, relationships, peer cooperation
  Task goals – subject mastery, achievement, intellectual curiosity

Therefore, performance may be explained by how students value social goals in relation to task goals:
H1: Developing the TA's social features will benefit social goal-oriented students more than task-oriented students.
H2: Strengthening personal attachment to the TA (e.g. giving it the student’s name) will influence students who believe task attainment develops out of social goals.
H3: Altering the TA's expressions of authority (e.g. through direct instructions) will influence students differently depending on their beliefs that goal pursuit in one domain (e.g. social compliance) leads to goal attainment in the other domain (e.g. task).

References