Interdisziplinäre Vortragsreihe Bildungsforschung

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16:15 -17:45 Uhr, S06 S00 A40

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Atomic, reusable feedback: a semi-automated solution for assessing handwritten mathematics tasks?

This research project investigates how we can give feedback to handwritten math assignments more efficiently. After all, handwritten tasks remain important to train higher-order thinking skills and genuine problem-solving. Feedback on those tasks can be the driver of conceptual change. Different students often make analogous mistakes in mathematics, as systematic error patterns are omnipresent. Therefore, we propose a semi-automated approach: teachers write feedback items, and the computer saves them so that they can easily be reused when other students make similar mistakes.

How to write feedback that can easily be reused for other students? Long pieces of text are often too targeted to a specific student, so we devised atomic feedback. Atomic feedback consists of a set of formulation requirements for feedback. Instead of writing long pieces describing many different errors at once, a teacher (1) identifies the independent error occurring and (2) writes small feedback items for each error independently.

In this seminar, I will present two studies in which two different semi-automated assessment methods were used. One crossover study with 45 math teachers in Belgium showed that atomic feedback is significantly more reused than traditional feedback. Furthermore, no significant time difference was detected between traditional and atomic feedback, but the teachers in our sample used the gained time to write significantly more feedback ($d = 0.41$). The other study consisted of a high-stake exam organised by the Flemish Examination Board, taken by 60 students and assessed by ten teachers using semi-automated assessment. The students highly appreciated the atomic feedback they received from this system. Furthermore, the semi-automated assessment method is as reliable as traditional pen-and-paper assessment.

The seminar will be interactive, as participants will also get the chance to experiment with the two developed assessment methods and write atomic feedback themselves. Participants should bring a laptop with internet connection.