SP - (16070) - CONCEPT MAPPING - HOW DOES TRAINING INFLUENCE LEARNING PERFORMANCE, WORK QUALITY, AND STUDENTS' SELF-ASSESSMENT?

Stefanie Elsner (Germany)[1]; Sina Lenski (Germany)[1]; Jörg Großschedl (Germany)[1]

1 - Institute for Biology Education, Department of Science and Mathematics Education, University of Cologne, Herbert-Lewin-Straße 10, D-50931 Cologne, Germany.

Short Abstract

Concept maps are graphical tools for organising and representing knowledge. Concept maps or the process of concept mapping might potentially support cohesive thinking in science education. Whether and how concept mapping needs to be trained in order to support meaningful learning remains the subject of controversial debates to this day. We distinguish between concept map construction and concept map study as two modes of concept mapping. We developed a concept map construction training, a concept map study training, and a brief introduction to concept mapping (control training). Applying a 3 x 2 factorial design, we analysed the impact of intervention type (concept map construction vs. concept map study vs. control) and the testing type (concept map construction vs. concept map study) on middle school students' (N = 201) concept map quality, learning performance and self-assessed ability to work with concept maps. Results revealed superiority of the construction training over the study and the control training in terms of concept map quality (F (2, 77) = 6.47, p = .003, η^2 = .144. Learning performance was improved for the construction training compared with the study training but not improved compared to the control training. We detected a transfer effect from one mapping mode to the other. Additionally, we observed positive correlations between self-assessed abilities to work with concept maps and concept map quality for both modes of concept mapping but not in the control training. Our findings suggest that trainings in concept mapping might be beneficial to learning with concept maps even if the mode of mapping differs from the mode in which concept mapping was trained. We further found that trained students' self-assessment correlated with concept map quality, indicating an improved reflective behaviour through concept map training. Our results underline the potential of concept map training.