Providing structure in mathematical tasks and keeping challenge: but how!?

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Teachers can facilitate motivation and self-regulation by providing authentic learning tasks, opportunities for challenging and creative thinking and minimize the use of controlling behavior, such as providing answers and solutions. Also providing a structured learning environment (e.g. clear goals and expectations, appropriate strategies, guidance to solve the tasks and clear procedures to be followed) contribute to feelings of competence which is important for motivation. However, too much structure can also lead that students acquire a narrow view of scientific inquiry where the thinking is characteristically rote and low-level. The issue is how much structure do students need, when solving problems, in order that the challenging effect of the tasks remains? In this presentation we explore and discuss this issue within the context of RME and SDT (self-determination theory). We use learning tasks from a research project with 11th grade students regarding the integral calculus and trigonometric functions.