Mathematical problem solving in choice-affluent environments

This talk presents a proposal for an exploratory model of mathematical problem solving in different instructional contexts. The proposed model aims at bridging the knowledge of how problem solving occurs and the knowledge of how to enhance problem solving. The model relies on the premise that a key solution idea to a problem is constructed as a result of shifts of attention, which are shaped by the solver’s individual resources, interaction with peers or source of knowledge about the solution. The conclusion is that successful problem solving is likely to occur in choice-affluent learning environments in which the solvers are empowered to make informed choices of: a challenge to engage with, problem-solving schemata, a mode of interaction, the extent of collaboration and an agent to learn from. The theoretical argument is supported by examples from several empirical studies. I will conclude the talk by discussing the possibility of adapting the proposed model to science teaching.