

# Working with context rich problems to teach problem solving

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**ABSTRACT:** The ability to solve problems is an important ability for scientists as well as engineers and something we identify as a key competence for our students. Problem solving is often examined but still students complain about the difficulty of the examination, describing the problems as more difficult than the problems they have encountered previously.

Our study suggests that our students often use inefficient strategies for problem solving, like pattern matching or trying to find a mathematical formula that fits the situation. It is clear that these strategies will not work and they become less and less useful the further the students get in their education.

To train problem solving and to prepare students to handle unknown problems and situations cooperative problem solving and context rich problems have been identified as efficient strategies [1,2]. These methods have specifically been used in early courses in mechanics and similar experiences with open ended but shorter problems have been described in [3,4,5]. We have applied these strategies in a more advanced course in Lagrangian mechanics. Students perceive this topic as somewhat abstract and disconnected from everyday experience and lack a clear relevance to their professional role. We describe our work as a team of teachers and our experience introducing a new methodology in the course with the goal to teach in a way that discourages inefficient problem solving strategies.

## REFERENCES

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