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***Navigating a Complex World: Investigating Pre-Service
Science Teachers' Modeling Competence***

Science students are expected to navigate a world of complex phenomena and to make sense of global challenges such as climate change, energy crisis, and pandemic outbreaks. To achieve this, both teachers and students should develop their modeling competence, meaning the system of knowledge, skills, and dispositions necessary to develop and use models in contextual problem-solving. In this talk, I will present and discuss two of my recent studies, which evaluate pre-service science teachers' modeling competence, focusing on the relationships between the three dimensions of the modeling competence: modeling practices, metamodeling knowledge, and model products (Engelshalt, Bielik, et al., 2024; Lobner, Bielik, and Krell, 2026).

Dr. Tom Bielik is an Assistant Professor at the Institute for Science Education at Radboud University, The Netherlands. Bielik received his Ph.D. from the Department of Science Teaching at the Weizmann Institute in Israel. He was a Research Associate at CREATE for STEM Institute in Michigan State University, USA, and at the biology didactics department at Freie Universität Berlin, Germany. Following that, he was a Senior Lecturer at Beit Berl College in Israel. Bielik's research focuses on developing students' and teachers' modeling competence, systems thinking, and critical thinking by engaging with advanced digital learning environments and using inquiry and Project-Based Learning approaches.