



NSF GROWING CONVERGENCE RESEARCH LECTURE

Convergence Science as Collaborative Problem-Solving

Tuesday, December 17, 2024 ~ 4:00 PM to 5:00 PM (EST)

Abstract: In various fields, teams are the primary mechanism for complex planning, decision making, and problem solving. For them to be effective, teams need to evolve and adapt while developing shared and complementary cognitive competencies. In this presentation, I discuss collaborative cognition as a form of complex problem solving, referred to as the Macro cognition in Teams Model. Although problem-solving has been extensively studied, there is a lack of research and theory addressing how team problem-solving evolves over time as teams grow and develop. Further, this is underexplored as a process of scientific teamwork. I bridge this gap by integrating existing concepts from the team literature, to expand our understanding of scientific team problem-solving and development. I provide a theoretical framework for examining the dynamic nature of team evolution and highlight how core aspects of team development influence macrocognitive processes during different phases of problem-solving. I contextualize this within the needs of convergence science to offer guidance for research and practice on how to better understand and improve this complex form of team science.



Speaker: Dr. Stephen M. Fiore

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Dr. Stephen M. Fiore is Director, Cognitive Sciences Laboratory, and Pegasus Professor with the University of Central Florida's Cognitive Sciences Program in the Department of Philosophy and Institute for Simulation and Training. He maintains a multidisciplinary research interest that incorporates aspects of the cognitive, social, organizational, and computational sciences in the investigation of learning and performance in individuals and teams. His primary area of research is the interdisciplinary study of complex collaborative cognition and the understanding of how humans interact socially and with technology. He is past-president of the International Network for the Science of Team Science, and past-president of the Interdisciplinary Network for Group Research. He is currently serving on a National Academies of Sciences committee for a consensus study on Research and Application in Team Science. Dr. Fiore is also serving as a founding board member of the Global Alliance for Inter- and Transdisciplinary Research, an organization formed to strengthen and to promote the global capacity and the calibre of collaborative modes of boundary-crossing research and practice. He has been a visiting scholar for the study of shared and extended cognition at École Normale Supérieure de Lyon in Lyon, France (2010) and he was a member of the expert panel for the Organisation for Economic Co-operation and Development's 2015 Programme for International Student Assessment (PISA) which focused on collaborative problem-solving skills. He has contributed to working groups for the National Academies of Sciences in understanding and measuring "21st Century Skills" and was a committee member of their 2015 "Science of Team Science" consensus study, as well as a member of the National Assessment of Educational Progress report on "Collaborative Problem Solving". As Principal Investigator and Co-Principal Investigator he has helped to secure and manage approximately \$35 million in research funding. He is co-author of a book on "Accelerating Expertise" (2013) and is a co-editor of volumes on Shared Cognition (2012), Macro cognition in Teams (2008), Distributed Training (2007), and Team Cognition (2004). Dr. Fiore has also co-authored over 250 scholarly publications in the area of learning, memory, and problem solving in individuals and groups.

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