

## Social Computational Thinking Tools: Reinventing Computation Education in Public Schools

Alexander Repenning, University of Colorado at Boulder



### Abstract:

For the last 15 years we have been exploring notions of design and social media as means to foster highly engaging as well as effective educational environments. We have created what we call *social computational thinking tools* with the goal to synthesize *human abilities* with *computer affordances*. This presentation will outline three social computational thinking tools and discuss how they have combined notions of design and social media to create unique learning experiences in the classroom: 1) Mr. Vetro is a Collective Simulation teaching students about human physiology through technologically enhanced role play of interacting organs, 2) Scalable Game Design teaches students computational thinking through game design. They learn about computational thinking patterns in the context of game design and later apply these patterns to scientific simulation building. 3) CyberCollage is a Collective Programming environment enabling students to work on game and simulation projects collaboratively in real time.

### Bio:

Alexander Repenning is a computer science professor at the University of Colorado, a member of the Center for Lifelong Learning and Design at the University of Colorado and the founder of AgentSheets Inc. Repenning's research interests include education, end-user programmable agents, and artificial intelligence. He has worked in research and development at Asea Brown Boveri, Xerox PARC, Apple Computer, and Hewlett Packard. Repenning is the creator of the AgentSheets simulation and game-authoring tool. He has offered game design workshops nationally at Stanford, the MIT Media Lab, and University of Colorado as well as internationally in Europe and Japan. His work has received numerous awards including the Gold Medal from the mayor of Paris for "most innovative application in education of the World Wide Web", and "best of the best innovators" by ACM. Repenning has been a Telluride Tech Festival honoree for contributions to computer science. Repenning is an advisor to the National Academy of Sciences, the European Commission, the National Science Foundation, The Japanese Ministry of Education and the Organisation for Economic Co-operation and Development (OECD).