Abstract: Researchers still understand too little about the cognitive difficulties of learning programming, but we now have several new methods that draw on lessons from across learning sciences. In this talk, I describe three examples of ways to teach computing that are just starting to appear in computer science classes. We can use prediction to help students retain knowledge from in-class live coding. We can improve learning and transfer by using subgoal labeling. We can use Examples+Practice to provide more flexible and efficient ways to learn programming.

Bio: Mark Guzdial is a professor in the School of Interactive Computing at Georgia Institute of Technology. He studies how people come to understand computing and how to make that more effective. He leads the CSLearning4U project to create ebooks that help high school teachers learn computer science. Along with UMass Amherst professor emeritus Rick Adrion, Guzdial is a principal investigator for Expanding Computing Education Pathways (ECEP), a National Science Foundation (NSF) Broadening Participation in Computing Alliance (BPC-A), which seeks to increase the number and diversity of students in the pipeline to computing and computing-intensive degrees by promoting state-level computer science education reform. Guzdial invented “Media Computation,” which uses media as a context for learning computing. With his wife and colleague, Barbara Ericson, he received the 2010 Association for Computing Machinery (ACM) Karl V. Karlstrom Outstanding Educator award. He is an ACM Distinguished Educator and a Fellow of the ACM.