Processes in Learning

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Abstract. One can productively model the learner, the teacher, their dialog, and other factors that influence learning as statistical processes. For example, one can model a student as a machine that moves from state to state probabilistically, conditioned on teachers' actions and other learning events. Models can be personalized by fitting their parameters with data from individuals, or models might represent groups of learners that are specified a priori or emerge from clustering. Given models of learning, one can use data gathered in online teaching/learning systems to optimize learning. I will describe three efforts in the University of Arizona School of Information to model aspects of learning statistically: Teaching robots the meanings of verbs by demonstrating the verb; teaching softbots plans through dialog with ordinary people; and the undesirable (and unintended!) consequences of inadequate personalization of tutoring in a conventional intelligent tutoring system.