“Intelligent Conversational Agents that Track and Help Student Learning”

Dr. Art Graesser
Professor, Psychology and Institute for Intelligent Systems
University of Memphis, USA

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Abstract
Pedagogical agents with conversational dialogue are becoming more popular in today’s learning environments. This is possible because the intelligence of the knowledge tracking, computational linguistics, conversational moves, and other features of these agents has been improving over the last decade. This presentation begins with a brief snapshot of the 16-year evolution of AutoTutor, a learning environment with an agent that tutors students by holding a conversation in natural language. AutoTutor’s learning objectives are pitched at deeper levels of reasoning, explanations, and mastery of complex systems, as opposed to memorizing definitions and facts. One version of AutoTutor tracks and responds to the emotions that learners experience, such as flow (engagement), delight, confusion, frustration, boredom, and surprise. Operation ARA is a serious game on scientific reasoning, with an eBook, multiple choice questions, conversational trialogs (two agents and a human), case-based reasoning, and inquiry modules. A recent project is developing trialogs to help adult learners read better in a new Center for the Study of Adult Literacy.

Biographical Note
Art Graesser is a professor in the Department of Psychology and the Institute of Intelligent Systems at the University of Memphis and is an Honorary Research Fellow at the University of Oxford. His primary research interests are in cognitive science, discourse processing, computational linguistics, and the learning sciences. He has developed automated tutoring systems with conversational agents (such as AutoTutor and Operation ARA) and automated text analysis systems (Coh-Metrix, QUAID). He served as editor of the journal Discourse Processes (1996–2005) and Journal of Educational Psychology (2009-2014). In addition to receiving major lifetime research achievements awards from the Society for Text and Discourse and University of Memphis, he received an award in 2011 from American Psychological Association on Distinguished Contributions of Applications of Psychology to Education and Training.