

Virtual Pedagogical Agents as Aids for High School Physics Teachers

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Abstract

The Pathway project is improving the quality of physics teaching and the number of available physics teachers by providing virtual expert help on issues of pedagogy and content. The project combines Carnegie Mellon's Synthetic Interviews and state-of-the-art digital video library technology with pedagogical advances developed at Kansas State University, and materials contributed by master teachers. This dynamic digital library for helping teachers goes beyond simply creating a collection of teaching and learning materials. It provides continuously improving assistance and expertise for teachers, all of which are related to the National Science Foundation Standards and to results of contemporary physics education research.

The Synthetic Interview is a technology and technique that creates an anthropomorphic interface into multimedia data of a particular kind: video of a person responding to questions (interacting with another person). The responses of the interviewee are presented in such a way as to simulate the experience of interacting with the expert. We have developed Synthetic Interviews of four master teachers, each of whom bring different experiences and approaches to teaching. Currently, these master teachers answer 2248 pedagogical questions covering topics that span the full one-year high school curriculum.

Another component of Pathway is a searchable digital video library of physics demonstrations, teaching examples, and virtual video labs, Pathway–Informedia. As users search and browse the library, they can create a personal on-line collection of objects to be used in their lessons.

This talk will demonstrate Pathway capabilities and content. Additionally, the Synthetic Interview and digital video library development processes and underlying technologies will be highlighted. Finally, results from early usability studies will be presented.

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