

## CHIFOO 2004 Speaker Series



Human Development and Technology in  
the Information Age

### Series Overview

The adoption of all things Internet has raised America's love affair with technology to a fevered pitch. No area of our daily lives is untouched by the rapid changes in technologies, but few are as important to our long term financial and developmental health as education. In this 10-month series, CHIFOO invites psychologists, educators, researchers and technologists to provide insight into the rapidly changing landscape of technology and learning. This wide-ranging series examines technology in the classroom, in brain development, and in adult and community education.

Each talk showcases a technology in the context of the learning objectives for a defined audience. Speakers also present the methods they used to evaluate the effectiveness of the technology.

This series is a must for students, educators and professionals interested in specific technologies, and the role technology can play in creating effective and appropriate learning experiences.

*Leo Frishberg, CHIFOO Program Chair*

### Time and Location

- 5:30 PM CHIFOOd  
No-host dinner & informal networking  
Old Chicago Pizza (Tanasbourne)  
17960 NW Evergreen Pkwy, Beaverton
- 7:00 PM PreFOO: Networking and social time
- 7:30 PM CHIFOO Program  
PCC Capital Center Auditorium  
Room 1508  
18524 NW Walker Rd at 185th Ave,  
Beaverton

### Admission \$5

- Members free  
Membership \$20

Check the CHIFOO web site - [www.chifoo.org](http://www.chifoo.org) -  
for updates and further information.

Wednesday, September 1, 2004

## SimCalc: The Design of Software for Teaching More Advanced Mathematics in Middle School

Jeremy Roschelle, SRI International

The mathematics that people need to thrive in the 21st century keeps advancing in complexity, yet our schools keep falling farther behind. As a society, we need to make significant changes in this area. The SimCalc Project is tackling the problem of democratic access to more complex mathematics through an approach that brings together the following:

- (1) previously untapped learner strengths,
- (2) the radically new representational capabilities of computers, and
- (3) a reorganized curricular sequence to enable all students (but particularly less advantaged, urban youth) to develop an understanding of concepts such as rate, accumulation, velocity, and approximation beginning in middle school.

Through eight years of National Science Foundation research, we have refined this approach and have begun to explore the conditions that will enable scale up. A key piece of our strategy has been porting SimCalc from expensive desktop computers to increasingly affordable graphing calculators and handhelds. This presentation will focus on the design theory behind SimCalc and some examples of how teachers and students use the software, especially the newer versions on the Palm Pilot. While SimCalc and similar software tools show great promise in addressing important educational needs, the educational system presents serious challenges to wide-scale adoption. Our current efforts to scale up SimCalc with a range of Texas teachers will also be discussed.

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*Jeremy Roschelle's work focuses on the design of educational software, aiming to democratize access to challenging math and science concepts by leveraging the unique representational qualities of computer graphics. As a PARC intern in 1986, he developed the Envisioning Machine, a simulation of velocity and acceleration vectors that helped students connect the "observable world" and the "Newtonian world."*

*Jeremy received his Ph.D. in Cognitive Science and Education from Berkeley in 1991. He has worked at the Institute for Research on Learning, the Royal Melbourne Institute of Technology, and the University of Massachusetts (from an SF home office). For the past four years, he has worked at SRI International's Center for Technology in Learning. Besides SimCalc and the Envisioning Machine, Jeremy is known for his work on the video analysis tools "VideoNoter" and "CVideo", research on collaborative learning, leadership of the ESCOT educational component software project, and leading research work with handheld and wireless educational computing.*



### Computer-Human Interaction Forum Of Oregon

The Oregon and Southwest Washington chapter of ACM SIGCHI facilitating the exchange of practical and theoretical ideas about human-computer interaction.

