Connecting with Kids: So What's New?

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ABSTRACT

From pre-schools to high schools, at home and in museums, the educational community has embraced the use of computers as a teaching tool. Yet many institutions will simply install "what everyone else is using" without questioning how technology can be best used to enhance education. For this panel, we have assembled a broad range of researchers and practitioners who are on the forefront of using computers to teach kids in novel ways. Each panelist will summarize their approach with examples of projects that they believe will demonstrate "what's new". We will then have videotaped children pose their toughest educational challenges to the panelists. Panelists will answer by talking about how they would meet these challenges. Finally, attendees will get to vote for their favorite solution. This will expose the CHI audience to a range of educational challenges, with a taste of the different ways that these problems can be solved.

Author Keywords

Educational applications, teaching tools, online communities, tangible user interfaces, collaborative computing.

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

OVERVIEW

This panel addresses the issues of technology in the educational community. Computers have almost become ubiquitous as tools of learning in our schools, homes, and museums. From pre-schools to high schools, most of our educational institutions have at least some computers, either connected to the World Wide Web, running word processing software, or hosting one or more educational games. More and more schools have entire rooms devoted to computer usage, and even offer computer classes. Yet as all the fancy new hardware accumulates, we need to ask some critical questions. For example, what are the children learning by using the computer? Does it accommodate different learning styles and multiple intelligences? When is

the computer an effective complement to traditional materials? In short, so what's new?

This panel brings together researchers who are on the forefront of bringing the computer into the classroom in new ways. Each panelist has a different approach to using technology to enhance learning. Many have entirely different educational philosophies and backgrounds. Yet all are striving to design user interfaces that help to make the educational experience more engaging and relevant to the students. We propose to have each panelist briefly present his or her approach to designing educational software. Each panelist will present examples of projects that they feel are demonstrative of "what's new".

We will then have children pose their toughest educational challenges to the panelists, answering questions like "What is the hardest thing you have to learn in school? What makes it so hard to learn? What do you think could make it better?"). Panelists will then talk about how they would meet these challenges. This will show the CHI audience the range of challenges faced by educators, while giving them a taste of the wide variety of approaches that can be used to solve these problems. Finally, the audience will have the opportunity to vote for the solutions that they find most effective.

PANELIST SUMMARIES

Lori Scarlatos

Lori is a computer scientist with training as a fine artist and visual communicator. Her work on Tangible Interfaces for Collaborative Learning Environments (TICLE) explores new ways that technology can enhance education without becoming the focus of the educational experience. It targets children with an aversion to (or fear of) math, science, and technology, providing individualized help in the large classes typically found in our public schools. A TICLE system will "watch" as children work together on puzzles and other educational tasks in a physical environment. It then acts as a "guide on the side" that provides the sort of encouragement and prodding that a teacher would. This builds on children's innate love of puzzles, their collaborative tendencies, and their inclination to learn by doing. Although such a system cannot replace a qualified teacher, it can help teachers to motivate and reach more students simultaneously. Lori will be showing some of the applications that she and her group (including teacher/collaborators) have developed, including a tool that

enables teachers to build their own collaborative learning experiences with tangible interfaces.

Amy Bruckman

Amy is a computer scientist who specializes in research on educational technology. Her research applies the "constructionist" philosophy of education to the design of online communities. Constructionism advocates learning through design and construction activities -- learning through working on personally meaningful projects. The Internet has a unique potential to make constructionist learning scalable and sustainable in real-world settings, because it makes it easy to provide social support for learning and teaching. In electronic learning communities, participants can help motivate and support one another's activities. She will present recent work in this area.

Allison Druin

Allison has a background in graphic design, computer science, and educational technology. Her research focus has been on giving children a voice in the technology design process. Her most recent work considers what happens when two children want to talk about a book, but they don't speak the other's language? If the book is in a digital library and the children live in different countries, she is taking on the challenge of building an online community for children. Through the development of new digital communities, she hopes children will have the opportunity to bridge differences and appreciate each other's cultures, languages, and interests. Specifically, she and her team in Maryland are developing an online book community for children interested in using the International Children's Digital Library. With books representing 28 languages, children can explore, for example the streets of Singapore, Spanish poetry, Ancient Egypt, or African folk tales. However, the books all remain in their original languages. Therefore, children need to find ways to share each other's culture without understanding each other's language. Allison will describe the tools they are building to bring together children from Hungary, Argentina, and the U.S.

Mike Eisenberg

Mike is a computer scientist working on integrating computational media with a wide range of children's "educational crafts" – activities that engage children with physical materials in ways that are creative, appealing, and intellectually stimulating. In some cases, this work takes the form of creating software applications that help children to design new sorts of craft objects using traditional materials such as string and paper. In other cases, this integration involves embedding small computers within craft objects themselves, to endow those objects with interesting behaviors. In still other cases, this work takes the form of exploiting the marvelous range of output and fabrication devices that are increasingly available to students and hobbyists; or exploring the ways in which new "intelligent" or responsive materials can be used in children's projects and activities.

Molly Lenore

Molly is an artist and animator working on custom educational displays in New York's American Museum of Natural History. Her approach is about filling holes in the present educational models. Text, graphics and linear presentations have historically been used to teach concepts, but they are neither the only nor the best way to facilitate learning. Interactive media used in responsible and creative ways (and combined with didactic explanations: text, graphics, linear animation and video) can greatly help to improve content retention and can be much more engaging formats for the user. She will present recent installations.

Oren Zuckerman

Oren Zuckerman is a PhD candidate in the Lifelong Kindergarten group at MIT Media Lab. He is developing new physical simulation tools that will help children uncover the working of dynamic systems through hands-on modeling, simulation and inquiry. Oren's current research work - 'System Blocks' and 'Flow Blocks' enable young children to perform hands-on modeling and simulation of dynamic processes, by connecting blocks together in different arrangements. The dynamic processes are made visible through several mediums, including moving lights, sound, and a real-time line graph. Using the blocks, children learn about systems modeling, complex causality, simultaneous processes, probability, and feedback.