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Human remote control may spell end for teachers

STORY HIGHLIGHTS

- A Ph.D. student has managed to use his face as a remote control
- The rise of intelligent tutoring systems may see the decline of textbooks
- Computer-based learning will allow greater interactivity for students

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By Mike Steere
For CNN

TEXT SIZE

LONDON, England (CNN) -- Teachers and textbooks beware -- your future could be under threat from a quickly developing and very smart technology.



University of California researchers programmed this computer to react to facial expressions.

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at the university, and was an important development in improving learning systems.

Whitehill said it was about students interacting with their robot educators.

"Classical ITS typically have a somewhat rigid architecture of 'first I ask a question; then I wait for a response; then I talk some more; then I wait for another response.' Facial expression recognition, I believe, will allow the feedback from student to teacher to happen while the robot teacher is talking," Whitehill said.

Experts agree the latest developments in ITS open a plethora of new possibilities for how people could learn. The consensus among most is that further advancements in active, participatory systems, is where the future lies.

University of Memphis researcher, Dr Andrew Olney, who recently received a US\$1.3 million grant to develop an ITS called Guru, said the key to future learning will be enabling interactive, one-on-one instruction. **Do you think robots could one day replace teachers?**

"The technology can facilitate these more advanced learning scenarios," he said.

Although robot teachers of varying abilities have existed for more than 30 years, ITS developments such as Whitehill's and Olney's are pushing beliefs that robots could soon be as effective -- if not more effective -- than human teachers.

"The ITS which have been developed are already better teachers than people who have no experience," Olney said.

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So, what is the future for today's teachers, classrooms, and textbooks?

Olney felt that human teachers would always have an important role, but said the current classroom set-up faces change.

"The traditional model of learning is consistently shown as one of the worst ways to teach people. It's much better for a student to have one-on-one interaction.

"I see textbooks falling away and students having large numbers of software packages," he said.

Co-head of the Future of Learning Group at Massachusetts Institute of Technology, David Cavallo, said technology would eventually lead to fundamental shifts in learning.

"In time, we will see the end of the monopoly of classroom instruction with age segregation. We will see many different types of learning environments... we can truly close educational achievement gaps through constructive use of the technology."

Cavallo told CNN that from a holistic perspective, the future of learning meant escaping the "mass-production" type scenario in many schools.

"Children in the future will be able to explore and learn about domains at far younger ages and with far greater results through computational approaches. They will be able to work with and learn from people around the world through connectivity. They will be able to learn without boundaries," he said.

A critical advantage that ITS hold in the future is that they can be very cost-effective, said Jim Ong, from intelligent software producer Stottler Henke Associates.

Ong's company produced training programs for the U.S. Defense Force. He said participatory virtual worlds would eventually become more effective than real life training.

"In life not every moment is a learning experience. This gives the students ten times more experience compared to traditional methods."

According to Ong, the future of learning is about harnessing the use of natural language between students and robot teachers.

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Ong believed the technology could assist human educators, acting as an intelligence system giving information about the students' needs.

So, is this a case of technology driving new learning concepts, or technology meeting existing instructional methods?

The answer appears to be a bit of both.

While new technology provides a cost-effective means for one-on-one instruction, Whitehill said interactive models have always been a part of learning -- and he is simply refining those.

"My goal in this research is not to change how people learn, but rather to adapt computer and robot interfaces to how people learn. I'm trying to bring the robot teachers to us, not the other way around."

Cavallo said computers were only a means to the end of a personalized, interactive learning system.

For a new way of learning to be truly realized it would require a change amongst educational institutions.

"The technology is not the most difficult part. Helping institutions to change and adapt to enable the new possibilities is the most difficult element. What is needed is vision and political will," he said.

Either way, all of the experts agree technology holds the ultimate key to how learning can progress, and they expect the role of robots to increase. [E-mail to a friend](#) | [Mixx it](#) | [Share](#)

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