# Online Learning's Frontier: Researcher Gives Computers a 'Human' Face

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The friendly facial expressions, the soothing hand gestures, the coolly intelligent voice: Put them all together, and she is both disarmingly lifelike and surprisingly persuasive.

And while she can't actually shake your hand in greeting, the unnamed,

computer-generated character and her troupe of animated friends can be judiciously designed for online learning - at least if one Florida State University researcher's vision becomes a reality.

Amy L. Baylor, an associate professor of instructional systems and director of FSU's Center for Research of Innovative Technologies for Learning (RITL), is working to give computers a human "face," and her results have shown that such characters can dramatically enhance the ability of computers to serve as learning tools for people of all ages.

"Up until now, the personal computer's potential to be a valuable teaching and learning tool has been stymied by its 'soulless' nature," Baylor said. "At RITL, we're using computers to simulate human beings in a controlled manner so we can investigate how they affect and persuade people."

Every day at RITL, researchers in the areas of instructional technology, human-computer interaction, communication, computer science and psychology work to develop innovative uses of technologies to support learning and performance. They also examine the effectiveness of emerging technologies to support learning at a variety of levels - everything from K-12 to higher education, lifelong learning and online learning.

One particularly compelling facet of Baylor's research is the design and development of effective "pedagogical agents." A pedagogical agent is an animated, three- dimensional character that serves as the "face" (and "interface") of the computer and that can mimic human emotional expressions, nonverbal communication and interactions. (Examples of such pedagogical agents can be viewed at ritl.fsu.edu/agentsdemo/)

Depending on the underlying system's intelligence, students can interact with such characters in ways similar to their interaction with a human

teacher. Pedagogical agents can adapt to the student's strengths and weaknesses in a particular subject and provide emotional and cognitive feedback, which makes the computer more user-friendly and improves learning and motivation.

"Unlike the Microsoft Word paperclip 'Clippy,' which is annoying and intrusive, a well-designed pedagogical agent has exactly the opposite effect," Baylor said. "It engages learners and helps them focus attention on the task at hand."

Such pedagogical agents even can be personalized to maximize the response of a particular group or individual, Baylor added.

"Unlike a human mentor, we can control all aspects of a pedagogical agent - its gender, age, ethnicity, personality, message, and interaction style - to represent the ideal persona for facilitating learning. This leads to all kinds of exciting possibilities for simulating and researching different teaching styles and instructional strategies."

In one of several projects supported by the National Science Foundation, Baylor is investigating the use of such agents to challenge young women's stereotypes about the engineering profession by employing non-stereotypical engineering "mentors" with whom the target population can better relate. Research like this is establishing a new frontier in the use of technology as an educational tool.

"Although the College of Education may not be the first place that people think of when cutting-edge scientific research at FSU is mentioned, that is starting to change," said Laura Hassler, director of the university's Learning Systems Institute, which, along with the College of Education, helps support RITL. "Through the efforts of her research team, Dr. Baylor is working to transform the computer learning environment in ways we can only imagine."

Source: Florida State University