



THE LEARNING

A PIONEER IN SIMULATION TECHNOLOGY, THE UNIVERSITY OF CENTRAL FLORIDA IS CREATING NEW HIGH-TECH LEARNING TOOLS TO BENEFIT CREATIVE-MINDED COMMUNITIES.

GAME

By Jessica Chapman

»» After decades of trying to convince parents that video games are actually good for you, kids everywhere have finally won a victory in the war between entertainment and education. A group of professors at University of Central Florida (UCF) has been working to combine the two by devising hands-on, gaming-style learning tools from which people of all ages and occupations, especially students, can benefit.

The Center for Research in Education, Art, Technology and Entertainment (CREATE), falls within the framework of UCF's School of Film and Digital Media. An interdisciplinary resource center for people working to develop interactive programs for schools, colleges and other areas of the community, it's made up of about 35 researchers from a variety of departments, including theater, digital media, film, engineering, education, psychology and computer science. Funding is provided in part by the National Science Foundation (NSF), Orange County and the State of Florida.

this project can be utilized time and again, and with just about any backdrop.

But CREATE projects aren't just geared toward youngsters. Thanks to a new grant from the NSF, the center will be developing a multi-player game to teach physics to high-school and college students. At UCF, many first-year physics majors lose interest as they run into difficult topics and decide to drop out of the program. In this simulation-based video game, participants play as space aliens who don't know anything about Earth. They

presented in an entertaining way," says Randall Williams, IST's assistant director of Information Services. "They like to call it 'creating lasting memories'."

IST scientists have studied modeling and simulation since 1985. A major client for its sim research, the United States' Department of Defense (DoD) — including all four branches of the military — has recently begun to take a hard look at entertainment and education.



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— Jan Cannon-Bowers, CREATE

One of the leading tools embraced by CREATE is simulation technology, which is used to mimic a real process and mock up a real situation. For example, the group has devised a virtual field trip that's soon to be tested in elementary schools. The kids take a "tour" of a virtual world that's been constructed to help them better understand the meaning of individual words and phrases in order to improve their overall reading comprehension abilities.

"We're all interested in how technology is involved in learning," says Traci Yeager, the program coordinator.

Jan Cannon-Bowers, an associate professor in the School of Film and Digital Media, adds, "Kids think 'ranch' is a salad dressing."

She feels that continuing to build 3-D worlds that children can actually experience will help them learn more quickly and easily, eventually increasing interest and improving test scores. In this particular case, a nature walk theme was used to illustrate animals and other things you encounter outdoors. Since the prototypes are already designed,



meet Aristotle and other prominent historical figures who provide clues to advance to the next level — and help them learn and apply physics.

"It's a hook, it grabs attention," says Yeager.

LEARNING ACROSS THE BOARD

Several years ago, UCF's School of Film and Digital Media, and the University's Institute for Simulation and Training (IST), collaborated in creating the Media Convergence Lab (MCL). The Lab's major emphasis has been evaluating how entertainment can aid learning.

"MCL research has shown that people learn better when information is

"The DoD has a great need for simulation research and a considerable budget for training," Williams says.

The government encourages new developments and typically offers material that anyone can access and use. There's some proprietary information, but most of it transfers to the private sector. That's important to IST, which is always trying to diversify its clientele and is committed to contributing this high-tech science to as many places within the community as possible.

"It's always been a goal of ours to develop simulation technology that can be used for other purposes," Williams explains. "Programs used for training soldiers can be modified to train employees."

Cannon-Bowers, who is also a research associate at IST and a former senior scientist for the Navy, agrees and offers similar ideas: "We could use the virtual environment to look at how diseases spread, and use the same program for hurricane preparedness."

Depending on active contracts, IST is capable of accommodating 100 to 150 people on site, including about 80 faculty members.

"We collaborate very closely with other UCF units on projects," says

Williams. "Many of our faculty members are jointly appointed."

IT'S ALL IN THE MIND

The connection with the Psychology Department is one of the most important since human behavior factors into a great deal of the research.



COURTESY OF DESTINEER STUDIOS

The Institute offers numerous internships and has about 50 college students working there each semester. Interns are drawn from a variety of disciplines, and can earn a master's and Ph.D. degree in Modeling & Simulation — multidisciplinary degrees are available through the Digital Media, Math, Computer Science, Psychology, Business and Engineering departments. Student interns "work right alongside our researchers on real projects," Williams states. After finishing a few semesters at IST, the best students often jump right into full-time, well-paying jobs.

Not only are simulation technology programs very rare in the state and elsewhere in the country, but games researchers are even more rare.

"We're among a few universities that have started to do this kind of stuff," says Cannon-Bowers. "There's a lot of talk, but very little serious research going on.

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War Games

The U.S. military has used mechanical simulations for decades, but those that are electronic or digital are a recent addition, and are quickly getting more realistic, more intricate and more popular as training tools.

"The Marine Corps has been using software simulation programs for at least ten years," says Col. Walter H. Augustin, the program manager for **Training Systems at Marine Corps Systems Command**. "Since then, we've used a variety of software tools and platforms to conduct our training. ... My unit here in Orlando actively participates in the development and acquisition of both types of simulation systems."

One of the newest examples, a team-based, first-shooter sim program and video game **Close Combat: First to Fight**, is a collaborative project between the Marine Corps and Minnesota-based **Destineer Studios** (publisher of *Halo*) that yielded both a Marine training tool and a game that's available to the public.

"Critical to the success of both versions was our subject matter expertise in the form of forty Marine combat veterans who had recently come out of Operation Enduring Freedom in Afghanistan," explains Col. Augustin. "These Marines spent weeks in the studio with the respective software engineers, artists and game developers to ensure that Marine tactics, techniques and procedures were accurately represented in the game.

...The purpose of this, of course, was to instill a high level of realism and accuracy in the final product."

The result of the combined efforts of these teams, made up of experts in their respective fields, is a highly sophisticated replication of a day in the life of a deployed Marine.

Col. Augustin explains: "The *Close Combat: First to Fight* sim program is very relevant to what our troops now face in Iraq. This is a versatile program, and can be used in a formal classroom setting, or by individual Marines working on their own ...The Marine version of the software allows up to sixteen simultaneous participants, and covers twenty different basic combat scenarios — which can be further customized into an unlimited number of situations. Participants can also be organized into a variety of fighting teams."

And while this may sound like a project that's better suited for Silicon Valley or King County in Washington State, Florida is proving to be strong competition for these technological hot spots as it's quickly developing its own reputation in the industry.

While the Marine Corps has been in the Orlando area since the early '70s, it wasn't until January of 2001 that Training Systems at Marine Corps Systems Command was established.

"The Marine Corps recognized the need for a significant investment in leading-edge technologies in the modeling and simulation field," says Col. Augustin. "And as far as we were concerned, there was only one place for that investment — and that was Orlando and, specifically, the Central Florida Research Park. Frankly, it's the perfect environment for that mission. The wealth of talent and capability among the private sector companies that do business in Orlando and the rest of Florida's 'high-tech corridor' is a critical resource for us as we strive to make ever-more-effective and efficient training systems for our service men and women."