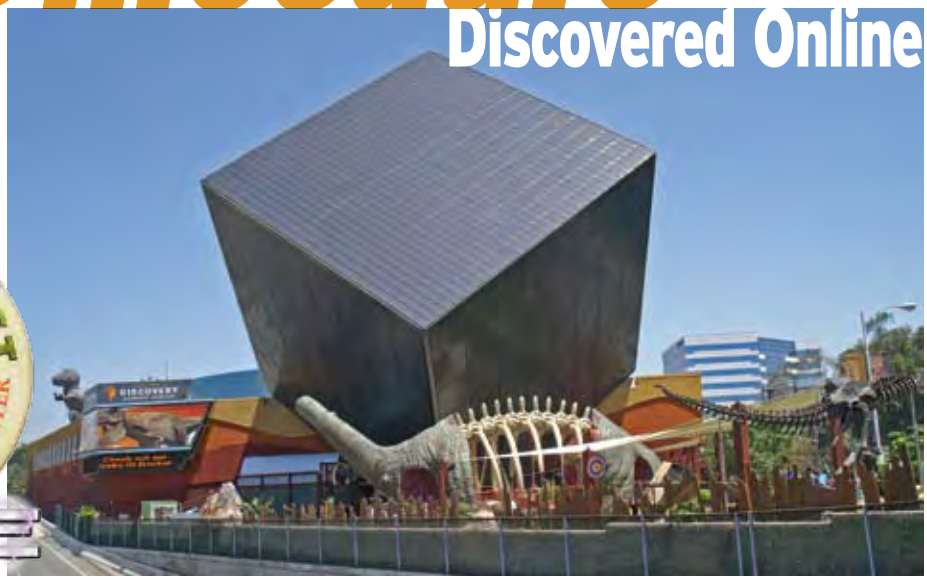
Dinosaurs Discovered Online



Visitors are flocking to Orange County's Discovery Science Center in Santa Ana, Calif. to experience Dino Quest, an interactive exhibit that brings to life prehistoric dinosaurs.

by Anna Lynn Spitzer

They can walk inside a giant two-story tall Argentinosaurus, view life-size models to explore the heart and digestive systems, and manipulate parts of the dinosaur to learn how body systems work. The encounters with prehistoric creatures don't have to end, however, when guests leave the center. An interactive, online version of Dino Quest, developed by the Game Culture and Technology Lab at Calit2@ UCI allows the learning process to continue at home or school.

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Infrastructure Allows Integration

Aligned with California science education standards for grades K-6, the $5.5 million physical exhibit combines an interactive search for information with life-sized models to encourage hands-on learning. Recent studies have indicated that gaming can be a more effective approach to children's learning than classroom lectures, and drill-and-practice assignments. In fact, says Walt Scacchi, senior scientist at UCI's Institute for Software Research, games will increasingly compete with traditional educational methods.

Dino Quest Online, which will debut this fall, not only allows visitors to continue studying dinosaurs and their life systems, but to jump in at home where they left off at the exhibit.

Visitors to the science center presentation become "research assistants," receiving transmitters that allow them to interact with Dino Quest Headquarters. As they solve challenges, the transmitter – aided by a network of sensors embedded in the exhibit – tracks each player's progress, allowing him/her to continue online or in a subsequent visit to the center.

"We designed a network information infrastructure to tie these two systems together," says Scacchi. "The objective was to achieve seamless integration of the physical exhibit and the online world."

Unique Expertise Benefits Collaboration

The UCI/DSC partnership began in late 2004, when Scacchi and Robert Nideffer, associate professor of studio art and informatics, submitted a proposal to Discovery Science Center. "Kids

Girls search for fossils in the shadow of a giant dinosaur. Their progress is charted and they can begin the online game where they left off at the venue.

Previous page: Life-size dinosaurs greet visitors to the Discovery Science Center's Dino Quest exhibit.

love dinosaurs and games. When you combine them in innovative ways, it's a win-win situation," says Nideffer.

DSC funded the online game with a $300,000 grant, and Nideffer and Scacchi developed a series of prototypes. "We put a lot of work into designing the game and game infrastructure," says Scacchi.

The free online game can be played by anyone with an Internet connection and Flash capability. It's not imperative that players visit the DSC first, but those who do get a richer online experience.

The collaboration has been mutually beneficial. "The Discovery Science Center understands the California State Science Content Standards and what works with teaching kids, but they've never done online games before," says Scacchi. "The main goal of the collaboration was to take advantage of each other's expertise."

That sentiment was echoed by Joe Adams, DSC president. "We liked the breadth of what Calit2 and the Game Lab brought to the project," he says. "They're in the know about game development, what's unique and different, and they understood what we wanted to accomplish."

Learning for All Ages

User-friendliness was another consideration. "Everything has to be experienced in ways that utilize little or no text," says Scacchi. "Part of the target audience is kids in kindergarten, first and second grades, and maybe even some pre-readers. You can't expect them to read instructions before they start to play." Another challenge was making the online game appeal to different age groups or skill levels. The solution was to allow more capable users to attempt more difficult tasks that require using knowledge acquired at earlier game levels.

Visitors to Dino Quest Online begin by retrieving a message from the game's message center. It's here they meet "Professor Digwell," who tells them what research missions they need to complete.

Players begin in the dig pit, where they learn how to play the game and dig up dinosaur fossil bones. From there, they can visit the ecology lab to learn about prey-predator and food-chain relationships among dinosaurs; or to the reconstruction lab, where they try to assemble fossil bones into dinosaur skeletons.

Carefully Crafted Characters

To guarantee cohesiveness, the physical exhibit and online game share a back story, introductory scenes and characters. The diverse characters were carefully designed to communicate the universality of science and learning through collaboration. "Since we can reach a global audience with the online game, we thought carefully about how the characters were depicted in terms of gender balance, nationality, expertise and collaboration," Scacchi says.

The success of the UCI/DSC collaboration is paving the way for additional partnerships, according to Janet Yamaguchi, vice president of education at the science center. Future exhibits that may be tied to online games include those on the water cycle and space exploration. "Students can learn more at a conceptual level through the game format," she says. "It is a really compelling learning environment."

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