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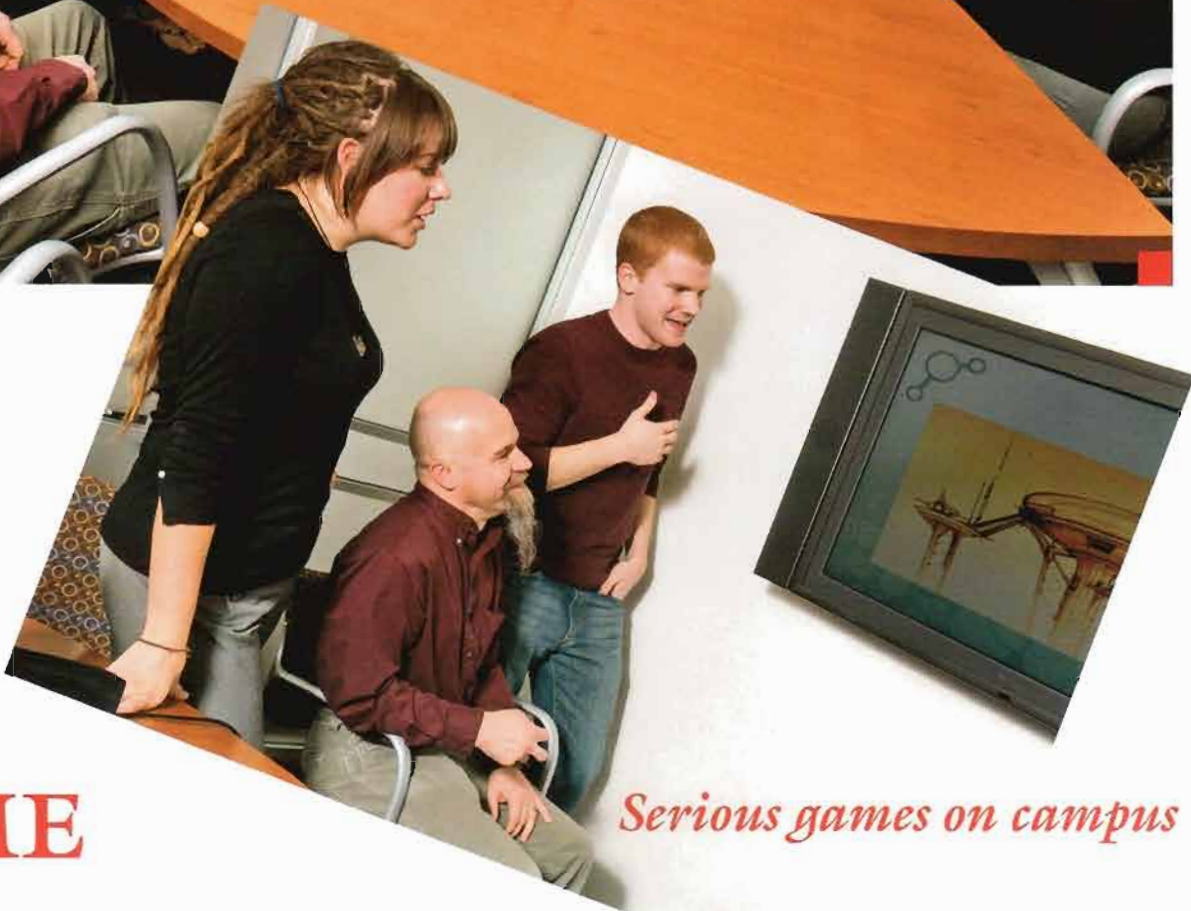
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North Carolina State University



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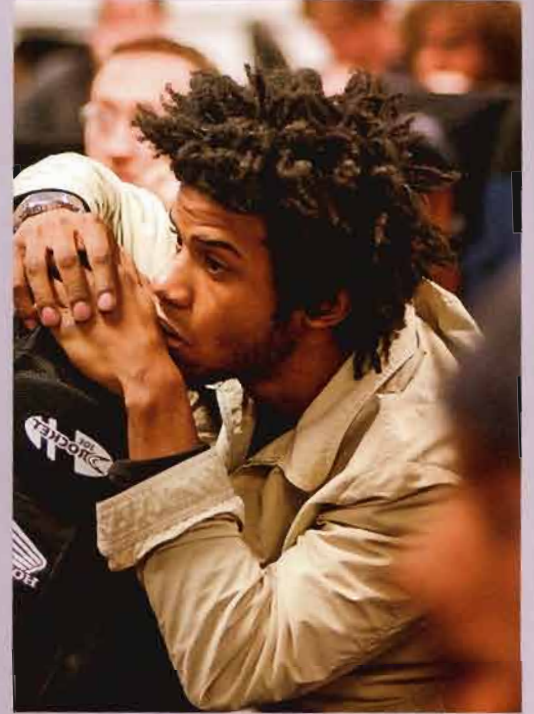


*Serious games on campus*





■ [Cover, left to right] College of Design Professor Tim Buie, student Barbara Nee, Associate Professor of Computer Science R. Michael Young, and students Rhys Harwell and Jessica Frucht, discuss a class gaming project in the Collaboration Room named in honor of Lucinda Hardwick MacKethan in the D. H. Hill Library's Learning Commons.



Computer science and industrial design multidisciplinary student teams pitched their game ideas to their professors and classmates at a special Gameday class session held at the D. H. Hill Library in January 2008.





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**PHOTOGRAPHY**

BECKY KIRKLAND & DANIEL KIM, NCSU, UNLESS OTHERWISE NOTED.

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Students set up for the class session on game development held in the D. H. Hill Library.

## NC State Has Game: Serious Games on Campus

By Joe Williams, Learning Commons

What do video games have to do with NC State's teaching, learning, and Libraries? More than most people might realize. Video games have come a long way in terms of content, complexity, and popularity since their emergence in the early 1970s. Today, gaming is a multimillion dollar industry that attracts a very broad audience—male and female, young and old. While games designed purely for entertainment are pervasive and account for a large portion of the current gaming market, educational or *serious games* and *3D online environments* represent an exciting and growing area of game research and development. North Carolina State faculty and students are actively involved in the study and creation of serious games, focusing on new modes of entertainment and interaction in digital media.

“Serious games are typically described as the application of

gaming technology in contexts other than entertainment,” says R. Michael Young, associate professor of computer science at NC State. Young is one of many faculty currently engaged in game development and research on campus. Young “looks at the ways artificial intelligence techniques can be put behind game engines to make games more adaptive to users. That often means creating educational games where the experience is tailored to specific learning goals” or a player’s background or interests.

Young is very active in both the local and national gaming research communities. In addition to his teaching and research efforts, he is director of NC State’s Digital Games Research Center and also serves as editor-in-chief of the *Journal of Game Development*. Young and other NC State faculty also maintain connections with several area gaming industry representatives through the NC Serious



Games initiative, based in the Research Triangle area. In fact, the Triangle is home to a very large concentration of nationally known gaming companies, including Virtual Heroes and Emergent Technologies. Many of these companies are leading the nation in innovative game development, and they serve as potential employers to NC State graduates.

Young teaches a number of courses related to game design, including Advanced Computer Game Projects (Computer Science 482), taught each spring in coordination with a studio class on 3D modeling and animation, 3D Game Development Studio (Industrial Design 500) taught by College of Design Professor Tim Buie. The students form multidisciplinary teams to build semester-long game projects, then show their work at the annual "Game Development Showcase" on campus.

In January 2008 Buie and Young held an evening class session in the D. H. Hill Library, where their computer science and industrial design multidisciplinary student teams pitched their game ideas to their professors and classmates. Each student team described its game idea in detail, provided concept art and color palettes, discussed the technical and design challenges anticipated, and proposed solutions to those challenges. Following the presentations, the students and faculty played multiplayer games on the Libraries' Xbox 360 gaming consoles to help the students get to know one another better and let them blow off a little steam after their rigorous pitch session.

The D. H. Hill library has been providing video game support to faculty, staff, and students since the opening of the Learning Commons on March 12, 2007, featuring the most popular gaming consoles—Microsoft Xbox 360, Sony Playstation 3, and Nintendo Wii—as well as a small and growing collection of popular game titles. There is also a small collection of games at the Design Library, and the Special Collections Research Center is seeking to collect examples of computer games from previous decades, to enable scholars to examine their evolution from a historical perspective. Librarians are collaborating with DELTA (Distance Education and Learning Technology Applications) on the development of the NC State "Wolflands" island in Second Life, an experimental virtual campus. Another project, an interactive 3D online tour of the D. H. Hill Library that could also provide the backdrop for a variety of gaming activities, is in the works as a partnership with Young and some of his students.

"The Learning Commons is an amazing thing for the Libraries to do," says Young. "Students no longer isolate study from social life and play. When the library reflects the way they live, they're more comfortable using all the resources" made available to them. "So, when we build something like that, the university is showing the students we understand how they live."



A pitch session by an NC State student during the class session at the D. H. Hill Library.

"People like me learn to do things with manuals," Professor Buie explains, "but our current students like to use videos" and other media. "The next generation will use simulations for learning, practicing, and training," he says, citing the important interactivity that games and simulations offer. The appeal of that type of interactivity "is not so much to keep us entertained, but just *involved*. We'll likely retain learning if we're involved."

"Games are a narrative, the same as a book, film, or magazine," adds Buie. "Why should they not be included" in library collections? "It's another art form, and I see art as a way to learn something. Fine art touches us emotionally and involves us, inspires us, and motivates us. I haven't seen a game done as a piece of fine art yet," Buie emphasizes, but he notes "it took film twenty years" or so to gain the heightened artistic levels the medium finally achieved. For Buie and many others, games are a vehicle with a powerful potential to engage and connect people.

"Most people think about video games when they talk about 'games,'" says Adriana de Souza e Silva, assistant professor with NC State's Department of Communication. De Souza e Silva's research focuses on how mobile and wireless technologies change perceptions of space, particularly urban spaces. "Critics of video games say that players lose their connection with 'real life,' but mobile games can actually get people out into the world, get them to rediscover their physical space and create local connections." She is looking beyond stereotypical ideas of what video games are and is working to understand games as social spaces.

As de Souza e Silva explains, there are a number of mobile devices available today, such as Web-enabled cell phones or the iPod touch, that connect easily to the Internet. With a growing number of people in



urban and rural areas connecting to and accessing an enormous body of information, de Souza e Silva wonders: "how does this affect them?" Through her research interests in communication, she first discovered "location-based" mobile games. Some of these types of games use GPS devices, others use Web-enabled phones or other mobile devices to facilitate game play. With mobile games, players can interact with each other using their real-life positions and location information. "This can change what we can do with the Internet. It doesn't make sense for us to talk about physical and virtual spaces as separate," she adds.

In addition to her current research projects, de Souza e Silva is also discussing developing "a location-based game on NC State campus," where players "would use cell phones to create location-based awareness." This particular "contextualized learning" project would be a collaborative effort with faculty from the Department of Landscape Architecture. "It is important to link (gaming) content among disciplines and programs. North Carolina State has the potential to move forward in this area and to become a leader in the area of game study research." De Souza e Silva is also director of the Mobile Gaming Research Lab at NC State, which promotes interdisciplinary and interinstitutional research on games in general and mobile games in particular.

*"Students no longer isolate study from social life and play."*—R. MICHAEL YOUNG

### Serious Games Links:

Virtual Heroes

<http://www.virtualheroes.com/>

Emergent Game Technologies

<http://www.emergent.net/>

RMY homepage

<http://liquidnarrative.csc.ncsu.edu/rmy/>

Annetta homepage

<http://www4.ncsu.edu/~lannett/Home/Welcome.html>

Buie homepage

<http://www4.ncsu.edu/~twbuie/>

HI FIVES

<http://ced.ncsu.edu/hifives/>

Libraries Gaming Web page

<http://www.lib.ncsu.edu/learningcommons/gaming.html>

Mobile Gaming Research Lab

<http://www.mglab.chass.ncsu.edu/>

De Souza e Silva homepage

<http://www.souzaesilva.com/>

Digital Game Research Center

<http://dgrc.ncsu.edu/>

3D-OLE

[http://delta.ncsu.edu/about/research\\_initiatives/3d\\_ole/](http://delta.ncsu.edu/about/research_initiatives/3d_ole/)

Active Worlds

<http://www.activeworlds.com/>

Second Life

<http://secondlife.com/>

*continued on page 20*



*"Games are a narrative, the same as a book, film, or magazine"*—TIM BUIE







[Above] NC State Assistant Professor Leonard Annetta, College of Education, works with middle school teachers in Lee County. Standing is NC State doctoral student Meng-Tzu Cheng. [Right] Professor Annetta works with one of NC State's Kenan Fellows, Carrie Jones, who is a doctoral student in science education and a science teacher at Middle Creek High School in Wake County.

*"Students are using iPods and cell phones to get their information, and we're sending them mail in the mailbox."*—LEONARD ANNETTA

Leonard Annetta, assistant professor in science education, is another faculty member deeply engaged in game research and interdisciplinary collaboration. He currently leads several grant-funded research projects on serious games and is passionate about the teaching and learning potential of this new medium.

Annetta's interest in serious games research "lies in the fact that people are knee-deep in games, not necessarily *serious* games, but they're playing. I want to . . . find ways to keep the excitement and entertainment aspect, but also embed education into these games." Annetta's background is in distance learning, and he is interested in using "massively multiplayer online gaming" or MMOG environments, as a framework for how a classroom environment can be set up online.

Annetta teaches a number of courses within the 3D virtual environment Wolf Den, which is built on Active Worlds. "We host an [Active Worlds] universe on campus in the College of Education," which limits the class space to participants registered by NC State. This added control "allows me to conduct research within my classes."

In addition to teaching, Annetta is involved in a number of game-related efforts, including his widely

*Serious Games, continued from page 5*

HI FIVES is a program based on serious gaming for teachers of grades 5 through 9 that will provide students with improved science skills. The North Carolina Department of Public Instruction is partnering over three years with NC State to develop this program to train teacher-leaders and teacher participants to reach 4,500 North Carolina students.

COURTESY LEN ANNETTA, NC SU



acclaimed HI FIVES project that involves many partners from across campus, including DELTA and the Kenan Institute for Engineering, Technology and Science. The HI FIVES project is developing sixty competitive simulations that will teach information technology-driven science to North Carolina students in grades five through nine, using inexpensive, online multiuser simulation software. The project is providing valuable new skills and first-hand experience to students as well as science educators.

Annetta hopes that more NC State faculty will become interested in using gaming technologies in their teaching. Young also hopes that more faculty will explore serious games as they relate to their own teaching, learning, and research. "Instructors need to know more about the potential for serious games before they can see how serious games can help them in their instruction. Off campus, a good source of information on serious games is the Serious Games Summit," a national annual event where individuals report on case studies of serious games developed in a range of disciplines, says Young. On campus, the Digital Games Research Center's Future of Games speaker series provides valuable information on this subject to interested faculty. ❖