K20

By Bill Moakley
Photos by Robert Taylor

Leads the Way

The video game technology that seems to have kidnapped our children is opening a new avenue to learning in the 21st century.

Because of the University of Oklahoma K20 Center for Educational and Community Renewal, your child may be playing video games in the classroom.

You should be thankful.

The center, part of OU's College of Education, is the engine behind a unique video game-based approach to getting Oklahoma eighth- and ninth-grade students excited about learning. Far from handing students an Xbox and the latest versions of Madden 2007 or Guitar Hero, the center has developed its own game-based learning experience. The K20 Center's game encompasses

math, science, language arts, social studies, technology and a host of other disciplines students must master to compete in the digitally driven, globally competitive workplace they will step into when they step out of the classroom.

Funded by a STAR Schools Grant from the U.S. Department of Education, the introduction of mobile technologies and digital game-based learning for students is the latest research project to emerge from the K20 Center, a statewide educational research and development center that promotes innovative learning through collaboration among OU, public schools and communities.

"The purpose has always been to improve student learning by connecting schools with each other and with OU faculty and students. Our goal is to create a seamless, high-quality learning community that crosses educational levels, academic disciplines and geographic borders," explains K20 Center director Mary John O'Hair.

The center's work influences both common education (K-12) as well as higher education through university engagement programs with over 100 faculty, staff and students working together to address local and regional problems. This emphasis can be seen in numerous K20 initiatives, including the new OU Engineering in Practice (EiP) program led by Mark Nanny, associate professor of Civil Engineering and Environmental Studies. The program combines the knowledge of a group of engineering and education faculty and students to assist low-income, rural schools in developing high quality science, math and technology lessons, providing connection and collaboration across the kindergarten through doctoral spectrum.

O'Hair, who also serves as OU's vice provost for School and Community Partnerships, founded the center 11 years ago as the Oklahoma Network for Excellence. That two-person operation has blossomed into a presence in schools in all of Oklahoma's 77 counties and more than $23 million in external funding from such partners as the Bill and Melinda Gates Foundation, Oklahoma Educational Technology Trust, Oklahoma Commission

Mary John O'Hair, vice provost for School and Community Partnerships and founder and director of the K20 Center, works with the leaders of schools and communities across Oklahoma to enhance student learning by improving resources and strengthening communication among schools, OU faculty and students.

for Teacher Preparation, National Science Foundation, Inasmuch Foundation, Presbyterian Health Foundation and U.S. Department of Education.

The center started as a network of six elementary schools. Later, seven secondary schools linked together to learn from one another, promote mentorship and dialogue within the kindergarten through 12th grade network and create community partnerships.

"Our philosophy from the beginning has been a whole-school approach that starts with professional development of educational and community leaders and progresses through phases to engage students," O'Hair says.

Those phases, which now number four, constitute the building blocks of the center.

In the first "leadership development" phase, the K20 Center works with Oklahoma school administrators to develop their whole-school learning philosophy. To begin the year-long phase, superintendents, principals and district leaders take part in a two-day seminar in which they focus on 10 practices for high-achieving schools. Each participant is given a laptop with the expectation that post-seminar networking and research will continue and grow.

Nearly 1,200 educational leaders from across the state have taken part in the first phase of the program. As part of their work, district leaders develop and submit to the center an action plan for work to be done in their schools. Districts are then eligible to apply for a $40,000 technology grant to begin work within their district and community. The grant provides another $25,000 for support from K20 personnel. Funding

Because of the K20 Center, laptops are just part of a first-grader's life at Norman's Jefferson Elementary. Jefferson is one of many schools statewide that has benefited from the K20 Center's OK-ACTS (Oklahoma: Achievement through Collaboration and Technology Support).

for the leadership and whole-school change grants comes from the Oklahoma Educational Technology Trust.

As part of their action plan, school districts identify three of the center's 10 practices for high-achieving schools on which they will focus. One must be shared values. The other two may include authentic teaching, shared leadership, personalized environments, teacher collaboration, inquiry and discourse, supportive leaders, community connections, equity concerns, and external expertise.

Approximately 50 to 60 grant applications are submitted each year. Districts receiving grants choose how they will spend their technology funds.

"This grant is different from others because it includes a lot of choices," explains Jean Cate, associate director of the K20 Center for Educational and Community

Renewal and co-director of the K20 Center's OK-ACTS (Oklahoma: Achievement through Collaboration and Technology Support). "With the exception of the required shared values practice, districts can choose both the practices to focus on and the technology to use. The process needs to be contextual for their particular school."

Leslie Williams, the center's associate director for research, adds that the choice of technology varies from one school to the next.

"There's a little bit of everything," she says. "Lots of interactive white boards, laptop computers, graphing calculators, LCD projectors, word processing devices, probes for science activities. They choose what they need."

During phase two, the focus shifts from administrators to teachers, parents and community leaders. The goal is to begin to empower those involved with education to create technology-enriched learning communities. Topics include teacher-peer mentoring, professional development, cross-discipline communications, statewide networking and technology access for all classrooms.

As a requirement for taking part in the second phase, school districts agree to open their schools to visits from personnel from other districts. They also make presentations on behalf of the K20 Center, sharing examples of the growth they have experienced as districts and what drives such growth.

Both Williams and Linda Atkinson, associate director for K-12 Partnerships, have conducted research on schools involved with the center and noted the strong correlation between the development of the 10 practices and the integration of technology. One of the reasons,

they say, is easing the tension that sometimes exists between technology-challenged teachers and those who are more technologically savvy.

"We find that the discussion about technology helps bridge the gap," Atkinson says. "Young teachers may easily use technology in their daily lives, but they've not integrated it into the classroom. Veteran teachers know how to teach their content area very well but may not be comfortable with the technology. The program gives both groups a reason to have a conversation that is not so much about technology itself but about teaching and learning."

Cate adds that engagement also is key. "In phase one, the leaders are engaged in issues they have to address on their own. In phase two, teachers do the same. In phase three, the engagement is centered on content," she explains.

Engagement aptly describes what has taken place at Westville Elementary School, a rural K-12 school district tucked just inside the Oklahoma-Arkansas border along State Highway 62. District participants in the program chose as the district's three practices shared values, shared leadership and authentic teaching. Ryan Swank, the district's principal for pre-kindergarten through second grade, formed committees based on both grade levels and content areas, such as math, science, social studies, language arts and reading.

Although he admits he and his teachers wondered whether going through the K20 process would be just about acquiring equipment or about a chance for real growth, he says the latter truly was the case.

"When we got through with phase two, it was clear the real benefit was being able to implement those three practices," Swank says. "Getting the technology turned out to be the icing on the cake."

Swank has set aside time on a regular basis for various committees to discuss curriculum, leadership, decision-making and other topics. Their goal of shared leadership became a reality early with discussions of what technology they would purchase. They visited other schools to look at technology in action before determining what to buy for Westville.

In the program's third phase, districts can apply for further grant funding aimed at in-depth research and learning experiences for teachers in specific areas, especially science, technology, engineering and mathematics. More than 500 Oklahoma teachers have completed phase three.

So what's next? Remember those videos games?

They are part of phase four, which began rolling out across the state in fall 2007. This fourth phase focuses on creative learning practices in the form of Ultra Mobile Personal Computers loaded with a game developed by K20 programmers and graphic artists.

"In our wisdom or foresight or lunacy, we decided a massive multi-player online game was what we wanted to move toward," explains Scott Wilson, K20 Center STAR Schools project associate director.

Massive multi-player online gaming has exploded in recent years with millions of players worldwide taking part in role-playing games like "World of Warcraft." One of the hurdles Wilson and his team faced was coming up with a game platform that would be rich enough to hold the attention of tech-crazy students. They decided modifying existing platforms was not an option. Instead, they developed their own environment, into which they built their own game engine and embedded instructional tools.

The creative team behind McLarin Adventures checks for possible glitches in the educational computer game during a brainstorming session at the center.
Clockwise from far left are Stanton White; Lou Vassilev; Scott Wilson, K20 Center STAR Schools project associate director; James Wynn and Gabe Miller.

"You just can't say as an administrator that I'm going to take the technology money and buy certain things," Swank explains. "You have to get teachers' buy-in. If they want it, they're going to use it."

He says development of curriculum materials and decisions concerning content areas are also being approached in a democratic manner. One result has been greater productivity for both him and the teachers.

"The two biggest issues for administrators and teachers are lack of communication and lack of time," he points out. "We get so much more done with the teams and sharing the decisions we make."

The benefits are not confined to Swank and his staff. Since being in the program and implementing technology in each of the classrooms, mainly in the form of smart boards and LCD projectors, performance on test scores has increased for the grades he oversees.

In 2005-2006, Westville first graders scored a 1.6 grade equivalent on the Stanford Achievement Test. In 2006-2007, that increased to a grade equivalent of 2.0. Second graders in the district also improved, jumping from a 2005-2006 equivalent of 2.7 to a 2006-2007 grade equivalent of 3.0.

"You're seeing actual increases in student learning," Swank says. "The only changes we made during those two years were using technology – smart boards and projectors – and teacher collaboration.

"Being connected to the K20 Center has been a great experience for myself and my teachers and ultimately for the students."

Titled "McLarin Adventures," the game's storyline revolves around a retired eccentric trillionaire responsible for revolutionizing transportation by inventing a fuel cell that used little energy but had great output and power. He discovers interstellar flight and earth-like planets that would support life and announces a competition for the right to be sent into space to work on potential colonization projects.

Competing teams are "flown" to a remote, uninhabited, unmapped island to

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Jean Cate, associate director of the K20 Center for Educational and Community Renewal and co-director of the center's OK-ACTS, standing, consults with Kerri Grigor, fourth-grade teacher at Jefferson Elementary, left, and Principal Katherine L. Taber during a team meeting at the school.

find the resources necessary to settle the island. Tasks include mapping the island, identifying life forms and food sources and determining the availability of water. Along the way, students must submit technical reports to McLarin, maybe write articles for such publications as *National Geographic*, keep a journal and communicate with other members of their team and outside sources. The activities engage the teams in math, science, engineering, language arts, social studies, technology and communication skills.

For Wilson and his team, the challenge was making "McLarin Adventures" believable to a generation of students raised on technology that changes daily. During the development process, programmers and graphics experts worked with students on content.

"We showed them story-

boards and asked if they made sense and looked fun," Wilson explains. "We videotaped the process so we could focus on their reactions."

Just as important, Wilson's team consulted teachers and other educators who were experts in content areas but less sophisticated in things technological.

"We asked them to explore the game for content, process skills and educational value. When they did, a trust was built, and they were very supportive of us coming into their world," Wilson says. "They wouldn't let us in just for the technology. They also had to see the promise of what these types of systems can do."

He hopes the systems will enhance the learning environment by utilizing the tools and technologies today's tech-savvy students handle every day in their personal lives.

"Number one, we hope it impacts student engagement and achievement," Wilson says. "We'd like to hear them say, 'I want to do that again next year.'"

By the end of November 2007, some 1,400 Oklahoma students had the devices, and their schools were asked to provide 40 hours of instructional time over two semesters.

As part of the research arm of the grant, three groups of students will be studied: one using the game and lessons studies connected with it, a second using just the lessons studies without the gaming units, and a third group with neither.

In the end, Wilson believes the gaming system, one of only six being used in public schools in the country, will be of great value.

"We really think it's going to be a powerful learning environment," he says. "There are a lot of possibilities here."

And the essence of the K20 Center is possibilities.

"If you provide opportunities for teachers, administrators and students to get together and learn from each other, the empowerment process is limitless," O'Hair believes. "Following that, positive change is a natural outgrowth." ▄

Leslie Williams, the center's associate director for research, left, and Linda Atkinson, associate director for K-12 Partnerships, demonstrate some of the equipment available to participating K20 schools in the technology resources room at the center.

Bill Moakley, who is the communications director of the OU College of Education, writes freelance articles for Sooner Magazine.