Students Tackle Video-Game Design

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In one row, juniors Jacob Currence and Tyler Gum test the gun-shooting level of "Finding Mr. X," a film noir-flavored game they've created to test players' acumen in quadratic equations. Behind them, Kasey Meadows demonstrates how the protagonist in "The Lost Llama" weaves through a maze and solves riddles about mathematical sines, cosines, and tangents.

The incessant low din suggests chaos, but White insists it's the sound of productivity.

"It's just a different type of classroom," she says.

White is the pioneer here at **Tygarts Valley Middle and High School** in Mill Creek, W.Va., where for one period a day for the past two years she has taught the **Globaloria** curriculum, a creation of the New York City-based ed-tech nonprofit World Wide Workshop built around students participating in social networking and video game design. It's an effort to transform much more than the classroom vibe.

For the students in this computer-lab-turned-mini-software-company, who spend the entire course working individually or with partners developing a game that teaches an educational concept of their choosing, there's the critical thinking needed to understand and communicate to players what exactly is toughest to teach about a subject. There are also the transferable skills of proposal writing, storyboarding, Adobe-Script software coding, informational blogging, and presentation of progress reports, as students follow a development plan similar to those in the commercial gaming industry through tools available through their account on Globaloria's wiki site.

For the 550-student school and its rural 4,200-student Randolph County school district, where 70 percent of students qualify for free or reduced-price lunch, there's a window to the world through communication with professional game reviewers and Globaloria students across the nation. (The district has also established Globaloria programs at Elkins High School, Elkins Middle School, and the Randolph Technical Center.)

And for a community where the economy hinges on retail sales and tourism, there's the hope that those tools and that window may allow the best students to find local work in large numbers for the first time since nearby Elkins' railway and mining industries faded after World War II.

"There are a bunch of kids here who in a couple years can start a company," says Idit H. Caperton, the founder and president of World Wide Workshop, during a visit to Elkins, where the Randolph Technical Center piloted Globaloria way back in 2007.

"I believe there is talent everywhere," she says. "And I think if we cultivate that, you will see some stars coming out of this state."

In School or After School?

The specialization that often occurs in groups of students that design games—when they split the tasks of coding, graphic artistry, and concept design, for example—and the resulting communication lessons are becoming more widely recognized by mainstream educators. On one level, the concept of student game design belongs to the increasingly popular strategy of project-based learning.

But even within the far narrower sliver of advocates pushing for educational gaming, there's a lack of consensus about whether the place to push student game design is in schools themselves, in after-school programs in schools or community centers, or in students' homes.

Globaloria programs, in California, Florida, Texas, and West Virginia, live mostly within the formal education system. The AMD Foundation, the philanthropic wing of the Sunnyvale, Calif.-based semiconductor maker AMD, has reached most students in its **Changing the Game** initiative in after-school programs, however.

Since its launch in 2008, the AMD initiative has funded work with Globaloria, the social-gaming website **Gamestar Mechanic**, and other platforms, and through work with a couple dozen partner organizations, has reached more than 99 percent of its 75,000 participating students outside formal educational settings, according to Allyson Peerman, the foundation's president.

And Alan Gershenfeld, the founder and president of the New York City-based E-Line Media company that is a co-publisher of Gamestar Mechanic, says his platform, which is geared for ages younger than Globaloria's target group and uses templates rather than original code to create games, is designed to avoid formal procurement methods.

"The curriculum is chunkable, so you can use it for a one-week program, an after-school program, as a full-semester or year course," says Gershenfeld, who says Gamestar Mechanic aims to take hold through individual teachers, not administrators. As such, the website features a free basic level that any teacher—or even student—can access, and a more elaborate for-pay model.

"We spent close to a year reworking the product for a bottom-up school distribution channel," adds Gershenfeld. "We kept hearing from teachers, 'Don't let this product die.'"

Caperton insists, though, that focusing on the formal education system is critical. No other pathway allows for as much scalability or access for the underserved students most in need of such a program, she says.

"Look at this place—it's very rural," Caperton says after a meeting in Elkins. "In this case, if you don't provide it in the public school, it's like food for many of them. You're not going to get that nutrition your brain needs."

Overcoming Obstacles

But with a model that departs so radically from the traditional classroom, winning over enough teachers to train to be competent instructors in the Globaloria curriculum is an obstacle, and getting students interested in something so unusual can also be daunting.

That's perhaps why the model at Tygarts Valley Middle and High School has seen slow growth, with Diane White teaching the first high school game-design course in the 2010-11 school year, and Mollie Ferguson and Melissa Walter teaching middle school courses beginning this past school year. White also teaches business courses; Ferguson, science; and Walter, English/language arts.

About 20 high school students signed up for the course as an elective this school year, although White says it's rare that they have much real concept of the course's nature. She points to Kasey Meadows' former class partner, who she says quickly felt overwhelmed and dropped the course, and to Meadows, who briefly left the course after getting frustrated by a coding error, before being persuaded to return.

"It's actually not that bad once you get the hang of it," Meadows says.

Students who struggle in game design may become more stressed than those who struggle in other courses, White says, because the number of students and teachers capable of helping on tasks like writing code for AdobeFlash Player is small. Even after summer professional development that requires teachers to make their own Globaloria game, most times students will create games above and beyond teachers' coding proficiency, White says.

"There are days when some students don't accomplish anything, and you leave here frustrated and devastated because you've worked for 90 minutes, and it's like one step forward, two steps back," concedes White.

But there is value in the adversity, she adds. "I think it teaches them determination, and that they have to have a good work ethic," White says. "And they know that they can't give up."

Meanwhile, Principal Steve Wamsley says he and teachers targeted more-advanced students to ensure that Ferguson's and Walter's first middle school courses went as smoothly as possible. As the program expands, however, he envisions offering game design courses to students of all levels.

"Next year, we're going to slide it down to the sixth grade, ... and then in the eighth grade, they're going to be able to take it as a high school credit," Wamsley says. "Kids who may have failed a year of school or have been held back somewhere in middle school, they can pick up some high school credit, which will increase the likelihood that they are going to graduate."

For middle school students who are weathering major life transitions, the intricacies of coding, blogging, and collaboration can be trying at times.

"We [share] so much, we make so many videos, and so many blogs and [postings on] our wikis," says 8th grader Leenette Fincham during Ferguson's second-period class. "We talk about the class, and we talk to other classes."

But, she adds, "it was either this, or gym. And I don't like gym."

Gaming and Assessment

State standards and staffing realities most likely mean Globaloria courses will remain electives at Tygarts Valley, rather than become woven within core academics. And funding is also a concern.

While there are plans for expansion, Wamsley says that, as of March, the budget for game-design courses had not yet been assured for the 2012-13 school year. The cost of Globaloria, including professional development, is roughly $20,000 per school, according to Caperton of World Wide Workshop, and Wamsley says it is partially funded through a county tax levy that contributes $45,000 yearly to the school. That levy will continue next year, Wamsley says.

But Caperton says she thinks much more broadly. When she first pitched the Globaloria idea to then-Gov. Joe Manchin, a Democrat, she envisioned penetration throughout every district in West Virginia. And while praising West Virginia for taking a chance on the program, she in the same breath makes sure to promote newer programs like the **East Austin College Prep Academy,** in the Texas capital, where all 320 students are game creators.

At the grades 6-8 charter school, which has plans to expand to 5th and 9th grade next year and eventually stretch across all 12 grades and kindergarten, Globaloria is linked closely with assessment.

In 6th grade, students there choose the topics for their educational games based on weaknesses they show in the Texas Assessment of Knowledge and Skills math entry exams. In 7th grade, they integrate a math concept into a game focused on a social issue, and in the 8th grade, they can choose to create a game pertaining to either math or social studies.

The Austin school's enrollment is 85 percent Hispanic and 40 percent English-language-learner. Principal Marisol Rocha says the program's most profound impact has been on native Spanish-speakers.

"When they were in those classes and doing blogging, they were free to write" without judgment, Rocha says of students in Globaloria. "When they have a computer in front of them, it's like a completely different world for them."

Seventh grade instructor Teresa Valdez, who was hired before the 2010-11 school year to teach 7th grade game design, says for teachers who may only teach game design, a cross-curricular background helps. Valdez previously taught 5th grade bilingual education in an enclosed classroom, meaning she taught her students their entire core curriculum in language arts, science, social studies, and mathematics.

And after teaching a computer-less course centered around students' conception and creation of board and strategy games, Valdez says it's possible to teach most of the same principles pushed by Globaloria's curriculum without technology tools. But with digital tools come an additional, healthy pressure.

"If you're doing something [educational] that's not electronic, they really have a lot of experience doing that," Valdez says. "When you throw them into technology, it's like you're putting them out into the desert, and they have to depend on each other a whole lot more."

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