

E-Learning's Gender Factor

Educators are examining how boys and girls learn differently in online environments.

**By Michelle R. Davis
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Tell a boy he needs to take a virtual math class that will focus on graphing, ratios, mean, and median, and the announcement might elicit a yawn. Then tell him that this online math class will use baseball to teach those concepts and, if he's a fan, he's likely to be enthusiastic.

That's what Jamey T. Fitzpatrick, the president and CEO of Michigan Virtual University, was banking on when his virtual school created the Mathematics of Baseball course. In partnership with the Baseball Hall of Fame, in Cooperstown, N.Y., the course uses baseball statistics, base running, coaching decisions, and baseball-field design to teach mathematical concepts.

"We designed this knowing there's a hook there for boys," Fitzpatrick says. "Our goal here is to figure out how to differentiate instruction and increase relevance, which is so important to gaining kids' interest and desire to learn more."

With single-sex brick-and-mortar classrooms gaining in popularity as a way to tap into teaching methods that may appeal to one gender or the other, the world of online schooling is looking closely at the idea of targeting virtual classes at just boys or just girls. In addition to Michigan Virtual University's math course aimed at boys, a consortium of private girls' schools launched the first virtual school just for girls this year. And the Research Center for Educational Technology is working on an online course that aims to help attract girls to careers in science and math. Even schools that don't plan to separate the sexes in online classes are thinking hard about the different ways boys and girls may learn.

"The benefit of online learning is that you can approach a set of learning objectives in various ways," says Richard E. Ferdig, a

research professor at the Research Center for Educational Technology based at Kent State University, in Kent, Ohio.

'Engaging and Relevant'

The research on how boys and girls behave and learn in the classroom and online can be contradictory and controversial, though. Some studies and experts claim a clear distinction in the way boys and girls tackle academics, while others have found little or no difference.

A 2005 research review on the subject by Jo Sanders, an expert on gender-equity issues and technology use who has written several books on the topic, cited some of those discrepancies. But it did find studies showing that when students could freely choose, girls opted to work collaboratively on the computer while boys chose to work individually. Girls were more interested in partnerships online; boys liked to compete.

A study the same year of middle school students' computer use, conducted by Alice A. Christie, an associate professor of technology and education at Arizona State University in Phoenix, found that girls used computers more often for social interaction and for word processing and working on homework, while boys spent more time playing games or seeking out entertainment.

While Fitzpatrick says Michigan Virtual University's baseball math course wasn't designed only for boys (some girls have taken the course), it was geared to boys.

"Our goal is to figure out how to make our online-learning experiences in the area of math as engaging and relevant and fun as they can be," Fitzpatrick says of the course, which was launched last year and is being taught by a middle school math teacher who also coaches high school baseball.

What Michigan Virtual University found is that those who took the course had an interest in baseball and felt connected to and invested in the subject matter, says Joseph R. Freidhoff, an education research analyst at the virtual school.

"If kids look at some mathematical equation and formulation, they may struggle," he says. "You ask the average 16-year-old boy about base-hitting percentages, and they have a conceptual framework" for how to tackle calculations around that.

There are some differences in the way boys and girls learn in a standard classroom environment that can be translated to online learning, says Kelley King, the associate director of the Gurian Institute, a research organization in Colorado Springs, Colo., that provides training on the educational needs of boys and girls.

Generally, girls find traditional lectures and note-taking easier to follow, and boys tend to need more visuals and movement, says King, the co-author of *Strategies for Teaching Boys and Girls: Elementary Level*.

She says an online course for boys might use more games, simulations, and video, and include more competition. It might present information in small chunks, spread through a lesson rather than delivered upfront. An online course for girls might include more information at the start of a lesson and stress collaboration, she says.

Guiding Principles

When Brad Rathgeber, the president of the Online School for Girls, was thinking about how to design courses for the Bethesda, Md.-based virtual school, which was opened this academic year, officials looked closely at research surrounding girls' use of technology, he says.

A review of the material helped school leaders develop some guiding principles for course development, which include an emphasis on collaboration and use of the technology to forge connections with fellow students and teachers.

Officials of the school also say they want to push girls to be creative with technology and to apply what they're learning to the world around them. "The way girls use technology and learn best is when it's applied to real-world scenarios," Rathgeber says.

The school will have about 100 students this year, from the four private girls' schools that started the school. This school year, six courses are being offered, but Rathgeber says that number will increase and eventually the school will be open to a wider pool of female students.

But he says that, unlike the baseball math course, the Online School for Girls' courses don't have content that is "geared toward girls."

Instead, the emphasis has been more about girl-friendly access to the material, he says.

"This is all about the pedagogy and trying to help find ways that girls learn best," Rathgeber says, "not about trying to give them content that may be appealing just to them in some way."

Critics say trying to use topics that appeal to one gender can create problems.

Building content toward a perception of what girls are interested in or boys are interested in can leave some students alienated. Not all girls care about shopping, for instance, and not all boys are into sports, says Leonard Sax, the founder and executive director of the National Association for Single Sex Public Education, based in Exton, Pa.

"We don't believe there are profound differences in learning between boys and girls," he says. "We'd be very concerned about someone trying to establish a program based on some stereotype." Having those online courses open to both boys and girls—as the baseball math course is—would make a difference, Sax says.

"The key point is customization," he says. "Customizing and differentiating instruction and the online digital approach is a natural match."

That's where virtual classes may have real success when it comes to gender, says Tom Carroll, the founder and chairman of the Brighter Choice Charter School for Girls and the Brighter Choice Charter School for Boys, brick-and-mortar schools that are both based in Albany, N.Y. Today's students are used to customizing everything from their music-listening preferences to their TV-viewing choices, he says, and virtual schools may allow boys and girls to customize their own learning by offering, for example, a variety of ways to experience an online class and a variety of subject matter to tackle.

But, Carroll cautions, it's also important to make sure that students learn material that might not appeal directly to one sex or the

other. "We want to allow some choice, but there is a common core of knowledge that all students have to be exposed to regardless of gender," he says.

Beyond **Preconceived Notions**

Even though some of the largest virtual schools are thinking about gender and how it relates to learning, it doesn't mean they're developing courses just for girls or for boys.

At the Orlando-based Florida Virtual School, Chief Development Officer Joy Smith says the school is looking closely at how to tailor courses to make them more successful with both boys and girls. Customization, she says, is key.

The school is looking at allowing students to customize, for example, both the background colors for the course interfaces and organizational features for presenting information. In addition, the school is developing avatars—online representations of the students—that could be tailored to their preferences. For example, an avatar might be "a big beefy man, or a scientist," Smith says.

"We're going to give them the opportunity to say how they want this information presented," she says, "and then let them personalize it." But the Florida Virtual School is being careful not to jump to conclusions about what boys will like or girls will like.

When it launched a new American history course called Conspiracy Code, which is an educational video game, most staff members assumed boys would be most interested and successful because they're typically more interested in video games, Smith says. It turns out that some of the most successful students in the course have been girls. "We realized that there may be preconceived things we may be holding on to," Smith says.

Ferdig, of the Research Center for Educational Technology, says he's developing a virtual course to encourage girls and minority students to go into careers involving science, technology, engineering, and math—the so-called STEM areas.

Research had shown that a social stigma and a lack of mentoring and role models often prevented female and minority students from planning to study in those areas. Research on online STEM courses, however, has shown a spike in the number of girls taking those virtual classes.

To bolster those efforts, Ferdig is working on a STEM-appreciation course for middle school students that would allow them to see a significant number of virtual characters and role models in those fields who would talk about their careers, what they do, and how they got there. Those are interactions the students might not get otherwise.

“This will give them a sense of their possible future self,” Ferdig says. But Ferdig cautions that “we don’t want just female and minority students taking this class. Male students need to come in and see positive female and minority role models, too.”

Tips

1. Choose an area of interest for particular academic units that cater to the likely interests of either boys or girls. For example, one school uses baseball statistics to teach mathematical concepts to boys, while some girls-only literature classes feature prominent female authors.
2. Allow students to customize their online experiences by letting them choose color backgrounds for the course interfaces, having them design avatars, or virtual representations of themselves, to interact with content, and by letting them customize a course setup to play to their preferences.
3. Put a heavy emphasis on online collaboration for girls, such as using wikis to work together on projects or by sharing information via social-networking sites. However, keep in mind that many boys also prefer collaborative activities.
4. Include more opportunities for competitive activities and gaming for boys. But researchers stress that a growing number of girls enjoy competitive activities and gaming.

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