

FIELDING NAIR INTERNATIONAL (2)



Education Innovations

By Elizabeth M. Economou

In San Antonio, Texas, the Anne Frank Inspire Academy, a K–10 public charter school, is turning the idea of a classroom learning space on its head—with the aim of nurturing creativity and helping students reach their potential. ■ A capacious plaza with floor-to-ceiling windows is central to the building, which was designed by Minneapolis-based school-planning firm Fielding Nair International.

Within the plaza, students circulate in open spaces to work on projects. The indoor area connects to the external landscape, which features a treehouse, a butterfly garden, a pond and a farm shed. And variably sized learning spaces serve the many ways in which students with differing learning styles process information—from large-group lectures, from small-group peer interactions and from one-on-one instruction.

For decades, architect and futurist Prakash Nair, the president of FNI, has been spearheading efforts to remake schools in ways that maximize comfort and flexibility for students and teachers.

“Research [tells us that] a personalized education model [will] maximize student achievement,” Nair says. Traditional classroom layouts are based on the erroneous assumption that efficient content delivery from the teacher out to the class is the same as effective learning, he says, noting that the transformation of learning spaces is essential to providing more varied educational approaches.

Redefining physical learning spaces is just one way that the field of education is falling in line with current understandings of the ways students learn. The shift to a model that involves more projects and

problem-solving—especially in the subjects of math and science—is another recent evolution that is expected to continue. Other changes include innovations in uses of technology and improvements in the efforts to train qualified teachers.

Across the U.S., educators are drawing on new ways of thinking to bring fresh approaches to their work. As they retool for the future, they are also preparing students to thrive in an evolving global economy.

Mighty Math and a Need to Improve “More than any other subject, math is rigor, distilled,” writes Amanda Ripley in her best-selling 2013 book *The Smartest Kids in the World* (Simon & Schuster). Another important point from Ripley: Math skills tend to predict future earnings.

Sadly, it’s no secret that many American teens regard math as they do curfews and chaperones. Correspondingly, they rank

The Anne Frank Inspire Academy, in San Antonio, Texas, has innovative learning spaces that include a large indoor plaza (above left) and an elaborate treehouse (above right).

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behind their peers in places such as Shanghai, Singapore and Liechtenstein. And math is not the only core subject area in which the United States ranks average or lower, according to the most recent Programme for International Student Assessment. U.S. teens ranked No. 27 in math, No. 20 in science and No. 17 in reading.

There has been little change in these scores since 2003. And the PISA study found the U.S. spending more than \$115,000 per student and performing at the same level as students in Slovakia, which spends around \$53,000 (USD) per student. There is clearly room for improvement.

A Problem-Solving Approach

Change is underway in Wendy Rose Aaron's classroom at Oregon State University in Corvallis, where Aaron works as an assistant professor of mathematics education. Her work with current and future teachers is informed by experiences observing, analyzing and designing effective K–12 classroom instruction, specifically in math.

“Instead of students sitting quietly while the teacher delivers information, they [should be] interacting with their peers and using what they know to formulate and solve problems,” Aaron says.

Aaron sees a need to make instruction more relevant and engaging to diverse types of students. She notes that the delivery method of the past has deterred certain groups—including girls and students of color—from succeeding in math classes. Boys are awarded inside and outside the classroom for speed and accuracy, whereas girls are awarded for being thoughtful in their approach to solving problems, Aaron says. The shift toward more interactive problem-solving could help shift the balance for students.

Making Learning Relevant

One way that U.S. educators are working to improve attitudes and capabilities for the future is trying to make subjects more relevant to more students. Part of this involves meeting students where their



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interests already lie—including looking at video games for inspiration—and connecting materials to the fast-paced world that students face.

“Students will not be motivated to do worksheets and lessons from a book when they are so geared toward instant gratification and stimulation,” explains Deborah Nieding, who chairs the Department of Teacher Education at Gonzaga University, in Spokane, Washington. “Teachers need to look at the structure of the things that are captivating the time and attention of children and use it as a model for classroom application of content. ... Students stay focused on a video game much longer than a math worksheet.”

Video games help children learn persistence, Nieding notes. “When children play video games, they are failing more than they are succeeding. But they don’t see it as failure; instead they are motivated to keep trying. That in itself is a great message: to keep trying different strategies to determine what works. This helps develop critical thinking and problem-solving abilities.”

Teaching the Teachers

Helping instructors develop new skills is another area of focus for the future. San Diego State University is one of the schools working to prepare the way for educators.

“There is already a strong push from the federal government to fund math education, and more generally STEM (science, technology, engineering and math), especially for women and minority groups,” says Luke Duesbery, an associate professor of education and the director of SDSU’s Center for Teaching Critical Thinking and Creativity.

Duesbery says that SDSU provides a foundation of research-supported teaching techniques. One effective approach is the Socratic Seminar, in which college students who plan on becoming teachers are required to read source material about a controversial issue and then discuss and debate it in large groups. The idea is that these future teachers might one day use the same approach in their classrooms.

Teachers also need to be ready for technology. Projecting ahead 20 or 30 years from now, Duesbery is convinced the class-

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room of the future will exist exclusively in cyberspace. “Knowledge is there and easily accessible. The modern classroom will help students find and organize [information] and think deeply about important issues—no desks will be needed,” he says.

Aaron concurs: “There surely will be an increase in online offerings as technology advances and virtual interactions are more integrated into our lives.”

“The classroom of tomorrow will be fluid so long as teaching continues to evolve.”

She also strikes a note of caution: “I hope these offerings will support learners to interact with each other and not reproduce the delivery methods from traditional classrooms.”

Evolving Classes and Classrooms

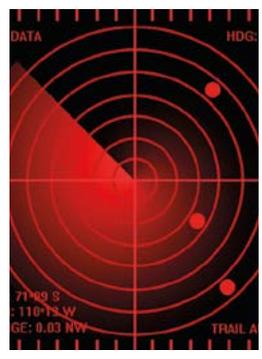
There is some debate about what parts of traditional education will be carried forward. The lecture-drill-and-test classroom model, a remnant of the Industrial Revolution, has its share of critics, who argue that it has been obsolete for years. Originally created to educate a large workforce with basic skills, the teaching model no longer delivers the skills students need to compete in a global economy, according to those who oppose it.

Susanna Cerasuolo sees things a little differently. Cerasuolo is the founder of CollegeMapper.com, a website with free services to help low-income students get into—and through—college.

“Lectures and group discussions have been central to pedagogy for more than 2,000 years. We always need to evolve with our times in terms of what we are teaching—the skills and materials that are relevant—but delivering that content need not be a case of reinventing the wheel just so we feel current,” she says.

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Encouraging students to harness technology is helping to push the traditional classroom into the 21st century, Cerasuolo says. But modern machines can also present new challenges (including cheating and surveillance).

Oregon State's Aaron feels that classes should reflect the demands of the outside world. "As technology permeates our lives, it should also permeate our classrooms," she says. "It's much more important [now] that students know computer programming."

There is, of course, some wariness around kids using screens too much. The American Academy of Pediatrics website's "Media and Children" guidelines note that "it is important for kids to spend time on outdoor play, reading, hobbies, and using their imaginations in free play." These guidelines do not oppose the use of high-quality educational media, but do note the benefits—especially at home—of children's media experiences being balanced with non-electronic formats.

At SDSU, Duesbery advocates phasing in technology as classrooms evolve. "Clearly, our teacher-education programs will continue to emphasize modern technologies, but with caution," he says. "Too often, educators adopt new technologies without the necessary infrastructure to maintain the innovation."

Moving Online

Online content delivery has its benefits. Steven Guttentag, the president and co-founder of Connections Education, a provider of virtual education based in Baltimore, Maryland, says he started the company in 2001 to leverage technology to improve learning. "My co-founders and I saw K-12 virtual schooling as holding the promise to provide personalized, data-driven education."

Connections Education has grown from 200 to 65,000 students, who are currently learning via 37 full-time virtual and blended public and private schools in

26 states. The company's growth reflects the growing interest in alternative forms of schooling, Guttentag says.

Online education comes in a variety of shapes and sizes. Beyond full-time virtual schools, there are online courses as well as blended schools where students learn online inside brick-and-mortar buildings.

"Many students are turning to online schools because the traditional classroom is not the best fit for their learning style," he says. Online content delivery can be highly individualized.

Guttentag also notes that virtual online learning is aligning more and more with the needs of the global economy. "Companies all over the world are switching to remote workforces," he says. "Students enrolled in virtual schools have an advantage, because they have experience working remotely."

Into the Future

New technologies, closer examinations of content delivery, deeper pedagogical knowledge, and heightened awareness about how spaces influence learning will continue to shape learning in the future.

As Guttentag points out, students are already taking laptops to art museums and historical sites to complete lessons. They are conducting science experiments in the real world and are using mobile devices to manage service-learning projects. Such tech-enhanced, real world-based projects are supported in the classroom by forward-thinking teachers who can facilitate students' explorations.

To be sure, the classroom of tomorrow will be fluid—a work in progress—so long as teaching continues to evolve.

"The future of education is active, social and productive," Guttentag says. "It will meet the needs of the digital natives who are demanding creative, technology-driven new ways to learn." ▲

Elizabeth M. Economou, a former staff business writer at CNBC, writes about health care, real estate and education.



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