Education Shifts the Frame

BY **ALLISON ARIEFF**

Academia is rethinking how teaching and research work. From middle school to graduate school, the new model is interdisciplinary, interactive, and hands-on.

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The new campus of the independent K–12 school, Campbell Hall, Los Angeles, with artwork by Mary Woronov.

Workplace revolution? Now it's education's turn, for many of the same reasons: to make programs more effective, spur productivity and innovation, and give its facilities greater flexibility and operating efficiency, and far more intensive use.

Shedding its cloistered traditions, the sector is turning to collaborative, project-based learning, where the instructor is as much facilitator as teacher. Hallways? They're places for serendipitous encounters. Faculty lounges and offices? They're being supplanted by "third places" for mobile work and conversation—used by faculty, staff, and students. The rise of interdisciplinary programs means that artists, designers, engineers, and scientists are often sharing the same space.

"All this means that we have to be 10 steps ahead of the curve," says Gensler's Maddy Burke-Vigeland. "The programs have changed and some disciplines are entirely new." Technology, while ubiquitous, is equally in flux as the institutions struggle to support information sharing and access to communication and tools. "Everything is on the table," adds Gensler's Josh Katz. "Our academic clients' demands and aspirations aren't being met by current models, so they're looking for new ones."

Questioning Assumptions

Consider technology: wired is not necessarily inspired. On their own, Wi-Fi, high-definition monitors, and other bells and whistles can't ensure that a given setting will even be functional, let alone attractive. Indeed, many academic institutions have reached a tech saturation point. Its inclusion is not enough, they realize, to create a dynamic learning environment.

Biola University Center for Science and Health, La Mirada, CA.

Then there's collaboration: a Gensler survey of college and university students found close to a 3-to-1 preference for solitary over group work. "I get more accomplished when I'm alone. I can focus more easily on the task at hand," wrote one respondent. This finding maps closely with Gensler's 2013 U.S. Workplace Survey. Like the office workplace, interdisciplinary settings have to balance interaction with the ability to work without distractions.

A feasibility study for Cornell University's School of Operations Research and Information Engineering (ORIE) addressed the reverse situation: isolated in their individual offices, its graduate students wanted to function more as a team. In a visioning session, "they told us to open up the floor and create social zones where they could interact with the faculty and each other," Gensler's Mark Thaler explains. "Isolation in large doses is as harmful to researchers as too much distraction."

Housing Interdisciplinary R&D

Gensler's ongoing involvement with interdisciplinary R&D in university settings gives its teams a leg up in understanding the issues and how to solve them. At New York University (NYU), for example, Gensler designed a social-science research setting. "When space is at a premium," says Burke-Vigeland,

Sharon Riley-Parks

The University of Pennsylvania's Wharton School campus in the Rincon district of San Francisco.

Gensler/Luis Perez

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Left: ULACIT-CIT Center for Innovation and Technology Transfer, Escazú, Costa Rica.; right: University of Houston Classroom and Business Building.

"the ability to adapt quickly and inexpensively to the changing needs of these grant-funded, interdisciplinary programs is where the value is. Flexibility is mandatory."

The Richard C. Blum Center for Developing Economies at UC Berkeley supports an interdisciplinary R&D program addressing the endemic problems of developing countries. Blum faculty and students share a building with the College of Engineering that's designed for a constructivist—learn-by-doing, hands-on—learning model. The heart of it is the lab as the center of inquiry. Blum's lab concept takes its cues from collaboration—real and virtual. When you see it, though, it doesn't look like a lab. "The old paradigm tailored the lab to the engineer or the scientist," says Gensler's John Duvivier. "Blum's labs are open-ended. Whatever direction the research takes, the labs can support it."

Another example of the trend is the International Design Center in Cambridge, Massachusetts, jointly developed by MIT and the Singapore University of Technology and Design. It combines elements of an engineering laboratory, design studio, and fabrication facility, providing a collaboration hub for the sponsors and their institutional partners.

At a much larger scale, Gensler is working with Renmin University in Beijing—China's "People's University"—to develop a second campus focused on science and technology. Just outside the capital's urban core, its state-of-the-art research and teaching facilities are organized as clusters in a parklike setting, connected to each other by courts, plazas, and walkways. The Duke University campus in Kunshan (DKU), opening in 2014 near Shanghai, will also encourage people from different fields to walk and mix.

K–12's Interdisciplinary Revolution

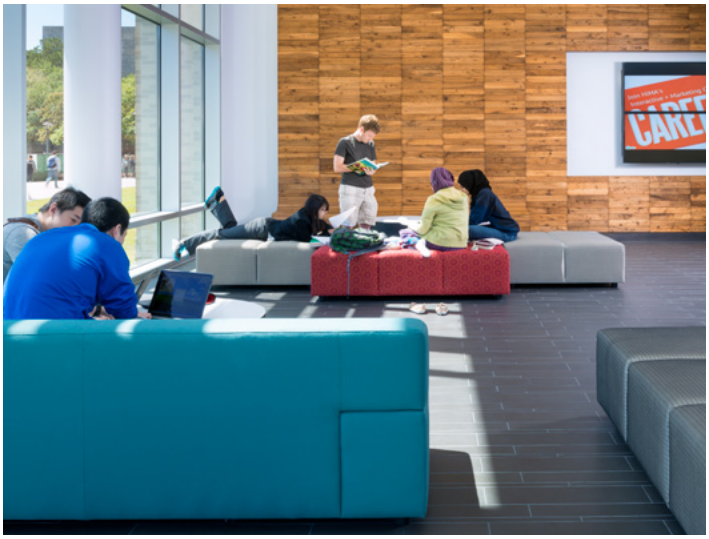
As K–12 schools refocus on team-based, interdisciplinary learning, they are moving away from standardized, teach-to-test programs that assume a one-size-fits-all approach to teaching. Instead, there is a growing awareness that students learn in a variety of ways, and the differences should be supported. The students often learn better by doing it themselves, so teachers are there to facilitate, not just to instruct. Technology is there as a tool and resource, not as a visual aid or talking head.

Gensler is working with one of the global pioneers, the PlayMaker School in Los Angeles. Behind the venture is GameDesk, the recipient of the largest-ever AT&T education grant. GameDesk views gaming as an interactive medium for learning. Launched with a sixth-grade class, the PlayMaker program builds on play and explores how its young students can use a variety of tools and games to learn in new ways. Instead of classrooms, PlayMaker School has a suite of spaces that are interconnected physically and visually. There's an ideation lab, a maker space, and an immersive gaming and learning zone where the students can try out the games they create and the software they develop. "There's no teacher at the front," says Gensler's Shawn Gehle. "The rooms are like different scenes in a video game. They inspire active learning."

Gensler/Richard Hammond and Ryan Gobuty

Campbell Hall gives its students a variety of studio spaces for the hands-on making of art and music.

Also in Los Angeles, Wiseburn High School will collocate three charter schools into a renovated 330,000-square-foot building, the former high-security offices of an aerospace firm. Given the radical change in function, "we're basically hacking an office building, using strategic interventions to reshape it to fit the schools' project-based curricula and support their combined staffs and 1,200 students," says Gensler's David Herjeczki. Like PlayMaker, Wiseburn moves away from the traditional classroom, opting for neighborhoods of teaching spaces—"pods"—that open out to a large commons area for each school and an atrium that interconnects all three but provides each with a unique address.



Gensler/Ryan Gobuty

University of Houston Classroom and Business Building.

Embracing STEM

Two buzzwords in K–12 education are STEM (science, technology, engineering, math) and STEAM (STEM plus art). Both prioritize inquiry-based learning that can equip students with the ability to think out all the angles of a problem.

STEM has real implications for how teachers interact, says Thaler. "When you put math and science teachers together, they can cross-collaborate on lesson plans. If they're teaching trigonometry or wave properties in math, they know they have to pull in the physics faculty also." Schools that embrace STEM end up retraining. "They have to stretch their conception of what's being taught."

When Gensler first looked at the Dwight-Englewood School in New Jersey, its campus planners realized that the STEM program had separate buildings for math and science. "It wasn't really

San Jose State University Athletics Complex.

Vistamar School in El Segundo, CA, integrates art and performance into its campus and programs.

The planned second campus for Beijing's Renmin University.

STEM," Thaler says. "The new campus plan called for a building that would support a truly interdisciplinary curriculum."

The faculty, administrators, and the design team toured 16 private schools, colleges, and universities on the US East Coast to try to understand the hallmarks of interdisciplinary STEM. They were inspired by facilities that "let spontaneous collisions happen," Thaler notes, but the takeaway was less a model than a point of view. Gensler documented it in a paper on STEM education. One of its major findings was that, to succeed, STEM and other interdisciplinary programs need to create propinquity—literally, "nearness"—among their participants. "We learned that a STEM building is not a linear thing, with math on one side and science on the other," Thaler explains. "What we designed is like the petals of a flower, with math and science sharing the classrooms and a great melting pot in the middle."

There are still labs. They operate in two modes: students seated around a large table or working as teams around a lab bench. The lab classrooms can shift easily between the two modes, so they're slightly larger than tradition dictates. The idea is that you can do a math lab at the table or a science lab at the bench. The labs have all the traditional equipment, but—designed for mobility and portability—they can be quickly reconfigured. "What's radical about the building is that it can support the gamut—biology, chemistry, whatever anyone wants to teach," Thaler says.

Elective Affinities

Within K–12, interdisciplinary programs are a top-down mandate. Within higher education, experiments and initiatives to break down walls are often undermined by tradition and turf wars. Lately, though, the tide has turned. It's not just because of financial pressures and scarce real estate—interdisciplinary learning has traction because everything is moving that way.

Emblematic of this sea change is the Gensler-designed Media and Games Network (MAGNET) facility in Brooklyn's MetroTech Center. MAGNET brings together faculty from four different schools at NYU and the Polytechnic Institute of NYU (NYU-Poly) to establish a new digital design program that, by combining talent and resources, creates synergies that go way beyond what the participating schools could achieve on their own.

MAGNET, which opened in September 2013, collocates teaching and research programs in such areas as games as a creative art form, game design, digital media design, computer science, and engineering. Each program retains its department affiliation and school identity. Gensler's design team worked closely with the faculty to understand the needs of its bleeding-edge curriculum. MAGNET "is designed to force interaction," says Burke-Vigeland. It does so by trading traditional classroom settings for a much greater proportion of open spaces for interaction and collaboration.

R. Luke DuBois, NYU-Poly Assistant Professor and founding member of the MAGNET faculty, is excited. "To its credit, NYU

The Duke University campus in Kunshan (DKU), China.

has doubled down on interdisciplinary education," he says. The new facility means "we're all in each other's faces." Along with collaboration space, there are places for hands-on work—making digital art, design, and music; developing software; and other creative activities.

The space, one floor of a 19th-century loft building, wasn't an obvious fit for traditional academics, but works fine for MAGNET. There are typical classrooms with four walls and furniture to match, but the spaces in between grab attention. Writable surfaces line the hallways, and the learning spaces are designed to be visible from the common areas so that learning can move freely between them.

NYU Steinhardt Professor Ricki Goldman, also a MAGNET faculty member, sees it as a template for other new teaching and research settings at NYU. "When people meet and share viewpoints, they need to find a structure that helps them understand one another, that builds commensurability among the group," she says. In her view, design for education is moving "from a closed to an open space, and from fixed to flexible." The academic setting should be "a place of balance where light and dark, activity and rest, find an internal harmony" that frees students and faculty to achieve their creative potential.

That's as true for science and technology as for art. STEM and STEAM leaven the learning process as their fast-changing

Gensler/Luiz Perez

The ULACIT-CIT Center for Innovation and Technology Transfer, Escazú, Costa Rica.

worlds play out in real time as conversations, arguments—spirited engagement that motivates students and researchers alike. "This is an amazing time for designers of educational campuses and facilities," Katz observes. "There's a real desire among academic clients at every level to break the mold and find solutions for a new era."

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Maddy Burke-Vigeland on "What Will the Campus Become?" See it now at dialogue.gensler.com/v/24