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Innovation 101

Anybody can be creative, says David Kelley. You just have to learn how.

By CAROLYN T. GEER

Innovators aren't exceptional as much as they are confident. So says David Kelley, the founder of the venerable Palo Alto, Calif., design firm IDEO.

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Mr. Kelley, whose company is responsible for designing a wide range of products and services, including the modern computer mouse, believes—and research suggests—that virtually everyone has the capacity to innovate. It's just that somewhere around the fourth grade most of us stop thinking of ourselves as creative, he says, so our ability to innovate atrophies.

Mr. Kelley has made it his life's work to help people regain their creative confidence. In his three decades as a designer and as a professor in the design program at Stanford University's engineering school, from which he graduated in 1978, Mr. Kelley has developed a set of techniques for solving all kinds of problems—techniques that he came to believe could be taught as a methodology. His approach is called "design thinking."

Six years ago, with a $35 million gift from German software magnate Hasso Plattner, co-founder of SAP AG and a onetime IDEO client, Mr. Kelley founded the Hasso Plattner Institute of Design at Stanford—dubbed the d.school—a nondegree program that draws students from all seven of Stanford's graduate schools. The program aims to help students unlock their creative potential by teaching them to become, among other things, more open to experimentation, more comfortable with ambiguity and less afraid of failure.

Teaching the Process

The best way to unleash creativity, Mr. Kelley says, is to give students an "experience," or in d.school speak, a design challenge. Under his teaching model, however, students aren't just handed a problem to solve—they must define the problem themselves through research and direct observation.

One group of students, for example, was tasked with designing an incubator for the developing world, where infant mortality is high and expensive incubators are scarce. But when the students were dispatched to Nepal to spend time with mothers and doctors, they found that most births take place in rural areas far from hospitals, so flooding hospitals with cheaper incubators would be of no use to most premature and low-birth-weight babies.

IDEO

David Kelley says most of us stop thinking of ourselves as creative somewhere around the fourth grade

Equipped with this knowledge, and, as Mr. Kelley sees it, a newfound empathy for their subjects, the students reframed the problem. "This was about keeping babies warm, not cheaper incubators," explains George Kembel, executive director and co-founder of the d.school.

The second step in the process is "ideation," where students visualize and brainstorm potential solutions with one another. The students decided that what was needed was an inexpensive baby-warming device that could function in rural communities—one that was transportable, simple to use and sanitize, and worked without electricity.

Next comes "prototyping." The students made sketches and three-dimensional models of potential incubators that they could test, modify, and test again, in an iterative process that is at the heart of design thinking. By the end of the class they had a finished prototype—a kind of sleeping bag made of special material that could be wrapped around a premature infant and kept clean and warm with nothing more than boiling water. The students went on to form a nonprofit company in the hopes of bringing their Embrace incubator to market.

Mr. Kembel says the learning experience at the d.school is centered on a few basic beliefs. One is that people learn by doing, so the more projects students tackle the better. The same goes for developing prototypes. Speed and quantity are encouraged in the hope that students will fail early and often. "If you go through lots of little tests, you learn more than if you just do one test," says Mr. Kembel.

Another guiding principle is that people learn best by collaborating with others who have radically different points of view, so classes should be made up of students and teachers from a variety of disciplines—the more the better.

Moreover, "everyone needs to have an equal voice," says Mr. Kembel, "because everyone in a sense is learning, even the faculty." So the old model of teacher at podium lecturing students has been thrown out in favor of classrooms that look more like studios, with tables and chairs scattered about.

Mr. Kembel says a lot of time at the d.school is spent helping students unlearn things they learned in elementary school. Fear of failure is rampant among students who have been drilled in standardized-test taking, he says. "What we want the graduate students to do is work with others and go out and take risks," says Mr. Kembel.

Making Waves

The d.school is reporting progress on several fronts.

It now enrolls 700 students per year, up from 30 six years ago. Applications are running at two to three times the number of available slots, Mr. Kembel says, and increasing numbers of students are choosing to attend Stanford because of the d.school. He also says employers are starting to seek out students with d.school credentials.

The d.school has produced several companies, including d.light design, which makes solar-powered lanterns for the developing world; Alphonso Labs, which markets Pulse, a news-reading application for iPhone, iPad and Android devices; and of course, Embrace, which hatched from the incubator project.

Almost weekly, educators from around the world make the pilgrimage to Palo Alto to take tours and get advice on how to set up d.school-like programs of their own. Dozens of colleges have programs in various stages of development.

More recently, the d.school has been teaching K-12 teachers how to employ design-thinking techniques in their classrooms. Last year alone, more than 500 educators attended workshops at the d.school's K-12 lab. Research is under way, but early indications are that K-12 students exposed to design thinking are more engaged and

motivated to learn, say Rich Crandall, director, and Adam Royalty, founding member and lead researcher, of the K-12 lab.

To Mr. Kelley, that is the Holy Grail of design thinking. He says it is behavioral change that enables students to gain innovation confidence, something he believes is as important as gaining literacy skills. "For me this is a mindset," he says. "It's a way of thinking that you can use in every part of your life."

Ms. Geer is a writer in Connecticut. She can be reached at reports@wsj.com.