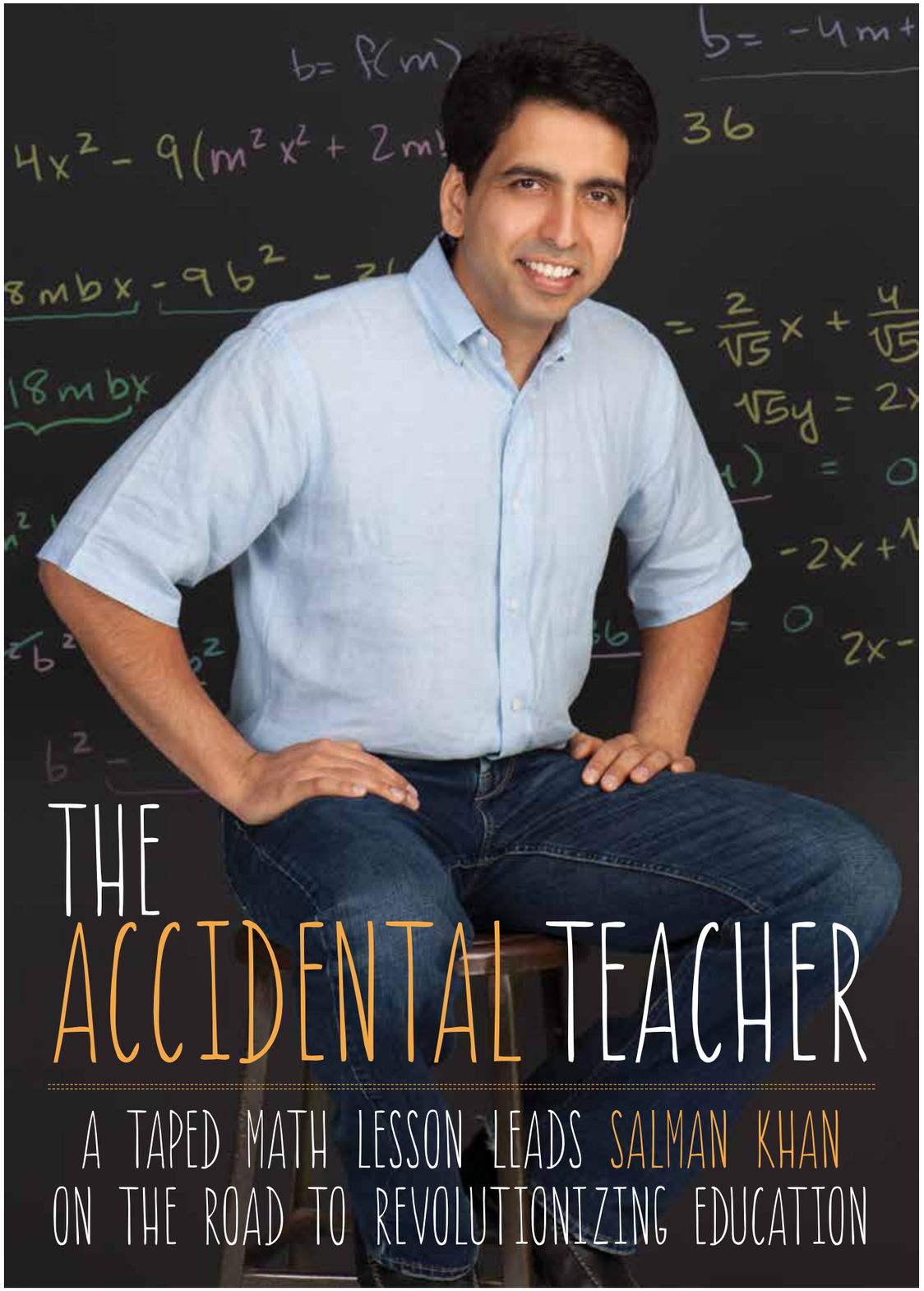


THE ACCIDENTAL TEACHER

A TAPED MATH LESSON LEADS SALMAN KHAN ON THE ROAD TO REVOLUTIONIZING EDUCATION

BRAD SWONETZ

WHEN SALMAN KHAN WAS IN HIGH SCHOOL, HE JOINED THE MATH CLUB AND FOUND HE ENJOYED HELPING YOUNGER STUDENTS WITH BASIC MATH PROBLEMS. // So years later, when his 12-year-old cousin, Nadia, was struggling with unit conversion (e.g. how many feet in a mile; how many ounces in three pints), it made sense that Khan would offer his assistance. ¶ "Obviously, Nadia was a smart girl and was very motivated, but because she couldn't understand this one concept, she had done poorly on a math placement exam," Khan explains. Nadia had been a straight-A student but couldn't understand why she was having trouble now, and this hurt her self-esteem. ¶ As a hedge fund analyst and a graduate of MIT and Harvard with degrees in mathematics, engineering and computer science, suffice it to say that Khan was pretty good at math. The problem was he was working while Nadia was in New Orleans. ¶ Khan came up with a solution. He started tutoring her on the phone after work, using the program Yahoo Messenger Doodle as an interactive notebook to graphically represent the concepts. Her scores started improving, which didn't escape the attention of the rest of the family. »

BY JULIE VALLONE

Soon, Nadia's brothers, Arman and Ali, also sought Khan's help. Naturally, he obliged, but scheduling became a problem. Eventually, Khan began to record videos, uploading them to YouTube so he could make better use of his time. His young cousins could then access the video lessons whenever they wanted.

"My cousins told me they liked me on YouTube better than in person," he recalls.

But he didn't take it personally. "I think what they liked was having an on-demand, virtual version of their cousin, one that they didn't have to schedule time with or worry that they were wasting my time. They had an infinitely patient version of me."

Nadia went on to retake her math exam and passed with flying colors. Today, she is a pre-med junior at Sarah Lawrence College.

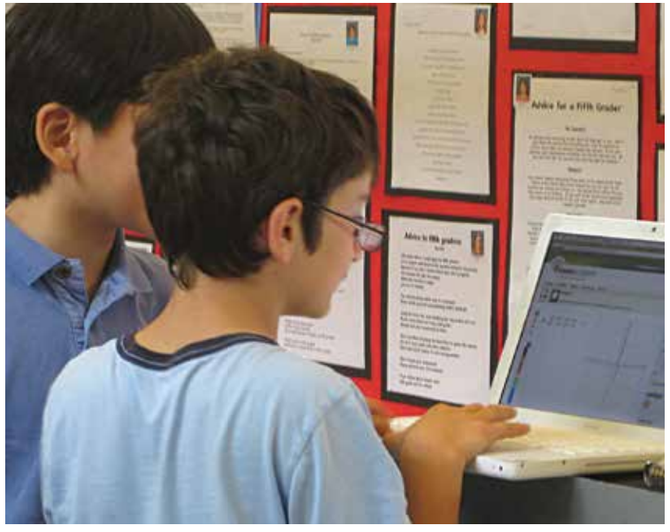
CYBER ED SURGES

Little by little, Khan noticed that more and more people—and not just family members—were watching his videos and finding value in them. It gradually became clear he was on to something big. He continued making the videos and gaining more followers, and in 2008, he founded Khan Academy as a nonprofit organization.

Initially, Khan worked on the project in his spare time, but a year later he decided to jump in with both feet, quitting his day job to build out Khan Academy. For nine months, he lived off his savings then eventually pulled in his first significant donation from philanthropist Ann Doerr. In 2010, other large grants followed from Google and the Bill and Melinda Gates Foundation.

Eight years after Khan's first tutoring session with his cousin, Khan Academy now educates young and old, with more than 3,800 educational videos, 379 practice exercises and about 6 million monthly followers.

The content of the videos currently resides on a slick KhanAcademy.org site (as well as its YouTube channel) and has expanded well beyond math to such topics as economics, finance, history, medicine and art. There are videos in 16 different languages, and academy developers are planning to expand into more subjects and languages in the future.



Fifth-graders in the Los Altos School District are among those in more than 40 district classrooms using Khan's programs. Here, two students tap into a learning video via laptop.

Khan Academy's home page invites users to browse its library of 3,800 videos covering everything from animation to organic chemistry.

COURTESY OF THE KHAN ACADEMY

The business itself has also grown. Khan Academy now employs 37 people, many of whom came from successful careers at companies like Microsoft, Google, Facebook and Disney. The staff includes Craig Silverstein, the man who created Google's tech architecture as its first employee, and John Resig, creator of the jQuery JavaScript library.

And where Khan was initially the instructor for all the videos, Khan Academy has expanded its faculty to include distinguished historians, authors, medical professionals and other innovators from top universities and institutions.

Khan points to two main reasons these accomplished and talented people choose to work for Khan Academy rather than making potentially higher salaries with stock options at top Silicon Valley companies.

"First, they feel like if we don't screw up, we could be creating a meaningful tool for humanity. That's our goal," he explains. "We can give this tool to any child or any adult anywhere, and that could potentially uplift our civilization in many ways. It's an equalizer. It's egalitarian. It's democratic.

"Second, it's intellectually interesting. We're looking at problems like how do you define learning, how do you measure a student's knowledge base, how do you present something so it's more effective. We know that we could go on theorizing about this stuff, but this is where the rubber meets the road. We can test it on millions of kids to get data to answer these questions."

As for the money, he says while Khan Academy doesn't give its employees stock options, it does pay them enough to live comfortably in Silicon Valley.

"No one is going to become a gazillionnaire working at Khan Academy," he says, "but hopefully, no one will have trouble paying their mortgage or sending their kids to college."

THE POWER OF POSITIVE REINFORCEMENT

Khan began to form his ideas about education while growing up in the New Orleans metropolitan area. He was born in 1976, the son of immigrant parents from India and Bangladesh. His father was a doctor and worked at New Orleans' Charity Hospital, but Khan never really knew him. His parents separated when Khan was 2. His father moved to Philadelphia and later passed away.

IN ADDITION TO HIS NEW ROLE AS EDUCATOR, NONPROFIT FOUNDER AND AUTHOR, KHAN HAS ALSO BECOME SOMEWHAT OF A MEDIA STAR.

Khan Academy founder Sal Khan addresses a seventh-grade pre-algebra class at Egan Junior High School in Los Gatos, as teacher Courtney Cadwell looks on. Khan says technology can be used to help students master a concept before they move on to others at a higher level.

COURTESY OF THE KHAN ACADEMY

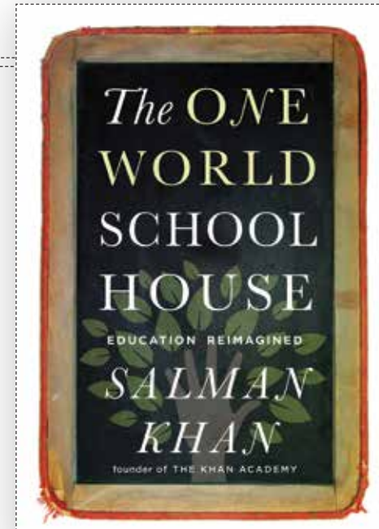
Khan and his older sister, Farah, were raised by his mother, Masooda Khan, who worked a range of odd jobs, from emptying the coins from vending machines to selling school uniforms.

"She had what was considered a good education for a woman from the continent at that time, but not a professional education," he explains. "She herself didn't have a great understanding of what you needed to know, but she did have high expectations—sometimes unrealistic expectations, I thought then—but they turned out to be good ones."

Sal Khan went to public schools, populated by students with a wide range of backgrounds and learning abilities. His assessment of the situation: "A few classmates were fresh out of jail, and others were bound for top universities."

Growing up, Khan remembers that he always liked learning but wasn't always too thrilled about school. "I would just get excited about a new idea," he recalls. "I wanted to understand it, to get to the bottom of it, distill it down to its conceptual nuggets, regardless of whether I was going to get tested on it or not. If you have that approach in your tool belt at an early age, it seems intuitive when you try to layer more information on top of that. So I think I was just lucky that I thought that way."

It also helped that teachers expected Khan to be smart even before he walked into the classroom, because his sister had done well before him. He later came to understand that the assumption worked in his favor, where the opposite assumption, that a student is not smart, could prove a barrier to others.



A VISION FOR EDUCATING THE WORLD

Last October, Salman Khan explored the state of modern education and fully outlined his vision for the future of education in his new book, "The One World Schoolhouse: Education Reimagined" (Twelve; Hatchet Book Group; 2012).

The book traces the roots of current, traditional education to a top-down model invented in 18th century Prussia. This model groups students by age and tends to advance them before they've mastered a subject. Khan believes the system results in students with "Swiss Cheese gaps" in their understanding of different subjects.

He proposes a return to the pre-Prussian "mastery learning" model, where students are expected to fully comprehend a subject before advancing to the next level. With technology, he says, this can now—for the first time in history—happen on a mass scale. He also describes how modern technological tools, like Khan Academy, can serve as a catalyst.

"The book asks, now that we have this tool, what are the implications? How can we rethink education, not in just a pie in the sky way, but in a way that's very tangible and practical, and that has an end point we can actually get to?" he explains.

He also writes of his own educational experience, what worked and what didn't, and describes his personal philosophy of teaching.

"I wanted to teach the way I wished that I myself had been taught. Which is to say, I hoped to convey the sheer joy of learning, the thrill of understanding things about the universe..." he writes.

"In a word, I wanted to restore the excitement—the active participation in learning, and the natural high that went with it—that conventional curricula sometimes seemed to bludgeon into submission."

Khan also conveys his views on liberating teachers from lecturing and state-mandated calendars, and opening up class time for truly human interaction, an idea that has become his life's passion.

He advocates for an approach that empowers teachers and students with the tools, technology and mindset to level the playing field, and to give everyone a world-class education.

"Formal education must change," he writes. "It needs to be brought into closer alignment with the world as it actually is; into closer harmony with the way human beings actually learn and thrive."

"There are studies showing that if you tell a teacher, 'We just administered an IQ test to a bunch of kids, and these are the kids at genius level; these are the kids who are below average,' … the teacher tends to reinforce that, approaching different kids in different ways."

Khan believes that reinforcement of those assumptions, whether positive or negative, has a great deal to do with how well or poorly students perform during their years of education.

"If you get positive reinforcement in something, you tend to like that more, and when you later hit some road bumps, you're more likely to have the confidence to power through them," he explains. "If people have told you you're not good at something, you're more likely to give up; unfortunately, I think that getting that confidence in the beginning is often kind of random, due to some circumstance."

Examples of those circumstances could include having a smart sibling in the system or just hearing in a casual conversation that a child is smart or not.

In addition to the influence of his mother and teachers, Khan also learned a lot about education and different life paths from social acquaintances in the area.

"We had a lot of family friends in the South Asian community of greater New Orleans," he said. "While we socialized with people from all different walks of life, some of the adults were doctors, engineers and researchers, and their kids were very motivated. Culturally, that rubbed off on me. I felt, 'I'm like these kids. I should have the same kinds of standards that they do.' "

His own motivation to learn, combined with these influences, helped him earn good enough grades to graduate as a valedictorian in 1994. He was accepted to MIT and graduated in 1998 with two bachelor's degrees and a master's.

FILLING THE GAPS

Khan worked in Silicon Valley, then earned an MBA from Harvard Business School, where he met his wife, Umaima Marivi, now a physician. They now live in Mountain View with their two toddlers.

One of the main points Khan came to understand through his education, and through tutoring others, is that people learn at different paces and in different ways. He believes that in the current educational model, some students inevitably fall behind while others who progress are left with "Swiss cheese gaps" in their understanding of a topic. Still, many traditional educational systems will continue to push kids on to the next level, even if they haven't mastered the earlier ones.

"How can you become an Olympic runner if you don't know how to walk yet? Our current school system doesn't follow that intuitive approach. It forces everyone to learn at the same pace," he asserts. "If I get a "D" or an "F" in basic exponents, it's crazy to think I'll understand the next level—negative exponents— but the class moves on, and these gaps accumulate."

The gaps are usually identified in exams, he explains, but they're often not addressed. "The exams often work to judge you rather than to diagnose these problems or fix them," he says. "Fast forward a couple of years; you have these gaps and people have told you you're not smart, so you give up."

In short, Khan believes education needs a different approach, one that helps ensure students have mastered the basic concepts, rather than focusing on getting through a particular curriculum in a set period of time.

FANS AND CRITICS

In addition to individual learners who regularly view Khan Academy programs, Khan's organization is also partnering with some 16 public, charter and independent schools to build a blueprint for

THERE ARE ALSO VIDEOS IN 16 DIFFERENT LANGUAGES, AND ACADEMY DEVELOPERS ARE PLANNING TO EXPAND INTO MORE SUBJECTS AND LANGUAGES IN THE FUTURE.

Brian Bernstein, a Peace Corps volunteer, works with a young student in Mongolia, one of many who are participating in Khan Academy's video-based learning program. More than 226 million academy lessons have been delivered worldwide.

NEIL DSOUZA

COURTESY OF THE KHAN ACADEMY

> 'WE CAN GIVE THIS TOOL TO ANY CHILD OR ANY ADULT ANYWHERE, AND THAT COULD POTENTIALLY UPLIFT OUR CIVILIZATION IN MANY WAYS.'

how the teachers can best implement the program in their learning environments. Those sites include schools in the Los Altos School District (which is using Khan Academy in more than 40 classrooms), Summit Preparatory Charter High School campuses in San Jose (its Redwood City school was featured in the film "Waiting for Superman") and Eastside Preparatory in East Palo Alto (an independent school that gives full scholarships to kids in need).

Those schools have been using the material in a variety of ways, such as assigning videos at night and devoting classroom time to small group instruction, one-on-one sessions, peer-to-peer tutoring and project-based learning. Khan Academy helps teachers evaluate who needs assistance in what area by putting performance data online in the form of a "dashboard" chart.

Each month, Khan Academy serves some 6 million students around the globe, including these youngsters at an orphanage in Indonesia.

NEIL DSOUZA

But while plenty of educators, philanthropists, tech visionaries and others applaud the work of Khan Academy, many teachers aren't too excited about the program. They see it as an attempt to replace teachers with technology. A survey of teacher blogs on the Web reveals a range of complaints, from the idea that video lessons devalue the interactive role and skills of the teacher to questions about whether kids can truly learn basic concepts and improve this way.

Suny Park, who uses Khan Academy at East Palo Alto Prep, understands their reservations. She says learning how to integrate the Khan Academy tool in her classroom was not an easy transition.

"It can be very daunting at first because it's a mindset shift," she explains. "If I've taught math for 10 years this way, I know all my lessons without even opening the book. And then this program comes over and says the kids can learn this by watching a video. So everything these teachers complain about I completely understand because I felt just like that."

But she says she eventually figured out how to use the technology to be a smarter teacher, and now, she feels it's been worth the hard work to blend it into her curriculum.

"If you can find a way to use it where it doesn't replace you, but rather just enhances your teaching, it can free you up so you can be everywhere at once," Khan explains. "You don't have to be standing at the board saying the same old thing, with some kids listening and others not. This way everyone is engaged. You're still in charge, but in a different way."

KHAN, CLASSES IN SPOTLIGHT

Park says her school is partnering with the Stanford Research Institute, which is attempting to measure students' math gains as a result of using Khan's program. However, there are no official results yet, as the data are still being collected. At the same time, Park says she is seeing significant improvement in her classroom, with more students doing well.

"The whole bell curve has moved to the right. I'm seeing fewer and fewer kids who are not passing. It is very successful in terms of every kid being met where they need to be met and every kid working on what they need to be working on," she says. "They don't feel stressed about being behind or bored waiting for the rest of the class to catch up."

Park says that as a result of using Khan, she thinks the kids in her class are happier. *(continued on pg 104)*

THE ACCIDENTAL TEACHER

(continued from pg 80)

"Not that they weren't happy before, but this is different," she says. "It's like they're internally motivated, and they're driving their own car. It's a completely different approach, but it completely works."

Khan is also aware of criticisms directed at Khan Academy—particularly the notion that it devalues teachers and threatens to replace them. But, he thinks that's based on a misconception.

"If I had to think of what we'd be a threat to, it would be textbooks," he says. "The role of being a coach and a mentor, and customizing the material for different students—that's of much higher value. It's much harder to do that than going through the same lecture, at a set pace, day in and day out."

> HER SCORES STARTED IMPROVING, WHICH DIDN'T ESCAPE THE ATTENTION OF THE REST OF THE FAMILY.

Khan addresses many of these points, and other questions about the potential impact of Khan Academy on education, in his recently released book, "The One World Schoolhouse."

In addition to his new roles as educator, nonprofit founder and author, Sal has also become somewhat of a media star. He was recently profiled on "60 Minutes." He has also been listed in Fortune's annual 40 under 40, in Fast Company's list of the 100 Most Creative People in Business and in Time as one of the 100 most influential people in the world, among other coverage.

As for Khan's other ambitions? Well, he wouldn't mind meeting the other Salman Khan, the Bollywood superstar who shares his name.

"In full disclosure, I've actually seen and enjoyed many of his movies," he says, "and I wouldn't be surprised if some of the Khan Academy traffic was due to searches for the other guy." ■