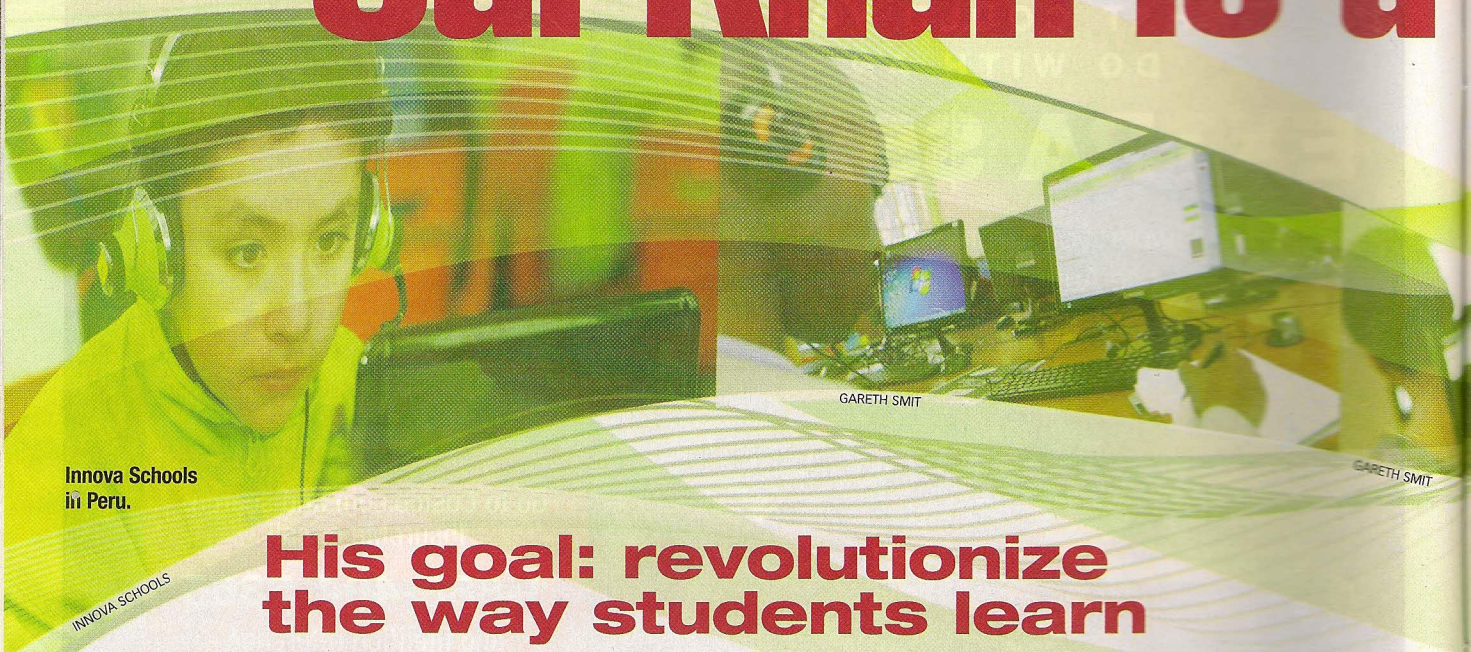


cover
story

Sal Khan is a



Innova Schools
in Peru.

INNOVA SCHOOLS

GARETH SMIT

GARETH SMIT

His goal: revolutionize the way students learn

By Irene Middleman Thomas

"YOU'RE ASKING ME?" Sal Khan exclaimed incredulously when invited by his alma mater, the Massachusetts Institute of Technology (MIT), to give last year's commencement address. After all, just four years prior, the then-31-year-old was a hedge fund analyst—successful, yes, but not a world changer. Since then, however, as the founder of Khan Academy, a nonprofit school dedicated to providing "a free world-class education for anyone, anywhere," Khan has become a world changer, and was recently named as one of *Time* magazine's 100 Most Influential People in the World. MIT chose Khan to inspire its 2012 graduates to change *their* world.

Who better to motivate graduating college students than Khan? Raised by an immigrant single mother, he founded his global school from what began, in 2004, as a simple favor for his 9-year-old cousin, Nadia, who needed help passing a crucial math placement test. From his home in the Northeast at the time, Khan developed and posted YouTube videos that used his voice and a virtual blackboard, which he drew upon to tutor Nadia remotely in her New Orleans suburban home. To his surprise, he began to receive grateful feedback from virtual strangers who had viewed the videos. By 2008, Khan had enough interest in

his growing series of instructional videos that he incorporated Khan Academy as a 501(c)(3) nonprofit. A year later, he quit his finance job to devote himself to the tutorials.

Khan's initial startup funding of \$3.5 million came from Google and the Bill and Melinda Gates Foundation. Today the school is primarily supported by philanthropic donations.

In just five years, Khan Academy has become widely recognized, publicized by *60 Minutes*, Charlie Rose, National Public Radio, CNN and, famously, Bill Gates, whose own kids use Khan Academy. With 6 million unique users clicking on Khan Academy videos (mostly made by Sal) each month, it's a worldwide phenomenon—and yet, Khan, typically dressed in a V-neck sweater and jeans, is humble about his achievements. "Even now, I kind of imagine that I'm making the videos for a larger collection of cousins," he says.

A background in learning

"I always enjoyed learning new things," he recalls about his own background as a middle-class public school student in New Orleans, and later on as a college student. "I liked talking to my peers, having direct conversations with teachers, but I was frustrated when being lectured to.

College at MIT is about as good as it gets, but still, I felt that, much of the time, I got more out of what I did out of class than in.

"In elementary school, I was lucky enough to be in programs that had enrichment activities and small groups. Also, my mom is a strong-willed woman and has always questioned norms. My older sister was a very advanced student, and interacting with her rubbed off on me, and made teachers push me more," he says.

As Khan says, not everyone has the motivation and support that he did. The typical educational system presents the subject matter for a certain period of time and then moves on, whether the material is truly understood or not, a one-size-fits-all approach.

"The old classroom model simply doesn't fit our changing needs," writes Khan in his 2012 book, *The One World Schoolhouse: Education Reimagined*, a provocative and passionate look at his philosophies, purpose and plans for the future of the educational system.

He notes that, in the United States, widespread evidence shows that American students score well below their European and Asian peers in reading and math. The U.S.

CONTINUED ON PAGE 32



Tablet or smartphone?
Scan or click here for a video about Khan Academy. Scan the photo of Sal Khan on page 31 for an example of a history lesson.

SWIRL ART. © H18#229/KON MATHIESEN / AGE FOTOSTOCK

can-do guy



Seventh- to 12th-grade students at Marlborough High School in Los Angeles.

KHAN ACADEMY

The Costco Connection

Sal Khan's book, *The One World Schoolhouse: Education Reimagined*, is available at most Costco locations.

RONN SEIDENGLANZ

CAN-DO GUY
CONTINUED FROM PAGE 30

ranks 24th out of 34 nations in mathematics fluency, according to the 2009 Program for International Student Assessment. Alarming, almost one-quarter of young Americans do not finish high school.

"It isn't clear that this [our educational system] was the best model 100 years ago; it certainly isn't anymore," writes Khan in his book.

4,120 videos and counting

Despite his MBA from Harvard Business School, where he was the president of his class, and his three degrees from MIT—including a B.S. and M.S. in electrical engineering and computer science and a B.S. in mathematics—Khan is no geeky nerd. Rather, he comes across as a sort of folksy mix of Jerry Seinfeld and Ray Romano. His casual demeanor, quips and enthusiastic presentation engage and entice the 6 million unique Khan Academy users per month who view

state standards, especially the Common Core. For other subjects, the focus is aligned with advanced-placement tests and major college courses.

Khan uses a range of sources to research the information for his videos (e.g., scholarly articles, textbooks, primary sources and experts in the field). On top of that, the millions of people using Khan Academy—many of whom are experts in those subjects and use the videos in their classrooms—have provided feedback to help ensure the accuracy of the content.

Many of the Khan Academy videos have been translated into other languages. Plans are to internationalize and translate as many videos as possible in the near future.

All of the site's resources are available to anyone. It doesn't matter if you are a student, teacher, home-schooler, principal or an adult returning to the classroom after 20 years. Khan Academy's materials and resources



KHAN ACADEMY

Five Khan Academy team members at the school's headquarters in Mountain View, California. Left to right: founder Sal Khan, Jason Rosoff (lead designer), Ben Kamens (lead developer), Bilal Musharraf (dean of translations) and Shantanu Sinha (president and chief operating officer).

Education for all

KHAN ACADEMY IS the biggest, but not the only, source of massive open online courses (MOOCs). Sebastian Thrun, an unpaid research professor at Stanford and a fellow at Google, is the founder of Udacity.com, which also offers MOOCs. In 2011, Thrun, a Costco member, and Stanford colleague Peter Norvig expanded the course they were teaching, "Introduction to Artificial Intelligence," to the Internet, partly motivated by what they saw Khan Academy doing.

Funded by Charles River Ventures, Udacity was launched in 2012 by Thrun and some former Stanford colleagues; it

offers courses at no charge, taught by academics but also by top-level businesspeople such as Reddit founder Steve Huffman and serial entrepreneur Steve Blank. After finishing courses, students can pay to take an exam administered by the educational testing company Pearson VUE to have a credential to present to future employers. Thrun calls Udacity.com a "21st-century university."

Thrun's former Stanford colleagues Andrew Ng and Costco member Daphne Koller are the founders of Coursera.org, which works with 62 national and international universities to make MOOCs available, and many universities offer their own courses online in ever-increasing numbers as well.—*IMT*

the 4,120-plus videos posted on the site. They come from more than 216 countries, in more than 30,000 classrooms, as well as countless more linking in from home or elsewhere.

Math is the area of content focus, but the videos also include art history, science, world history and computer code. Video topics include such disparate titles as *Linear Algebra*, *Cosmology and Astronomy*, *The Age of Enlightenment in Art History* and *Comparing the Eastern and Western Fronts in WWI*.

The videos are approximately 10 minutes long. The structure of the videos differs depending on the content. For math content, Khan Academy is focused on covering all of the major

are available completely free of charge. Students can make use of the extensive video library, interactive challenges and assessments from any computer with access to the Web.

Personalized and adaptive

The Khan software development team is increasingly focused on building state-of-the-art software tools to create personalized adaptive learning experiences. Many Khan students spend most of their time practicing concepts on the online interactive exercises.

"I didn't like math time before," says Fernando Hernandez, 9, a fourth-grader in Alison Elizondo's 33-child classroom at William Burnett

Elementary School, a Title I school with a highly diverse population in Milpitas, California. "But now, with Khan Academy, math is like a workplace. I don't have to sit at a desk. I can lie down on the floor, I can talk, I can work with friends." In fact, Elizondo says, "Fernando asks me when we will 'get' to do Khan each day. He has gained great confidence in himself and his math ability."

Elizondo explains that Khan Academy, which her principal introduced her to, has been an "incredible journey" for her professionally. She began to use it regularly as part of her class day this year, when her school got the computers it needed for laptop use in class.

Elizondo is especially enthused about the real-time data Khan provides teachers. "I think all teachers would love this," she says. "The kids work on their own, and I get data in my 'teacher tool kit.' I see what they get wrong, how long it takes for them to solve problems, who is struggling and who isn't. I can then determine how to help each student according to their exact needs."

Elizondo notes that one 9-year-old boy has advanced to writing computer code for his own Sudoku games, thanks to Khan instruction. "We call our approach the 'Four C's': collaborating, communicating, critical thinking and creating," she says.

The classroom, reimagined

"Flipping the classroom" is a basic Khan philosophy. The philosophy essentially inverts traditional teaching methods, delivering instruction online outside the classroom and moving the homework into the classroom. A primary tenet of Khan Academy is that students work at their own pace through technology while the concept



member profile

engagement happens with the teacher in the classroom.

"There are some people who believe that technology in education diminishes the importance of teachers," says Shantanu Sinha, Khan's life-long friend, colleague and, since 2009, chief operating officer of Khan Academy. "In our experience, nothing could be further from the truth. The fantastic teachers we have seen implement Khan Academy are bright, innovative, creative, and they take their classrooms to new heights. Their role is not diminished. Rather, their responsibility is increased."

"We're trying to move the passivity out of the classroom," explained Khan in his 2011 *60 Minutes* interview. "We believe teachers are coaches and mentors, not just lecturers." Khan also responded to detractors who criticize Khan Academy. "We're not a 'silver bullet,'" he agrees. "But we can certainly help move the dial. How? By personalizing learning for students to move at their own pace, focusing on mastery to fill learning gaps in student's foundational understanding, and by creating interactive and exploratory learning environments to drive hands-on learning and applications."

Karl Wendt, who joined Khan Academy as an instructor after completing a doctoral internship there, has made about 80 videos and teaches Khan's Discovery Labs at in-person summer camps in programs such as thermodynamics, projectile motion and robot building. "Khan is all about empowering people to learn at their

own pace, in multiple different ways," he says. "It is about a whole lot more than flipping the classroom."

Complementary education

Teacher Elizondo now has her fourth-graders watching Khan videos in the evenings at home (or before and after school in the computer lab for those without home computers), and then has Khan time in school three times a week. "I want my students to take risks and 'walk the talk,'" she says. "I don't feel very tech savvy, but Khan Academy is so user-friendly that it has made us successful. Anyone could learn to use it by themselves."

Maddy Markham, 14, entering high school in Aurora, Colorado, used Khan Academy videos in her eighth-grade math class at the Challenge School, a public school for advanced and motivated students. She says she is a visual learner, and found Khan videos quite beneficial, commenting that "I don't love math, but once I get the hang of it, I am good at it. Khan has helped to break it down step by step."

She says that if her high school geometry teacher does not recommend Khan Academy, she will most likely use it on her own. "This was probably the best year in math that I've

Member name: Khan Academy

Owner: Sal Khan


Number of employees: 42 full-time

Address: Mountain View, California

Website: www.khanacademy.org

Comments about Costco: "I have a growing family and I work at a nonprofit, so I don't have money coming out of my ears. I appreciate high-quality items, so Costco fits my needs quite well. I also love free samples." —Sal Khan

ever had," she says, heaping praise on her eighth-grade teacher, Elyse Whitt.

Elizondo is so excited about Khan Academy that she contributes to a teacher blog on its site, urging others to think beyond the status quo. She writes, "As educators we must prepare our students for college and career. I believe our future innovators will need to collaborate with their peers, communicate effectively, think critically, and demonstrate creativity. The way teachers can assist students with this endeavor is to explain the relevance of their studies to future use, expect students to achieve proficiency through rigorous studies and to work together to achieve a common goal. Khan Academy lends itself as a diverse tool for achieving my goal of preparing students for their exciting future." 

A professional writer as well as a K-12 substitute teacher, Irene Middleman Thomas is excited about Khan Academy and is finally grasping the basic elements in physics, a subject she avoided like the plague in high school.

SWIRL ART: © HR#229; KON MATHISEN / AGE FOTOSTOCK



Sixth-grade students at Eastside Prep in East Palo Alto, California.



Tablet or smartphone?

Scan or click here for an example of a brief Khan Academy math lesson. (See page 5 for scanning details.)