

Khan, Salman. *The One World Schoolhouse: Education Reimagined*. London: Hodder & Stoughton, 2012. Print.

Salman Khan, innovator of the Khan Academy education site online (www.khanacademy.com) has written a book that raises some great questions for educators. Perhaps the best thing is that he has generated these questions as an "outsider" to education, not within the professional ranks. I believe that his answers are spot on in places and in others, misguided. I think some of his historical investigation into the sources of our current problems are too shallow, but he still paints a clear picture of where we are.

I initially entered this book with low expectations. I was pleasantly surprised by how much I agreed with the author. I am not a one given to technology, though I do use it when I have to. I expected someone who was the founder of such a huge online product as The Khan Academy to press the technology a lot more than he does. Thus I am taking the time to give the book a decent review, because he raises some great questions.

Introduction: A Free, World-Class Education for Anyone, Anywhere

"Even more troubling, many people seem somehow to overlook the basic fact of what the crisis is about. It's not about graduation rates and test scores. It's about what those things mean to the outcome of human lives. It's about potential realized or squandered, dignity enhanced or denied." (p. 3)

"If the name was rather grand, the resources available to this new entity were almost comically meager. The Academy owned a PC, \$20 worth of screen capture software, and an \$80 pen tablet; graphs and equations were drawn --- often shakily --- with the help of a free program called Microsoft Paint. Beyond the videos, I had hacked together some quizzing software running on my \$50-per-month web host. The faculty, engineering team, support staff, and administration consisted of exactly one person: me. The budget consisted of my savings. I spent most of my days in a \$6 T-shirt and sweatpants, talking to a computer monitor and daring to dream big." (p. 6)

"I wanted to teach the way I wished that I myself had been taught." (p. 7)

"Formal education must change. 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." (p. 11)

"There's an old saying that *life is school*. If that's true, then it's also true that as our world grows smaller and the people in it more inextricably connected, the world itself comes to resemble one vast, inclusive schoolhouse. There are younger people and older people, people farther or less far along in their education on a given subject. At every moment, we are both students and teachers; we learn by studying, but we also learn by helping others, by sharing and explaining what we know." (p. 12)

Part 1 Learning to Teach

Teaching Nadia

"Quicker isn't necessarily smarter and slower definitely isn't dumber. Further, catching on quickly isn't the same as understanding thoroughly. So the pace of learning is a question of style, not relative intelligence. The tortoise may very well end up with more knowledge --- more useful, *lasting* knowledge --- than the hare." (p. 20)

Focusing on the Content

"But for all that, the face time can and should be a *separate thing* from first exposure to concepts. And these two aspects of the educational experience, far from being in conflict, should complement one another. The computer-based lessons free up valuable class time that would otherwise be spent on broadcast lectures - a model in which the students generally sit blankly with no effective way for teachers to appraise who's "getting it" and who is not. By contrast, if the students have done the lessons before the interaction, then there's actually something to talk about. There are opportunities for interchange. This last point needs to be emphasized, because some people fear that computer-based instruction is all about replacing teachers or lowering the level of skill needed to be a teacher. The exact opposite is true." (p. 35)

Mastery Learning

"At its most fundamental, mastery learning simply suggests that students should adequately comprehend a given concept before being expected to understand a more advanced one." (p. 37)

"...personal responsibility is not only undervalued but actually discouraged by the standard classroom model, with its enforced passivity and rigid boundaries of curriculum and time. Denied the opportunity to make even the most basic decisions about how and what they will learn, students stop short of full commitment." (p. 43)

How Education Happens

"...[connections] can't [happen] given the balkanizing habits of our current system. Even within the already sawed-off classes, content is chunked into stand-alone episodes, and the connections are severed. In algebra, for example, students are taught to memorize the formula for the vertex of a parabola. Then they separately memorize the quadratic formula. In yet another lesson, they probably learn to "complete the square." The reality, however, is that all those formulas are expressions of essentially the same mathematical logic, so why aren't they taught together as the multiple facets of the same concept?

"I'm not just nitpicking here. I believe that the breaking up of concepts like these has profound and even crucial consequences for how deeply students learn and how well they remember. It is *connections* among concepts - or the lack of connections - that separate the students who memorize a formula for an exam only to forget it the next month and the students who internalize the concepts and are able to apply them when they need them a decade later." (p. 49-50)

"In gradually developing my own approach to teaching, one of my central objectives was to reverse this balkanizing tendency. In my view, no subject is ever finished. No concept is sealed off from other concepts. Knowledge is continuous; ideas flow." (p. 51)

"An example of this is something we at the Khan Academy call the knowledge map. By 2006, when I was tutoring my cousins and a handful of family friends, I had made about sixty question generators for various concepts, and I was beginning to have a hard time keeping track of my tutee's individual progress through the series. I had already been drawing graph-like structures on paper to illustrate which concepts were pre-requisites for others, so I decided to write some software that would thread these together and automatically assign new exercises. It looked kind of cool once I had done my first pass, and I thought that my cousins might enjoy seeing the "map" of all the concepts in the system. It was a big hit with them and became a core piece of the Khan Academy software platform. In stressing the connections among subjects and giving learners a visual picture of where they've been and where they're going, we hope to encourage students to follow their own paths - to move actively up, down, and sideways, wherever their imaginations lead." (pp. 51-52)

Filling in the Gaps

Two things are needed to help students reclaim ownership of their own education:

1. "First, students should be encouraged, at every stage of the learning process, to adopt an *active* stance toward their education. They shouldn't just take things in; they should figure things out.
2. "Active learning, *owned* learning, also begins with giving each student the freedom to determine where and when the learning will occur. This includes student control over tempo (or pace).

He then mentions a third thing: easy and ongoing access to the lessons that have come before.

Part 2 The Broken Model

Questioning Customs

"Entire industries and some of our very largest professions depend on the persistence of our current [educational] system. Other social institutions - like giant publishers and test-prep companies - are synched to its workings...Thus the powerful tend to have a bias toward the status quo." (p. 63)

He argues at some length against classical education on the basis of two ills: it is elitist and it looks down upon anything practical. I can argue both of these out the door, so did not really catch me. (pp. 67f.)

The Prussian Model

Most of this chapter is better dealt with in Diane Ravitch's book, *Left Back*, and he probably makes too much hay out of it being Prussian. U.S. did fit the model to our needs. But he is right that the general model is defunct, if it ever was functional.

Quotes John Taylor Gatto: "School trains children to be employees and consumers." (p. 81)

Swiss Cheese Learning

"...our schools measure out their efforts in increments of time rather than in target levels of mastery." (p. 83)

He calls learning that allows for a student to pass on without mastering basics, "swiss cheese learning" as it is full of holes and sooner or later the student will "hit the wall" and be totally lost because of the cumulative effect of passing with 75's and 80's instead of 95's and 100's.

"Another consequence of Swiss cheese learning is the very common but perplexing inability of many people - even very bright people with top-tier educations - to connect what they have studied in the classroom to questions they encounter in the outside world." (p. 87)

Tests and Testing

His main point here is that we are test happy, and especially with cumulative "at the end" tests.

"Conventional schools tend to place great emphasis on test results as a measure of a student's innate ability or potential...The Prussian version of "tracking" students assured a plentiful labor supply. Moreover, since the testing process, for all its flaws and limitations, could claim to be "scientific" and objective, there was at least the illusion of fairness in the system." (pp. 93-94)

"Tests also change. If the changes could be solely ascribed to evolving insights into educational methods, that would be great. ... Economics and politics factor in, as does a strange Alice-in-Wonderland kind of

cockeyed logic; tests change, in part, so that the results will come closer to what the testers think they should be." (p. 94)

Tracking Creativity

Main point here is that testing cannot measure the intangibles, such as creativity. He sees the confusion of "arts and sciences" without saying it as such. I view the confusion of arts and sciences to be one of the most difficult aspects of modern education.

He spends sometime on intuition which is flavored along the lines of James Taylor's *Poetic Knowledge*, though Taylor does a much longer and better job of dealing with it. Without poetic knowledge, creativity is hamstrung.

Homework

Believes as I do that much homework is pointless because it is purposeless.

Nice distinction between rigor that comes from quantity vs from quality.

Blames a lot on Sputnik

"The answer, I think, lies not in the perceived virtues of homework but rather in the clear deficiencies of what happens in the classroom. Homework *becomes* necessary because not enough learning happens during the school day. Why is there a shortage of learning during the hours specifically designed for it? Because the broadcast, one-pace-fits-all lecture - the technique that is at the very heart of our standard classroom model - turns out to be a highly inefficient way to teach and learn." (p. 114)

Flipping the Classroom

"In the model that [has] ...lecture at home, "homework" in class...students had the benefit of having the teacher and their peers around when they were problem-solving." (p. 116)

The Economics of Schooling

"At roughly \$10,000 per student per year, the average American school is spending \$250,000-\$300,000 per classroom of twenty-five to thirty students. Where is that money going? Arguably, most of it *should* be going to teachers; but that isn't how it works. Teachers' salaries are a relatively small part of the expenditure. If we generously put a teacher's salary and benefits at \$100,000 per year - teachers in most of the country make far less - and the cost of maintaining a 1,000-square-foot classroom at \$30,000 per year (a figure comparable to leasing high-end office space), we still have \$120,000-\$170,000 *for each classroom* to be spent on "other stuff." This other stuff includes things like well-paid administrators, security, guards, and well-manicured football fields - none of which have a direct role in students' learning." (p. 120)

"What will make this goal [excellent education available to everyone] attainable is the enlightened use of technology. Let me stress ENLIGHTENED use. Clearly, I believe that technology-enhanced teaching and learning is our best chance for an affordable and equitable educational future. But the key question is how the technology is used. It's not enough to put a bunch of computers and smartboards into classrooms. The idea is to integrate the technology into how we teach and learn; without meaningful and imaginative integration, technology in the classroom could turn out to be just one more very expensive gimmick." (p. 122)

Part 3 Into the Real World

Theory versus Practice

Of all his chapters, this one bugged the most perhaps. His basic problem is with educational research. He decries that it takes on average about 30 years to prove a new theory sound or unsound. He wants to opt for pragmatic means. Find what works and use it. Stop making sweeping generalizations from a theoretical standpoint. There is some truth to this, but the pendulum need not swing over to pragmatism. In the end, right theory works. The assumptions and presuppositions are key.

The Khan Academy Software

Interesting discussion of how he developed the idea of "ten in a row." In his videos, the student must successfully complete ten problems in a row before he can move to the next level. I believe this has real fodder for thought in it. Assessment is the big idea right now, and this seems worthy of discussion and argument. He freely admits that he arrived at ten, as opposed to more or less, somewhat arbitrarily, but that it "works" well for his platform.

The Leap to a Real Classroom

The next step for Khan Academy has become finding a way to take "distance learning" platform and use it effectively in the traditional "Prussian" classroom. This chapter discussed his work with real classroom settings. This encompasses only about five years work, but the stats are engaging.

Fun and Games

This chapter, coupled with the last and next, comprise his history of Khan Academy's development and story. It is worth reading but I don't include too much here until we get to the Los Altos Exp.

Taking the Plunge

The Los Altos Experiment

While this chapter includes more of Khan Academy's story, there are some important points made as he learns how to do what he is doing.

"In early October, Shantanu and I met with Jeff Baier and Alyssa Gallagher, the superintendent and assistant superintendent for Los Altos schools. They listened to our presentation and realized we were proposing the kind of *differentiated education* - that is, teaching geared and nuanced to the needs of each individual student - that educators were always striving for but not quite knowing how to implement." (pp. 162-63)

"Forgive me for gushing, but there was magic going on in those [Los Altos] classrooms, and the magic confirmed a believe I'd had ever since talking with my cousins about my earliest video lessons: that the best tools are built when there is open, respectful, two-way conversation between those who make the tools and those who use them." (p. 165)

"But let me be clear about *why* I was nervous. It wasn't that I had strong doubts that our kids were learning math. I was confident they were learning, and that, moreover, they were learning at a deeper and more durable level than most conventional classrooms afforded. My concern, rather, was with the congruence, or lack thereof, between what our kids were learning and what the [standardized end of grade] tests were testing...This is one of the paradoxes and potential dangers of standardized tests: They measure mastery of a particular curriculum, but not necessarily of the underlying topics and concepts on

which the curriculum should be based. the curriculum, in turn, becomes shaped by the expectations of what will be tested. so there's a kind of circular logic, an endless loop going on. Teach what will be tested; test what most likely had been taught." (p. 166)

I won't take the space needed here, but there is a great discussion of remediation and common mistakes about tracking made on pages 167 and following. "Now, all of sudden, we were seeing that students who were put in the 'slower' math classes could actually leapfrog *ahead* of their 'non-slow' peers. Even better, the experience with both the fifth and seventh graders showed that there really was no reason to track students into separate classrooms to begin with." (p. 168)

Education for All Ages

This is his summary of what was shown in Part 3 and his pitch for how his findings can change the face of education in the future.

Part 4 The One World Schoolhouse

Embracing Uncertainty

Main point - the idea that education prepares us for a making a living is inadequate to reality. In reality, 65% (p. 179) of the world's children starting grade school this year will be working at jobs that don't even exist at the moment. So education should teach children to learn, not just how to earn a living.

My Background as a Student

Here he relates his experience at MIT:

"We soon became acquainted with some upperclassmen who were taking eight or nine courses a term (about double the typical MIT student's already rigorous course load), and who challenged us to take extra courses as well. Without doubt, these guys were bright, but not freakishly so; their argument, in fact, was that *any* of us - not just at MIT but at every high school and university - should be able to handle twice as many courses *if we avoided the seat time and simply pursued whatever actually helped us learn*. There was no hocus-pocus here, no miracle shortcuts to academic success. It took discipline and work, quite a lot of each. But the idea was to work *effectively*, naturally, and independently." (p. 188)

The Spirit of the One Room Schoolhouse

In this brief chapter, Salman returns to the idea of "owning your education" or student responsibility. He states that the power of the old one-room schoolhouse in part was that older students took responsibility for helping younger students. He feels this must be recovered for education to move forward again.

Teaching as a Team Sport

He believes that collaboration when done correctly aids learning, and that the more teachers become like coaches and less like, well, teachers, the better school will be loved by teachers.

Ordered Chaos Is a Good Thing

Here he sets forth his vision for large classes, with several tutors moving among the students. He argues harshly against the lined up desks and lecture format. I am not sure I buy into his idea of 50-75 student

classes. His love of "efficiency" is going to get him into the same problems as the current factory school system. Real education is not efficient, and definitely is not "mass" or large anything.

Redefining Summer

Calls for us to abolish the agrarian schedule of school. He has my full agreement here.

The Future of Transcripts

Believes we will inevitably move toward certifications and resumes, along with portfolios and away from the basic two page transcript. I hope so.

"As I've said, I am not antitestng; I believe that well-conceived, well-designed, and fairly administered tests constitute one of our few real sources of reliable and relatively objective data regarding students' preparedness. But not that I say *preparedness*, not potential. Well-designed tests can give a pretty solid idea of what a student has learned, but only a very approximate picture of what she *can* learn. To put it in a slightly different way, tests tend to measure quantities of information (and sometimes knowledge) rather than quality of minds - not to mention character." (p. 215)

Serving the Underserved

One of his basic tenets is that education should be attainable by all. He focuses on how third world and poverty stricken places can benefit from his vision.

The Future of Credentials

Comes back to this and fills it out, using Cisco and MS as examples of where we are headed. This chapter feels very utilitarian to me. Not enough about being ready for life, just the work place here.

What College Could Be Like

Most of this is extrapolating out to specifically the university what has been said generally about all of education. Not as well thought as some of the rest of the book.

Conclusion: Making Time for Creativity

He believes that a Khan like approach will free up the time needed in education to foster creativity and intuitive learning. There was much here to think about. I would recommend it to educators and creative thinkers alike.