

Disrupting How and Where We Learn

AN INTERVIEW WITH CLAYTON CHRISTENSEN AND MICHAEL HORN



Photos by Evgenia Eliseeva, Eve Photography

The authors of *Disrupting Class* believe education will be shaped by innovations that create opportunities to individualize learning for every child.

By Joan Richardson

KAPPAN: What is a disruptive innovation?

CLAYTON CHRISTENSEN: Almost always at the beginning of an industry, the services or the products that are available are so complicated and expensive that the only people who can participate are people with a lot of money. A disruptive innovation is an innovation that transforms the complicated, expensive services and products into things that are so simple and affordable that you and I can use them.

A great example is the personal computer. You go back in the history of computing to mainframes. The original mainframe computers cost millions of dollars, and it took training to operate that machinery. So, the largest universities had one, the largest corporations had one. And for the rest of us, we had to get in line if we wanted the computer to solve a problem for us.

The personal computer made it so affordable and simple that even someone like Clayton Christensen could have his own computer. At the beginning, we could just do the simplest things, like word processing and spreadsheets. But, little by little, the technology got better and better so that you and I could start to do remarkable things on these machines. Eventually, we just didn't need mainframes anymore.

That's the essence of a disruption. It makes it simple and affordable. It improves the quality of the experience.

JOAN RICHARDSON is editor-in-chief of *Phi Delta Kappan*.

KAPPAN: One of the concepts you introduced in the book, *Disrupting Class* (McGraw-Hill, 2008), is the idea of “nonconsumers,” those individuals who aren’t currently taking advantage of a product or a service, typically because they can’t afford to do so. When you think about nonconsumers in education, who are you talking about?

MICHAEL HORN: This is one of the trickiest questions in U.S. education. It’s a lot easier to get your mind around this when you’re talking about developing nations where literally millions of children don’t have primary or secondary school options, so there are lots of opportunities for innovation. But, in the U.S., if you look at the class level, the course level, you see lots of areas of nonconsumption. In high school, credit recovery is an issue, particularly in the urban areas. When students fail a course, they have essentially no way to make that up. They might get a summer school course packet or something like that. But those children need that course if they’re going to learn those concepts and graduate.

Another big area is advanced courses. Advanced Placement courses are the obvious ones that many schools can’t offer. But the picture’s much starker than that. We know that 25% of our high schools don’t offer any kind of advanced science course beyond biology. No chemistry. No physics. No advanced math course beyond geometry. No Algebra II. Forget about calculus. Yet, we know that there are children in those schools who would like the opportunity to have those subjects.

KAPPAN: Have you seen examples of disruptive innovations occurring in developing places?

HORN: Yes, in Bangladesh, in rural China. China has hundreds of millions of students they need to educate. They can’t possibly build the infrastructure they need. But they can set up a WiMax connection that has a 25-mile radius and, boom, they’re educating thousands of kids. We call that horrible education but, from their perspective, it’s way better than the alternative, which, yesterday, was no education at all. And they don’t have so many rules governing what the school day looks like or what makes someone a teacher. They can rethink everything from scratch. We do all of these exercises at conferences about how to rethink education. But they lead nowhere because we actually don’t have the freedom to rethink education. They do.

KAPPAN: You said that you deliberately called the book *Disrupting Class*, not *Disrupting School*. Tell me why.

HORN: I only see one possibility for disrupting schools. I think the much more likely disruption is

in classes, in courses. The wild card is home schooling, which is an area of nonconsumption.

I think we’re going to see some facilitated networks where people will rate all of the free curriculum out there, the low-cost stuff. Someone will start to patch together courses and curriculum so that a family could put together a home school curriculum for maybe \$700 for a year. It won’t be as good as what’s offered in the traditional school, but it will be better than the alternative, which is nothing at all. But it will get better and better and better as the community rates it and more curricula come out.

Private school families will see that they could spend a lot less and get basically the same experience. They’ll move over and, over time, the education will get better and better and better. Then some entrepreneur will snap it into a bricks and mortar environment because most kids and most families will need more structure. Families would then flock out of the public schools. I really think this is a remote possibility, but it’s the only possibility that I see for disrupting schools in the United States. The far more likely scenario is the disruption of class in the sense of courses.

ENCOURAGING DISRUPTIONS

KAPPAN: Is there a way to encourage disruptive innovation? If someone wants to apply this concept, do they first look for the kind of audience that is not being served? How do we nudge them toward developing those kinds of innovation?

CHRISTENSEN: A very important element of our research helps people understand what causes people to buy a product or a service. So that’s a place to begin. Every company faces the problem of motivating customers to buy what they’re trying to sell. There’s nothing about motivation that’s unique to schools.

Our insight is that we have “jobs” in our lives that we have to get done. In order to get these jobs done, we hire people, products, or services to do those jobs for us. So that’s the causal mechanism. I have a job to do, and I hire you to do it for me.

As we studied that application in education, it didn’t take us long to realize that school is not a job to people. You can hire school to do the job for us. But school is not the job. The job is that I need to feel good about myself every day. I need to feel like I’m worth something, like I’m accomplishing something, and I want to have fun with my friends. That happens every day.

So, I could engage school to help me feel good about myself. But I also could drop out and join a gang to feel successful and have fun with my friends. Or I could just buy an old car and spend all day working on my car and driving around the neighborhood to see my friends.



A disruptive innovation is an innovation that transforms the complicated, expensive services and products into things that are so simple and affordable that you and I can use them.

We want a robust system that is always sustaining innovation that . . . leaves room over time for disruptions to come in and change things. The jobs-to-be-done concept is the critical building block to getting any innovation right, in either a sustaining or a disruptive circumstance.



MICHAEL B. HORN

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EDUCATION: AB in history, with distinction, Yale University, 2002. MBA, Harvard Business School, 2006.

PROFESSIONAL HISTORY: Worked at America Online during its aol.com re-launch. Research assistant for journalist David Gergen.

BOOKS: Co-author with Clayton M. Christensen and Curtis Johnson, *Disrupting Class: How Disruptive Innovation Will Change the Way the World Learns*. New York: McGraw-Hill, 2008, 2010.

When you look at it at that level, schools compete with very different things. It turns out that schools are not designed to help students feel successful.

KAPPAN: Where does the job of learning fit into all of this? That seems like something that gets overlooked in your equation.

HORN: One of the things about Clay's theories is that they tell you how the world works. Then you say, here's what we want it to look like.

If we want children to learn, here's how we have to reach them. So, society has a goal that it wants children to learn. The children will eventually get there. But they don't know that coming out, per se. Recognizing that this is how we can actually motivate them to learn is a critical part if we actually want them to do certain things.

The cognitive and neuroscience research to some extent ignores the question of motivation. It talks about the optimal ways to learn. But it sidesteps the question of whether students will really do this. That's left a huge gulf in the research between how people learn best and whether they will actually do it. Because if they won't do it, it won't really matter.

CHRISTENSEN: But, if they do it and feel good about themselves, if they feel success, then tomorrow they'll want to do more of it.

HORN: This is really the Zone of Proximal Development. We actually don't like to make our brains think that much. If something is too hard, we tend to shut down and just don't do it. If it's too easy, we get bored and tune out. What we want is something that's just above our level so that it stretches us, and when we accomplish it, then literally a chemical is released in our brain that makes us feel good and drives us.

KAPPAN: I understand the concept of getting at what motivates kids. But I don't understand the connection between that and disruptive innovation. Make that link for me.

HORN: Let me make a broader link. A bit of the misreading of the book is that disruptive innovations are good and sustaining innovations are bad. What we want is a system that does both. We want a robust system that is always creating sustaining innovations that will drive products to market and make them better and serve people better. That also leaves room over time for disruptions to come in and change things. The jobs-to-be-done concept is the critical building block to getting any innovation right, in either a sustaining or a disruptive circumstance. You have to understand that that is the first building block of any innovation.

KAPPAN: So, is the disruptive innovation the starter, the piece that jumpstarts the process?

CHRISTENSEN: As a general rule, when these kind of simplifying technologies emerge, if you try to force them into head-on competition against the existing technology in the mainstream market, boy, that's tough. If you want to take over the world with electric cars, that means you have to make better cars than Toyota in a head-on competition with Toyota. This is a very difficult technical hurdle to overcome. History shows that a new technology almost never supplants the old one in the mainstream market. On the other hand, if you start with a simple application, then little by little in this new application, it gets better and better and better and better.

KAPPAN: And as it gets better, it creates its own market.

CHRISTENSEN: That's right. People see this new technology and say, "I could use that." Think about electric cars. Is there a market for someone who would love to have a car that won't go very far or go very fast? Actually, parents would love to have a car for their teenagers that won't go very far or go very fast. It's good enough to tool down to school and come home at night and plug into a 110-volt outlet. Since most of those kids don't have a car at all, the electric car gets hired for their job. The parents like it because they don't have to drive all over all the time to pick them up and take them places. But the technology gets better and better and better, and one day Dad says, "Would you let me borrow your car today?" Little by little, they see the improvements, the potential. Eventually, the cars become good enough that customers will leave gas and come over to electric.

HORN: If it hadn't solved the "job" for parents and kids, it wouldn't take off, because it's not solving something that's a priority in their lives. You have to understand that the innovation does the job for someone who can't do that job right now.

WHY EDUCATION?

KAPPAN: Let's bring this back to education. What made you think that this theory about innovation could be applied to education? All of your research up to this point was about business, and not even just business, but mostly manufacturing.

CHRISTENSEN: I was so naive. (Laughs.)

KAPPAN: Naive because education operates differently from the world of business where you were comfortable?

CHRISTENSEN: Well, I was worried that that



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PROFESSIONAL HISTORY: Chairman and president of CPS Technologies, a firm he co-founded with several MIT professors in 1984. Consultant and project manager with the Boston Consulting Group. Named a White House Fellow in 1982 and served as assistant to U.S. Transportation Secretaries Drew Lewis and Elizabeth Dole. Founded Rose Park Advisors, an alternative investment management firm; Innosight LLC, a consulting and training company; and the Innosight Institute, a nonprofit organization focused on addressing critical social issues.

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was the case. You do get a sense that this is a different world. Back then, I don't think we understood how generically applicable our work had been until we moved away from cars and semi-conductors. Everyone thinks their industry is different. But, actually, at a fundamental level, they have much more in common. There are some fundamental theories about how people work with other people and how technology is developed and gets deployed, how technology and people interact or don't interact, and what motivates people. If you're running an organization, how do you see where the future's going? These problems are common to everybody, to every organization.

CHARTERED SCHOOLS



Online learning is very clearly acting as a disruption. If we put online learning back into the existing architecture, it won't work.

KAPPAN: You make the case in the book that chartered schools — and I do like how you call them “chartered,” not charter schools — are not a disruptive innovation; they're a sustaining innovation. So, why aren't they disruptions?

HORN: The problem that chartered schools are trying to solve is to do schooling better. Disruption is to start with something simpler that doesn't do something better by historical measures of performance. By definition, they were trying to move schooling one step up, which is a sustaining innovation. They often cost more money — not always, but often. They've been running head-on into the district schools, which is why you've seen such a fierce response from the district schools to try and elbow them out of the way.

KAPPAN: When you have a disruptive innovation, how does the knowledge that's acquired from the disruptive innovation feed back into the original organization or industry? Is there a feedback loop?

CHRISTENSEN: Basically, it rarely goes back into the mainstream. If it's truly disruptive, the value of what they're learning is interdependently embedded with the customers and the distribution system and the way the world works. The value is really important there. But back here, in the traditional industry, they have a different business model.

KAPPAN: You mean that they don't value the same things.

CHRISTENSEN: That's right. The world of the mainframe computer didn't value the technology in my personal computer.

HORN: A lot of foundations have come to us and said you're learning a lot of important stuff. They say, “We need to take those lessons and apply them to our projects.” I'm really worried about those efforts.

They're not plug compatible. All of the processes are structured to solve a different problem in a different way.

CHRISTENSEN: In Silicon Valley, who were the people who created these great new disruptive technologies?



Well, they were people who were working in the old industries. In that context, their new technology just wasn't valued. They had to break out and create a new context where the technology would be valued. It's not that entrepreneurs are smart and the people at the old company are dumb. It

just depends on the context that you're in, what the value is, and how the work will get done.

History shows that a new technology almost never supplants the old one in the mainstream market.

KAPPAN: OK, it's like putting new wine into old wineskins.

HORN: And with schooling, where that's dangerous is with online learning. Online learning is very clearly acting as a disruption. If we put online learning back into the existing architecture, it won't work. We'll spend a lot of money, and it won't transform anything.

DISRUPTION ONLINE

KAPPAN: You're clearly very convinced that online learning is a disruptive technology for education, maybe *the* disruptive factor for education. Tell me why that is.

HORN: Online learning is adhering very much to the traits that any disruption exhibits. At first, it's not as good. Teachers don't define it as quality because the teacher's role is very different. It costs less, and it's more convenient. It hits at a lot of the different attributes of disruption. Where it's taken off has been in the areas of nonconsumption.

KAPPAN: Who are the nonconsumers that want this?

HORN: Dropout recovery, students who want advanced courses and don't have access to them. I think we may start to see after-school programs at the elementary level that expand the learning day.

In the book, we projected that 50% of all high



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school courses will be online by 2019. I'm feeling very confident about that. But, I think it misses the point. Having half of the courses be online won't guarantee a student-centric future because we may still use a lot of the old processes, rules, and policies to govern what that learning looks like.



Disruption means to start with something simpler that doesn't do something better by historical measures of performance.

KAPPAN: So, in other words, we'll have traditional American classrooms where we bring in the kids, sit them in front of computers, and dismiss them with a bell after 45 minutes.

HORN: Right. That's where the role of policy is really important right now.

KAPPAN: How would policies have to change to support this?

HORN: Policies can't judge the disruption by the old metrics. As long as you do that, the disruption won't look particularly good, and you'll hamstring it in not particularly productive ways.

In practice, this means moving much more to outcomes-based funding models for this new disruption. In online learning, time can be a variable. But we can hold outcomes as the constant. The Florida Virtual School is a good example. They only pay for a course when a student has successfully completed the course. We have to free up all of our assumptions about seat time. We've been measuring the wrong end of a student for the last 80 years. Free up all those constraints on Carnegie units and seat time. Let creative solutions come out and just focus on the outcomes that we want.

CHRISTENSEN: There is a sense in Washington that we don't trust these people that we're giving money to. We don't want them to make judgments about what might or might not work.

HORN: The message I would give to policy makers is this: If you want to encourage innovation, get out of the business of governing where every single dollar is used and how it has to get used. **■**