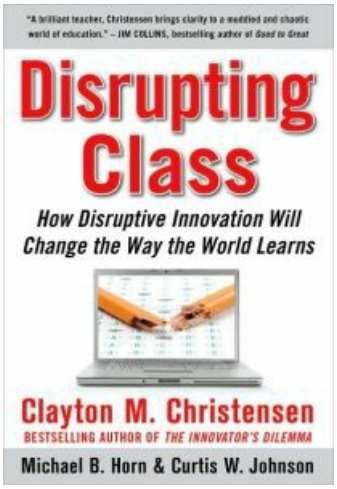

Book Disrupting Class

How Disruptive Innovation Will Change the Way the World Learns

Clayton M. Christensen, Curtis W. Johnson and Michael B. Horn
McGraw-Hill, 2008

Recommendation

The very real value of this useful and, at times, pleasantly surprising book comes from the way the authors apply their expertise in innovation to the field of education. By approaching public education's crisis with new eyes – and conceptualizing education as a product or service like any other – Clayton M. Christensen (*The Innovator's Dilemma),* Michael B. Horn and Curtis W. Johnson provide insights that escape the tired loops of argument that often define discussions about public education. These writers' obvious willingness to look in new directions for learning innovation is matched by their genuine concern for everyone involved in education. However, they do seem a bit idealistic, as they focus so strongly on the pedagogical and conceptual aspects of education that they seem to skim over other concerns, like logistics and budgets. The authors acknowledge the legal monopoly governing public education without really addressing the social weight and inertia of such a monopoly. In fact, they seem to believe that positive disruption is almost inevitable. *BooksInShort* recommends this thoughtful book to anyone interested in social change and education, and – not tangentially – in how new technologies affect societies.

Take-Aways

- Many factors contribute to the disappointing performance of U.S. public schools.
- Schools use outmoded assumptions and don't teach the way students learn.
- Because each child learns differently, an individually tailored teaching approach works best.
- To change the educational system, think in terms of disruptive innovation.
- Disruptive innovations take root in places the dominant system doesn't serve and then grow to displace it.
- Educators have jammed computers into schools without changing instruction.
- Computers will radically alter education, making it more student-centered.
- How you talk to your kids before they begin school – and how much you talk to them –has a tremendous impact on their intellectual development.
- Because education's stakeholders disagree on what to change and how, reformers have few tools available.
- A dated paradigm governs most educational research, so it is of limited value.

Summary

What People Want from Schools – and Why Schools Fail

Imagine what a school should do: help students become the best people they can; give them the background to play active roles in "a vibrant, participatory democracy"; guide them toward understanding the value of diversity; and teach them the skills they need to support themselves and contribute to a thriving economy. Unfortunately, American schools aren't doing a good job of reaching these lofty, varied ideals. Many elements contribute to the weak U.S. educational system – a lack of funding, insufficient technology, uninvolved parents, a faulty educational model, the unions and more – but the blame never gets assigned correctly because Americans measure scholastic performance the wrong way.

> "Explaining the disruption theory and a brief history of schooling in the United States shows that schools actually have consistently improved over time."

When you want someone to do something, you can use "extrinsic motivation" (rewards from the outside) or you can rely on "intrinsic motivation" (satisfaction from the

task itself). Right now, students have little extrinsic motivation to learn, so their progress depends heavily on the slippery issue of intrinsic motivation. Extrinsic motivation used to be stronger. People wanted to get ahead economically. However, their success led to prosperity, which weakened the need to study as hard. This has occurred elsewhere, too: As Japan prospered after World War II, fewer students studied math and engineering. The same phenomenon is happening now in South Korea.

> "By disrupting the classroom as we now know it, we can break apart the fundamental obstacles with which educators, parents and students have struggled for so many years."

The social and organizational legacies that shape public education greatly challenge those who seek to design a satisfying scholastic experience. The public system is based on standardization. Its roots in industrialization give it an inherent "factory model" of how to do things for maximum efficiency. Schools are also caught between "lateral" and "temporal interdependencies," that is, changing how people teach information in one subject requires changing how they present it in another; altering the ninth grade curriculum requires altering the seventh grade curriculum. Hierarchical structures further limit educators' ability to innovate.

> "In every organization, there are forces that shape and morph every new innovative proposal so that it fits the existing organization's own business model, rather than fitting the market it was intended to serve."

The unwieldy educational system faces several even larger problems. First, it doesn't teach material the way human beings actually learn it. The system operates on outmoded assumptions about the nature of intelligence and optimum learning processes. Howard Gardner's 1980s research into "multiple intelligences" showed that the monolithic model is unrealistic. Gardner posited eight distinct intelligences, each with an aligned learning method. These intelligences range from fairly traditional areas, such as "linguistic" or "logical-mathematical" intelligence, both relatively easy to measure with standardized testing, to "interpersonal" and "naturalist" intelligences, which depend on interaction with other people or the environment, and so don't test or standardize nearly so well. Each person learns somewhat differently. To function best, educators need to focus on those differences, provide "customized learning" and become "student-centric." Some school systems, like Maryland's Montgomery County Public Schools, are trying to personalize education, but that is very difficult within a factory model.

Changing the Educational System

To understand some potential ways to reform the educational system, consider "disruptive innovation theory." If you chart a product's or service's evolution over the years, you will see two types of change. First, industry leaders produce a steady stream of improvements. These "sustaining innovations" are important. People and organizations create such innovations as they get better at what they do. However, from time to time, another type of change occurs, a "disruptive innovation." Industry leaders don't produce this kind of shift, and manufacturers don't market it to current customers of the field's dominant products.

> "Public education's present commercial system is largely a value-chain business."

In fact, most disruptive innovations are inferior to their field's leading products when they emerge. Early personal computers had very little computing power compared to mainframes. The first portable radios sounded inferior to standard radios. However, these lesser products improve at a sharper rate than dominant products, eventually overtaking them. Industry leaders often see this clash coming but their institutions are tied to their current organizational and production practices. They see their fate, but can't escape it. That's the current situation endangering public education. Those involved desperately want to change it, improve their schools and better fulfill their missions. In fact, they've been advancing steadily over time, raising test scores and doing a stronger job at the highly varied missions that the intersection of history, policymakers and organizational structures has handed them.

Computers in Education

The way teachers have and haven't used computers in public education demonstrates how established systems struggle to integrate disruptive innovations. Educators poured money into computers and, for a brief time, radically increased the number of computers in schools. As recently as 1981, schools averaged "one computer for every 125 students." By 2000, that ratio had risen to "one for every five students." But, when the schools got computers, they "crammed" the machines into the existing structure, minimally affecting the status quo. Using computers became just another activity for students to perform. Instruction still flows from teacher to student. Schools continue to test in "monolithic" units, rather than pacing their tests to match students' needs. For a model of how to integrate computers effectively into curricula, educators can track the paths of other disruptive innovations, like online classes. Today, small schools that can't offer Advanced Placement (AP) or "credit recovery" classes allow their students to take such courses online.

> "Almost all disruptions take root among nonconsumers. In education, there was little opportunity to do that."

Parents can use computers to augment traditional homeschooling. The first step is probably "computer-based learning," though it takes only moderate advantage of a computer's potential. Even with simple software that replicates existing conceptual structures in established disciplines, homeschooled students will benefit from "different pathways" and paces for learning. Over time, such student-centric technology will replace more basic approaches. Apex Learning, founded by Microsoft's Paul Allen, shows the sort of path this kind of disruptive innovation might take. Apex specifically targeted providing AP courses to secondary schools that couldn't afford them. In 2003 and 2004, 8,400 students took these courses. Three years later, 30,200 students participated.

> "Virtually every successful disruptive innovation took root similarly – competing against nonconsumption – so that people were delighted to have a product, even if its capacities were limited."

Computer-based learning will change and even displace traditional learning as technology gets better and cheaper. Newer technology will give teachers more options for crafting individualized education plans for students. As the U.S. faces a teacher shortage, the instructors who remain in the system will play different roles. Some will help create educational tools like the "Virtual ChemLab," where students take part in increasingly sophisticated experiments. Others will coach, advise and encourage students. Assessment will also change. Instead of testing students in big groups at preset times, evaluation can be individualized to fit students' needs as they master the material.

> "When students learn through student-centric online technology, testing doesn't have to be postponed until the end of an instructional module and then administered in a batch mode."

As the educational system becomes more student-centered, other changes will occur. For instance, the current textbook production and distribution system is, like the educational system, hierarchical and monolithic. Change might include texts that are customized to individual needs. As those needs take center stage, textbook marketing and distribution will also shift. Users will be able to generate their own content more quickly and easily, and to produce "collaborative learning libraries" where people learn from one another.

Educational Research

Teachers and administrators feel some frustration with educational research. Often it doesn't seem to produce any answers or, if it does, schools rarely implement them, even when they come from valid research. However, while teaching is, in part, "an art" and, thus, always depends on individual interpretation and performance, research can accomplish a great deal – if researchers update its "prevailing paradigm." Education research now resembles pre-1700 scientific research. Then, even people who made useful observations about the natural world lacked the rigor of the scientific method. Educational researchers have to shift from trying to solve specific problems affecting average students in given systems and focus on students as individuals.

> "By employing chartered and pilot schools as heavyweight teams and R&D laboratories, school districts can create new school architectures for everyone."

Research passes through "descriptive" and "prescriptive" stages. In the first stage, researchers observe a field, note details, and build abstract models or "constructs" to help them understand their data. This leads to classification, when they identify categories of events that share specific characteristics, and find correlations among these categories and the information they have gathered. Descriptive research is "inductive," moving from data to conclusions, and can only go so far. To advance beyond its limited benefits, researchers must "deductively" reason and seek oddities that don't fit the current structure. Such "anomalies" disrupt existing conceptual structures, pushing researchers to learn more. Competing models may appear, none of which is clearly more valid than the others.

> "Few reforms have addressed the root cause of students' inability to learn."

In the prescriptive stage, researchers seek "prescriptive bodies of knowledge." They look beyond correlations to try to understand the causes of specific relationships. Unfortunately, solid prescriptive research in education is not yet the norm, so, for now, educators should evaluate the reliability of research-based statements, even though they generally welcome researchers who try to tell them "what they ought to do." Look at the findings' "internal validity": Do the researchers' conclusions follow logically from their premises? Are any other explanations likely?

Factors External to School

The passage of the No Child Left Behind Act gave American public schools the job of eliminating poverty. However, family and community factors outside the school shape several major contributors to poverty, including those directly related to education. Familial influences during the first three years of life determine a great deal of a child's intellectual capacity. In educational terms, the most important influence is a specific practice: talking to children. All parents speak to their children but, often, in families from lower economic classes, speech is very functional. It focuses on specific things a child needs to complete.

> "Political and school leaders who seek fundamental school reform need to become much more comfortable amassing and wielding power because the other tools of cooperation will yield begrudging results at best."

However, conversation that goes beyond mere function – the "extra talk" called "language dancing" – encourages neurons in the young brain to form many more connections, thus laying the groundwork for superior "intellectual capacity." Through language dancing, you engage children in hypothetical situations, and ask them to recall things they've encountered and to reason through their decisions. This extra talk starts long before infants can give any external sign of understanding. Therefore, for any public education reform to succeed, the reformers must address class-based differences in parenting. This might require public schools to add parenting classes; it will certainly involve the cooperation of doctors and child-care professionals.

Tools for Change

When leaders want to change their organizations, they can turn to various "tools of cooperation," from "visionary speeches to outright threats." Which tools will work depends on how people align along two general spectrums: how much they agree on "what they want" and how much they agree on "cause and effect." If groups agree on how to do things, but not on the goal, leaders can use standardized training and negotiating processes. If the groups concur on goals, but not on how to achieve them, visionary leadership is useful. If they share common goals and methods, moderators can use "culture tools," like norms and the democratic process, to keep them on track. When participants disagree on both goals and methods, leaders must use "power tools," such as "fiat, force, coercion and threats." If the disagreements are intractable, separate the two groups.

> "In any community, the world over, people disagree wildly on education."

Frontline public school personnel disagree about the best goals and processes for education. That leaves leaders only three tools for creating change: "common language, power and separation." If you can create a common language a group can use to discuss a situation, it can move people closer to agreement. Instituting change may require demonstrating that alternative methods work better. Visible success will win support.

About the Authors

Clayton M. Christensen is the Cizik Professor of Business Administration at Harvard Business School, and the author of *The Innovator's Dilemma* and *The Innovator's Solution*. **Michael B. Horn** co-founded the Innosight Institute. **Curtis W. Johnson** served as chief of staff to the governor of Minnesota and was an early champion of charter schools.