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BOOK REVIEW

A. Collins, R. Halverson: Rethinking education in the age of technology. The digital revolution and schooling in America

Teachers College Press, New York, 2009, List price: $21.95, ISBN 978-0-8077-5002-5 paperback

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Every now and then a book comes into the social conversation about the future of education that has the potential to significantly change attitudes and opinions, and perhaps even influence policy decisions. I believe that the new book by Allan Collins and Richard Halverson, *Rethinking Education in the Age of Technology—The Digital Revolution and Schooling in America*, will be one of those.

Collins and Halverson address an issue that has received considerable attention in the recent past: Current models of schooling are broken, and we need to move onto alternatives that integrate technology in innovative and meaningful ways. Other authors addressing the issue of reform—with technology as a key component—include David Thornburg's 1992 book, *Edutrends 2010: Restructuring*, *technology*, *and the future of education*, more recently Andrew A Zucker's *Transforming schools with technology—How smart use of digital tools helps achieve six key education goals* (2008), and Clayton Christenson and colleagues' *Disrupting Class: How Disruptive Innovation Will Change the Way the World Learns* (2008). Less well known, but equally worthy of attention in this context, is the Report of the NSF Task Force on Cyberlearning, *Fostering Learning in the Networked World: The Cyberlearning Opportunity and Challenge* (2008). Collins and Halverson's book is unique among these in that it not only looks forward and identifies what needs to be done (and why), but also looks back in time and does a marvelous job of explaining how our education system got to be the way it is today. Their historical review establishes them as thoughtful realists rather than either wide-eyed tech enthusiasts or nostalgic skeptics.

One of the book's core ideas is that "…technology's main impact on learning is occurring outside of school" (p. xiv). The authors carefully distinguish between schooling, education, and learning in Chap. 1, touching upon the differences again and again as they first present the arguments in favor of technology in education (Chap. 2), the skeptics' arguments against it (Chap. 3), followed by a recap on the development of American schooling (Chap. 4). To keep the historical angle flowing perhaps Chap. 6 ("The Three Eras of Education") should have been Chap. 5, which is instead devoted to "The Seeds of a New System of Education." Chapter 7 reflects on possible positive and negative

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consequences of the envisioned changes, followed by chapters where Collins and Halverson lay out the substance of their perspective: Suggestions for "How Schools Can Cope With New Technologies" in Chap. 8, and some guidance on figuring out "What Does It All Mean" in Chap. 9, leading to the closing chapter on why we should be "Rethinking Education in a Technological World" (Chap. 10).

The distinction between education, schooling, and learning allows Collins and Halverson to analyze the tension surrounding change in schools and technology's role in that process. A section in Chap. 2 contrasting learning by assimilation (what most schools try to do now) versus learning by doing (the model favored by the authors) states it plainly: "So technology is likely to take education in a different direction, toward design and construction of artifacts and analysis of complex problems and situations. This is a vastly different view of education from that which pervades the culture of schooling" (p. 47).

Part of what motivates technology enthusiasts is the recognition that what society needs from schools has changed compared to the time (the nineteenth century) when the current model for schooling was put in place. Demographic, cultural, social, political, and technological changes all point to the need to have our schools prepare students in forward-looking rather than backward-looking ways.

As mentioned above, the last three chapters are the ones where the authors elaborate their arguments in more detail. Chapter 8 details their reasons for performance-based assessment versus standardized tests, for new curriculum designs that include "using technology to help students focus their learning around their goals and interests" (p. 117), and for innovative strategies to address inequities in access to and benefits of digital technologies. Chapter 9 is a brief one that addresses three pressing questions: "What are kids learning from technology?" (one answer is "sophisticated problem-solving and communication skills in virtual worlds beyond the experience of many parents," p. 123); "How has technology changed kids' social lives and learning" (e.g., social media like SMS and Facebook, participatory media like YouTube, and video games); and "Where does this leave us?" (Their view: "we need strong leadership from innovative educators to make sure that the new system embodies our society's critical goals for education," p. 127). Access to technology by itself is major issue, but solving the access problem without addressing the even larger questions about what is the social purpose of education in the twenty first century, which ties back to questions about assessment strategies, will not be enough.

Readers pressed for time or who like to skip to "the best parts" should go from Chap. 1 (which includes an overview of the book) to Chap. 10, which delivers on the book's title by presenting the specifics of what needs to be rethought in American education:

- Learning—no longer associated exclusively with "schooling"
- Motivation—fostering intrinsic, self-driven efforts at lifelong learning
- What is important to learn—skills for a knowledge, not an industrial, economy
- Careers—jobs that "emphasize collaboration, communication, and knowledge-processing skills" (p. 135)
- Transitions between learning and work—more than once in a lifetime, and well supported at different stages of people's careers
- Educational leadership—visionaries who can figure out "…how to integrate nonschool resources into learning environments, both supporting families in bringing these tools into their homes and in building wired learning centers in communities that reach those in need" (p. 140), and

- The role of government in education—the Feds equalizing educational opportunities, the states reconsidering "their mandates of keeping kids in comprehensive schools until they are 16 years old" (p. 143).

Rethinking U.S. education is a relatively easy task compared to the challenges of actually implementing significant reforms. Among industrialized nations, the U.S. is the only country with a decentralized system where the federal/central government must defer to states and localities on what students get to experience in the classroom. Individual districts or even entire states (consider Maine's landmark laptop program—http://www.maine.gov/mlti/) are able to move forward when the economic resources are available and the political will is strong, but so far the pace of change has been slow and the magnitude of the efforts (on a national scale) limited. Administrators and policy makers looking for more specific guidance on what to do next will likely not be as satisfied with this book. Collins and Halverson do not provide many examples of existing projects that could serve as evidence for the viability of their ideas and their claims (Zucker's book is a better resource in this regard). At several points in the book they indicate what, "As a society, we need to…" do to address problems. For example, toward the end of the book they suggest that "…we need to build policies that support people in making the many career transitions they will have to make in a constantly changing environment" (p. 137), but stop right there and don't elaborate on what such policies should look like or how technology initiatives could be a major component of these policies. Should open learning initiatives like MIT's OpenCourseWare be viable options for non-matriculated, self-driven learners in between jobs to earn a degree or, a certification recognized in the job market? (See, for example, the *Chronicle of Higher Education* regarding the benefits and challenges of open learning initiatives not tied to degrees or certifications: http://chronicle.com/article/Free-Online-Courses-at-a-Very/48777/.)

Collins and Halverson also pay little attention to ongoing efforts to redesign schools that could be examined as possible models to emulate and replicate: Should schools and districts be reorganized along the lines of Dennis Littky's Big Picture Schools (http://www.bigpicture.org/), the New Tech Network's New Tech High Schools (http://newtechfoundation.org), or the San Diego-based High Tech High School model (http://www.hightechhigh.org/about/)? Their suggestions are at too high a level (particularly in the section in Chap. 10 on rethinking school leadership) to be of much practical use to decision makers. This is perhaps an unfair criticism since the book never pretends to be a "how to" book—this is definitely not "reforming education for dummies." Still, a vision for the future that offered more concrete starting points based on ongoing, successful experiences—perhaps even a few case studies that ground that vision in reality—would have greatly enriched this already intellectually generous book.

In sum, *Rethinking Education in the Age of Technology* is a great source of historical perspectives on the U.S. education system, information about important trends in society and in technology, and a compelling argument for change. Graduate students and faculty will be satisfied with the many ideas and issues raised that will fuel rich discussions in class, while administrators and policy makers may be left wishing for more specifics.

Collins and Halverson have given us a well-written book that deserves to be read carefully. Many of its ideas can be included in planning efforts at every level, from local schools and districts all the way up to the federal government's current effort to craft National Educational Technology Standards. There is little doubt that we need to rethink our education system. This book makes many valuable contributions to this difficult task.