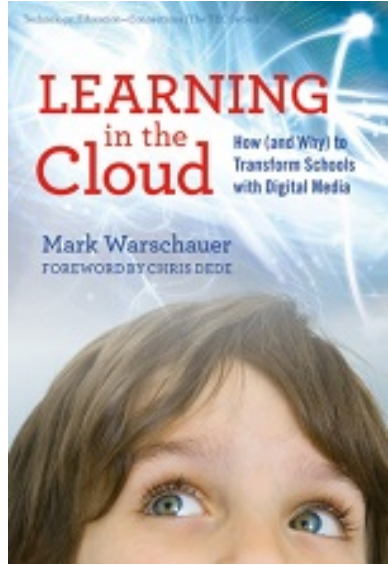


REVIEW OF *LEARNING IN THE CLOUD: HOW (AND WHY) TO TRANSFORM SCHOOLS WITH DIGITAL MEDIA*

<p>Learning in the Cloud: How (and Why) to Transform Schools with Digital Media</p> <p>Mark Warschauer</p> <p>2011</p> <p>ISBN: 0807752495</p> <p>US \$31.95</p> <p>144 pp.</p> <p>Teachers College Press</p> <p>New York, NY</p>	
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Learning in the Cloud is an informative and thought-provoking book. It is ambitious in its goals for K–12 education and the ways digital media may be operationalized to help achieve a new vision of 21st century learning. While deeply embedded in the US context and primarily written for this audience, *Learning in the Cloud* provides information and discussion that will be of value more broadly. The text moves from the more theoretical to the practical through its chapters and provides many detailed examples of how—and how not to—go about implementing digital media in K–12 schools. Essentially, the book may be said to have a three-part architecture. The early chapters consider the goals for using technology in education and the tools available. A chapter on exemplar projects from selected schools around the country then follows. The next two chapters look at designs and environments and further develop the key concepts or principles introduced earlier. Having the exemplars chapter in the middle of the book is a wise construction, operating as a consolidation for the earlier discussion of goals and tools, and functioning as a reference for designs and environments.

In this review I will begin with a descriptive overview of the chapters of the book to give a sense of its ambition and purpose and the ways in which the central arguments are constructed and presented. I will then examine in more detail one of the key ideas of the book: the notion of 21st century learning and what it may entail in a school setting.

The introductory first chapter is built around a contrast. It is employed to illustrate starkly different ways in which digital media may be introduced into schools. On the one hand, Warschauer uses the case of Littleton Public Schools outside Denver to exemplify a new curricular initiative for improving writing and literacy. He returns to Littleton throughout the book as a kind of benchmark or role model of an enlightened approach. On the other hand, Birmingham Public Schools in Alabama is used to illustrate the implementation of the One Laptop per Child (OLPC) program. The author uses this contrast as a springboard to present his central argument, that digital media are part of a “complex sociotechnical ecology for educational reform,” not merely “a tool to be dropped into schools for bringing rapid

change” (p. 5). This core message reverberates through the themes, arguments and examples presented in the remainder of the book. It is also the catalyst for the core questions the author sets out:

- What are the goals of reform?
- What is the particular contribution that digital media can make in helping to achieve these goals?
- What kinds of learning environments are best for that process?
- What kinds of curriculum, pedagogy, and assessment should underlie the reform effort?
- And how can we develop a long-lasting sociotechnical infrastructure—from affordable tools, to effective leaders, to skilled and committed teachers—that can sustain successful reform? (p. 5)

These questions in turn broadly reflect the order and content of the remaining chapters of the book.

Chapter 2 provides the rationale. It is fundamental to Warschauer’s orientation and points of focus, so I will spend a little more space describing it. He describes three central goals for technology use in education: (a) to improve academic achievement, (b) to facilitate new kinds of 21st century learning, and (c) to promote educational and social equity. He supports his arguments with relevant statistics on students in the United States and gives examples from schools. Each educational goal is discussed in turn. With academic achievement, he refers to the national No Child Left Behind (NCLB) Act adopted in the United States in 2001. In particular, he considers the pervasive influence of standards-driven curricula in order to achieve proficiency in standardized tests on reading (“downplaying writing,” p. 7) and math, a topic that the author returns to later in Chapter 5. He also warns about a continued overemphasis on the use of drill and practice activities in the classroom, and argues for richer, more open-ended activities such as project-based learning.

Under 21st century learning, Warschauer argues for a greater concentration on new skill sets that are relevant for the contemporary world, especially with a view to the workplace and the job market. He makes the case for learning and innovation skills, as well as expert thinking and advanced pattern recognition and experience. He also examines the concept of *adaptive expertise* (Bransford et al., 2009) and the importance of balancing content knowledge with skill development, and efficiency with innovation. Again project-based learning is lauded as an example: “If designed well, [it] helps students pose and test their own conjectures, experiment with ideas, experience the need to change them, and develop the proficiency to make them work” (p. 20).

The third dimension of the rationale concerns educational and social equity, and Warschauer argues that “issues of technology access, use, and mastery” (p. 21) are closely connected to these concerns. Here statistical data from a variety of studies are used quite extensively to identify differences in technology usage and access across homes, communities and schools, especially according to race and ethnicity and socio-economic background in the United States. He looks at a range of differences between high-SES and low-SES schools and the factors involved, including the importance of professional development, robust technologies, technical support staff and parental guidance in the home setting. He argues that “technology can play a vital role in promoting educational and social equity if deployed as part of well-designed educational interventions” (p. 29), but providing the equipment itself only constitutes a small (but important) part of this effort. These three dimensions of the rationale provide the basis for the remainder of the book.

Chapter 3 discusses the technological hardware, software and content tools that are required to achieve the goals described earlier. The chapter is organized around what Warschauer describes as the “four critical functions of learning” (p. 30) that contribute to achieving the goals of *content*, *community*, *construction*, and *composition* (the four Cs). Under content, there is a particular focus on the requirements

for successful out-of-school learning and for content that is rich and individualized to motivate the student. Content is interpreted broadly, covers materials that support process as well as product, and includes websites, discussion forums, games, mobile apps, and other online resources. Community looks at collaboration and play, both online and offline. Construction focuses upon the value of creating “meaningful public entities and artifacts” (p. 30), again emphasizing the importance of project-oriented learning and student products that have meaning in the world rather than those that are simply classroom-oriented, as in a test or an assignment only read by the teacher. Similarly, composition reflects this wider interpretation as students write for journals, blogs or wikis, and the like. Otherwise, the chapter provides good coverage of contemporary technological tools, resources and systems that are available (e.g., netbooks, tablets open source software, cloud computing) and how they may be utilized to support or further the goals and functions of learning.

The next chapter is one of the strongest in the book, in my view, because it provides the reader with exemplars of four outstanding K–12 programs. While examples and contrasts between schools on the use and application of digital media are a positive feature throughout this book, it is the level of detail in the case studies in this chapter that is especially illuminating. They provide a fine complementary set of experiences around technological and curricular innovation. Though the programs differ, there is evidence in each case of the critical importance of information sharing, curricular innovation, close involvement of stakeholders from the start, and professional development. One example that “involved a complete remaking of the school and the curriculum” (p. 61) illustrated perfectly that a digital media component is not merely an addition that leaves all existing structures and materials untouched, but contributes to ecological change as referred to earlier. The examples also amply demonstrate that the pathways to success vary and depend upon the particular goals and circumstances of the setting.

The Designs chapter provides an in-depth, perceptive discussion of curriculum innovation and digital media. It also includes a much more extensive discussion of the influence of standardized testing in the United States and its impact upon curricula, especially with a view to flexibility, change and innovation. The exemplars of Chapter 4 are referred to regularly to support the arguments presented. The Environments chapter continues with a practical slant and some down-to-earth wisdom on how-to-get-things-done. For example, it looks at the pros and cons of such options as the schools providing their students with technology versus the BYOT (Bring Your Own Technology) option in which students and their parents bear the cost; a compromise, middle option is also offered in the example of a volunteer program. Importantly, this chapter also deals with some other critical components of technology innovation such as leadership, the roles of internal and external stakeholders, and perhaps most importantly of all, teachers and how to cater to their needs and professional development. A short conclusion wraps it all up at the end.

In the space remaining, I would like to return to one of the central platforms of the book, the idea of 21st century learning. Warschauer cites Shaffer and Gee (2005, pp. 5–6) to help develop his theme: “Our standards-driven curriculum, especially in urban schools, is not preparing children to be innovators at the highest technical levels—the levels that will pay off most in our modern, high-tech, science-driven global economy.” Warschauer argues that there needs to be a better alignment of classroom environments with the requirements of 21st-century workplaces and communities. He discusses the concept of *adaptive expertise* (Bransford et al., 2009) and the importance of simultaneously attending to the dimensions of inquiry and innovation, as well as to the development of specific skills and knowledge. From a rather different angle—though still highly relevant in today’s technology-mediated learning settings—he also considers *geeking out* in this chapter. It is included under “Educational Equity” and “Home and Community Use” rather than “21st Century Learning.” Ito and her colleagues (2008) describe *geeking out* as a form of interest-driven online practice—as opposed to one that is friendship-driven: “an intense commitment to or engagement with media or technology, often one particular media property, genre, or type of technology” (p. 28). Warschauer argues that this kind of activity is to be encouraged because of

the high levels of motivation and engagement that derive from students developing and pursuing their own personal interests.

As elsewhere, Warschauer illustrates the point with a perceptive and telling example. In one school science program, students were junior science apprentices such that they performed authentic experiments of the kind scientists might perform (the teacher had been a research scientist at Berkeley and Stanford as a graduate student). In another program students collaboratively produced a monthly newsletter about science-related, personal experiences; although engaging and motivating for students, this project had much less to do with scientific enquiry or disciplinary knowledge. Warschauer concludes: “Instruction that *balances* efficiency and innovation seems optimal and should include opportunities to experiment with ideas and, in the process, experience the need to change them and develop the proficiency to make them work” (p. 20, italics in the original). Together these ideas and examples inform Warschauer’s position on 21st century learning. In many ways this idea is central to the book, and numerous other perspectives in the volume connect or relate to it in some way. As such, it is worthy of further discussion.

If we consider the well-documented endeavors of the Wright Brothers over 100 years ago and their invention of the control mechanisms that enabled powered flight, we can, I believe, discern numerous features of what Warschauer describes as 21st century learning. Notable in the case of the Wright brothers would be the importance of real-world application, disciplinary knowledge, creativity and innovation, regular correspondence with like-minded individuals, project-oriented learning, and (not forgetting) phenomenal levels of persistence. The Wright Brothers may be said to have “geeked out.” This episode in their lives was also a consequence of their own individual personalities, the relationship between the brothers and mutual interests, as well as their background in the bicycle business. With an example such as this one as counter-evidence, I am not entirely convinced that there is a distinctive 21st century kind of learning, although I readily admit that avenues of communication both to knowledge and to people has changed out of all proportion for students today because of technological advances. However, what I believe we can say with some certainty, at least for the majority of schools, is that the kind of learning environment the Wright Brothers created for themselves is rare within an institutional setting. When it does exist, it may be said to be transitory and perhaps incidental to the “main game” of core content study and test preparation. In other words, the central question reduces to a concern with the processes, opportunities, and constraints involved in actually implementing this particular kind of learning environment in a typical school setting.

It is now that the constraints of providing formalized teaching and learning across the curriculum to large numbers of students within an institution become so insistent and penetrating. That is why there are recurring references in the book to time pressures, the restrictive impacts of massively standardized testing, the crowded curriculum, a focus on the needs of a narrow band of students, and even the compensatory role of informal, independent, out-of-school learning so that students may develop their own personal interests. Warschauer’s book wrestles with these challenges for the school and rightly questions priorities and approaches in light of what is required in today’s workplace and community.

In presenting his arguments for a new approach, and especially through his exemplars and examples, Warschauer gives us the courage to imagine how it might be different, and he offers practical ways forward. The examples from Dos Pueblos High near Santa Barbara, where it took two years of negotiations with the University of California to approve innovative subject-area requirements, or from King Middle in Maine, where the expeditionary learning program involved a complete remaking of the school and curriculum, are indeed inspirational. At the same time they also highlight the sheer complexity and effort required when one wishes to initiate meaningful change for institutional settings that are so deeply embedded in current practices. Such pathways to the future are not for the faint-hearted. As Warschauer says, these schools “have achieved their success due to the inspiration and perspiration of their administrators, teachers, parents, and students” (p. 66). It also is noteworthy that a number of the examples of success stories involve extra-curricular activity and rely heavily on volunteer labor.

Extending these notable exceptions into some kind of broader norm for schools remains a monumental task. It will require a coordinated approach and action at state and national levels well beyond the scope of a single institution, or a district. That said, Warschauer's book provides insights and guidelines on numerous levels to assist in this task from strategic planning, to leadership, stakeholder participation, societal repercussions, professional development for teachers, and of course technology choice and pathways to implementation. As he says in the introduction, we are dealing with a "complex sociotechnical ecology for educational reform" (p. 5). Nobody said this would be easy if success were to be enduring. In this volume, by providing well-informed and reasoned arguments drawn from many years of experience in the field, Warschauer helps show us the way forward.

ABOUT THE REVIEWER

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