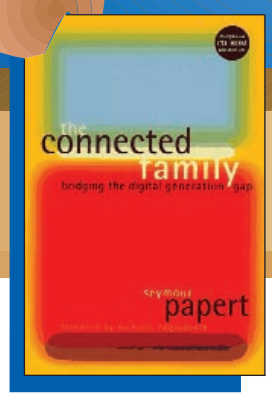
The Educational Technology Canon

By Gary S. Stager



Want to do a better job of integrating technology and curriculum? Reading these books will move you to the head of your class

Countless articles and conference speakers stress the importance of educational technology plans and remind us that schools need to assemble all relevant stakeholders in the formulation of that plan. The problem is those stakeholders often know little about technology's revolutionary potential to enhance the learning process or the issues involved in successful integration.

The following is a list intended to kick-start the development of an educational technology canon. Share these books with your colleagues before you meet to define future directions for your district. While this list is hardly exhaustive, you can use it to expand your professional library.

Father of Educational Computing

A mathematician, computer scientist and artificial intelligence pioneer, Seymour Papert worked with Jean Piaget, created the Logo programming language and is widely recognized as the father of educational of computing. Papert began advocating for personal computers in the hands of every learner nearly 40 years ago. It would be a huge mistake to overlook his wisdom, experience and profoundly moving books when thinking about the future of education.

Papert has written three books on learning and computers. If you can only read one, I recommend starting with 1993's *The Children's Machine: Rethinking School in the Age of the Computer. Mindstorms: Children, Computers and Powerful Ideas* is arguably the most-read book about learning and computers since its publication in 1980. *The Connected Family: Bridging the Digital Generation Gap* (1996) embraces the Internet as a vehicle for connecting family members and expanding the learning environment into the home.

Understanding the Past

Critics would like us to believe that educational computing is an accident of corporate marketing. The following books remind us that many of the visionaries, scientists and dreamers responsible for the computer revolution have always viewed the computer as a way to expand intellectual power and human creativity.

Tools for Thought: The History and Future of Mind-Expanding Technology by Howard Rheingold (2000) tells the fascinating and often entertaining tales of the men and women responsible for personal computers and digital communication. Unlike other technology historians, Rheingold connects these inventions to personal visions of revolutionizing the learning process. You will be amazed to learn how much children influenced the development of the personal computer.

The New Media Reader, edited by Noah Wardrip-Fruin and Nick Montfort (2003), makes an enormous historical contribution by assembling dozens of the most important articles and scholarly papers by the men and women responsible for the most powerful ideas of the digital age. Best of all, this exhaustive anthology includes a CD-Rom containing examples of important computer programs and digital artifacts of the past. Now you can show your students what computers used to do.

The Victorian Internet: The Remarkable Story of the Telegraph and the Nineteenth Century's On-Line Pioneers by Tom Standage (1999) offers a context for thinking about the impact of the Internet by comparing the current era to a time when the telegraph transformed society.

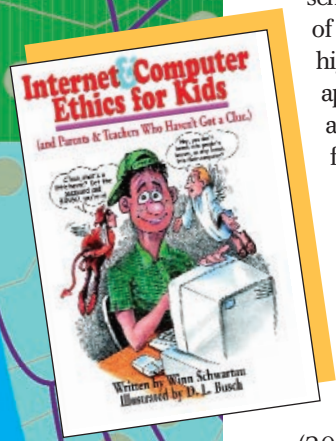
Media Convergence

Media convergence was the hot topic of the late nineties. The confluence of multiple forms of media holds great promise for engaging many kinds of learners. Neil Gershenfeld's *When*

Things Start to Think (2000), will capture your imagination about the fanciful ways computers may enhance lives in ways similar to those described earlier by his colleague Nicholas Negroponte in the important book, *Being Digital (1996)*. Gershenfeld and Negroponte work at MIT's Media Lab. Author Stewart Brand chronicled the early days of this important imagination factory in 1987's *The Media Lab: Inventing the Future at MIT*. Though out-of-print, Brand's book is widely available.

Safety, Security and Sanity

Internet & Computer Ethics for Kids: (and Parents & Teachers Who Haven't Got a Clue) by Winn Schwartau (2001) has been embraced as a lifesaver by many schools. The book explores dozens of moral dilemmas created by high technology in breezy fashion appropriate for middle schoolers and the adults in their lives suffering from Internet hysteria.



These Kids Today

There has been a great deal of discussion about videogames and learning. James Paul Gee's book, *What Video Games Have to Teach Us About Learning and Literacy* (2004), offers the most thoughtful insights on the issue.

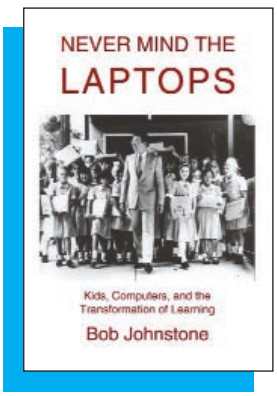
Online Learning

The Concord Consortium is a leading R&D organization concerned with math, science and online education. Its virtual high school is the gold-standard for effective K-12 e-learning. Its experience and advice are shared in *Facilitating Online Learning: Effective Strategies for Moderators* by George Collison, Bonnie Elbaum, Sarah Haavind and Robert Tinker (2000).

Respected artificial intelligence researcher Roger Schank authored *Designing World-Class E-Learning: How IBM, GE, Harvard Business School, And Columbia University Are Succeeding At E-Learning* (2001). Although intended for corporate leaders, this fine book contains many important lessons for K-12 educators and administrators concerned with professional development.

Laptops

Despite the book's curious title, *Never Mind the Laptops: Kids, Computers, and the Transformation of Learning* by Bob Johnstone (2003) meticulously chronicles the implementation of laptops in schools over the past 15 years while rooting this global trend in important educational ideas.



Reasonable Criticism

For the sake of balance, I recommend Larry Cuban and David B. Tyack's book, *Tinkering Towards Utopia: A Century of Public School Reform* (1997). While I disagree with many of the book's conclusions, the authors do a good job reviewing the history of other educational interventions.

Educational Research

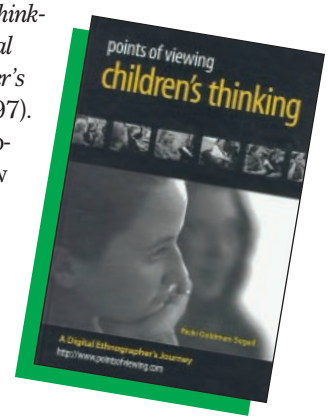
Idit Harel's book, *Children Designers: Interdisciplinary Constructions for Learning and Knowing Mathematics in a Computer-Rich School*, earned the Book of the Year Award from the American Educational Research Association in 1991. Her comprehensive research demonstrates how elementary students who program computers to design their own educational software make impressive academic gains in math and other domains.

Cynthia Solomon has made countless contributions to technology and

education for decades. Her book, *Computer Environments for Children: A Reflection on Theories of Learning and Education* (1988), provides an analysis of several competing learning theories and their high-tech manifestations.

Constructionism by Papert & Harel (1991), *Constructionism in Practice: Designing, Thinking and Learning in a Digital World* by Mitchel Resnick and Yasmin Kafai (1996) and *Robotics for Kids: Exploring New Technologies for Learning* by Allison Druin and James Hendler (2000) are anthologies chock-full of case studies about innovative educational technology research and classroom implementations.

Ricki Goldman-Segall demonstrates how digital ethnography may be used as a research tool in *Points of Viewing Children's Thinking: A Digital Ethnographer's Journey* (1997). Her development of new video-based scholarship is an important contributions to classroom research.



Understanding the Future

The Clock of the Long Now: Time and Responsibility: The Ideas Behind the World's Slowest Computer by Stewart Brand (2000) will inspire you to look beyond the upcoming round of testing or next quarter's profits. This provocative book uses the construction of a clock designed to keep time for 10,000 years as a philosophical metaphor for deep thinking about the future.

Ever wanted to really understand how computers work? *The Pattern on the Stone: The Simple Ideas that Make Computers Work* by Daniel Hillis (1999) answers all of your questions in a stimulating and readable fashion. **DA**

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