

4-1-1999

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Citation Details

Gary Brown and Mary Wack "Online Collaboration and Implications for Learning and Society" The Technology Source, April 1999

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Online Collaboration and Implications for Learning and Society

by [Gary Brown](#) and [Mary Wack](#)

Note: This article was originally published in *The Technology Source* (<http://ts.mivu.org/>) as: Gary Brown and Mary Wack "Online Collaboration and Implications for Learning and Society" *The Technology Source*, April 1999. Available online at <http://ts.mivu.org/default.asp?show=article&id=1034>. The article is reprinted here with permission of the publisher.

Last month, we explored the debate over the perceived impact of new technologies on education. As we continue to examine issues of learning with technology, we thought it might be useful to situate those issues within a broader context. In this month's column, therefore, we have identified three provocative articles that trace the development of technology tools as they have begun to transform not only education, but also the workplace, our notions of space and time, and even the way the brain processes and structures information.

As we examine issues of teaching and learning in future columns, it should be useful to keep in mind not just the implications of new technology not in our educational endeavors, but the ways in which education both reflects and shapes our society.

In the first of this month's featured articles, "The Evolution of Computer Supported Cooperative Work—Past, Present and Future Developments" (Crow et al, [1997](#)), the authors mediate a roundtable discussion between luminary technology pioneers from education and industry. The participants trace the rapid changes in computer-supported cooperative work up to its emergence as a discipline, and they explore the continuing challenges and implications of designing software that hopefully reflects the ways in which people work and live.

Central to the design challenge, observes Paul Dourish, a senior research scientist at Apple Research Labs, is that "people are most definitely not doing the things which the Internet was originally designed to do, moving large volumes of data around, getting remote access to supercomputer facilities, or whatever. . . . They're not connecting to other computers, but to other people."

Saul Greenberg, an Associate Professor of Computer Science at the University of Calgary, Canada, laments the fact that present "technical constraints of computers" have made it acceptable to "think that groupware can be provided as an add-on

feature and as a luxury." He says, "I would like to see the term 'groupware' disappear from use, simply because every system will be groupware."

Complicating the design challenge, as Greenberg notes, is the fact that "understanding a group's work practice is inherently more difficult than understanding a single person's individual work. While we can get a good handle on stereotypical individual behaviors and requirements for conventional software design, these same people will relate to others in a groupware context in quite different ways." He adds, "To further confound the problem, there are no agreed upon measurement metrics for deciding upon the success or failure of groupware. Researchers in video conferencing, for example, have been trying to discover a metric that somehow shows the value of these systems. Measuring the end work product often shows little difference, because people are incredibly resilient at working together through even the most limited groupware." Dourish summarizes this challenge when he observes, "New media spaces provide more than just a reflection of the workplace"; they create a "new and different channel for other sorts of interactions, increasing both the opportunities and the range of interactive possibilities."

Crow and his colleagues try to conclude the discussion by suggesting that designers should increasingly strive to reflect what we expect from face-to-face communication. It seems to us, however, that the complex design and evaluation issues of collaborative groupware—issues that the roundtable participants examine—renders ineffective the "conversion" metaphor that is often used to describe the relationship between face-to-face communication and computer-mediated communication in teaching and learning. The notion that we can "convert" a traditional course into an online course implies that there are two stable entities, one of which is converted into the other. But the roundtable presented in this article illustrates that both sides of the equation—face-to-face and online interaction—are dynamic and form a reciprocal, co-evolutionary relationship. As we learn more about the mysteries of what makes face-to-face teaching and learning "work," our groupware will improve; and as we use groupware more extensively, it will help make explicit and visible what works, and what does not work, in face-to-face teaching and learning.

In "Space, Collaboration, and the Credible City: Academic Work in the Virtual University," Stephen R. Acker ([1999](#)) examines a key aspect of the interactive possibilities new technologies have unleashed. He identifies the "merging" of space and time and the complicated consequences of our new existence in multiple places simultaneously. We now confront, he argues, the "essential question": the choice between "dislocation or co-location between physical and electronic space."

Acker argues that "we have confused connecting across distance with being in the same space" and that "in this confusion we have become smug about our domination of space" at the expense of our "well-being." In the "culture of urgency" that has emerged, Acker argues, we need to reconcile the relationships between our physical and electronic spaces. He asks, "Can the collaborative process conducted in

distributed locations save us time for reflection, or will these space-merging technologies only increase the frenzy of activity?"

Finally, Acker calls for educators to "consider this issue, especially if its practices serve to habituate and direct activities in other social arenas by those who, at least for a time, are charges of academic institutions. . . . Collaborative work," he concludes, "may help us to return to the agora, or expose us to a middling diversity of gnawing dissatisfaction."

In "Bioelectronic Learning: The Effects of Electronic Media on a Developing Brain," Robert Sylwester (1999) hones one aspect of these issues to an even finer point, examining the impact of online acculturation on "the best-organized three pounds of matter in the known universe."

Sylwester observes that "this is the first generation to directly interact with and alter the content on the screen and the conversation on the radio." The breadth and duration of this electronic exposure, Sylwester argues, often "comes at the expense of other more positive and normative experiences with human behaviors and interactions." He notes that neuroscience suggests we should recognize technology, like drugs, as an additional or "fourth technological brain—located outside of our skull but powerfully interactive with the three integrated biological brains within our skull."

Sylwester concludes that although "a socially interactive environment that stimulates curiosity and exploration enhances the development of an effective brain," such an "excessive childhood involvement with electronic media that limit[s] social interaction could hinder the development of a brain's social systems."

To optimize the potential of new media, we need to keep in mind, as Sylwester suggests, that "perhaps it's not what electronic media bring to a developing mind that's most important but rather what the developing mind brings to the electronic media."

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