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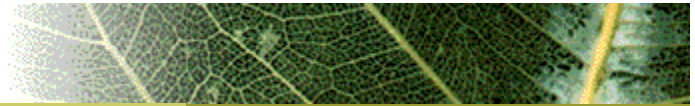
ORION
September | October 2005

LOWELL MONKE
Charlotte's Webpage
Why children shouldn't have the world at their fingertips

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THOMAS EDISON WAS A GREAT INVENTOR but a lousy prognosticator. When he proclaimed in 1922 that the motion picture would replace textbooks in schools, he began a long string of spectacularly wrong predictions regarding the capacity of various technologies to revolutionize teaching. To date, none of them—from film to television—has lived up to the hype. Even the computer has not been able to show a consistent record of improving education.

"There have been no advances over the past decade that can be confidently attributed to broader access to computers," said Stanford University professor of education Larry Cuban in 2001, summarizing the existing research on educational computing. "The link between test-score improvements and computer availability and use is even more contested." Recent research, including a University of Munich study of 174,000 students in thirty-one countries, indicates that students

Breaking Connections
Are Computers Changing Childhood Experience?
Lowell Monke

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Whether or not these assessments are the last word, it is clear that the computer has not fulfilled the promises made for it. Promoters of instructional technology have reverted to a much more modest claim—that the computer is just another tool: "it's what you do with it that counts." But this response ignores the ecological impact of technologies. Far from being neutral, they reconstitute all of the relationships in an environment, some for better and some for worse. Computers tend to promote and support certain kinds of learning experiences, and devalue others. As technology critic Neil Postman has observed, "What we need to consider about computers has nothing to do with its efficiency as a teaching tool. We need to know in what ways it is altering our conception of learning."

Several years ago I participated in a panel discussion on Iowa Public Television that focused on some "best practices" for computers in the classroom. Early in the program, a video showed how a fourth grade class in rural Iowa used computers to produce hypertext book reports on *Charlotte's Web*, E. B. White's classic children's novel. In the video, students proudly demonstrated their work, which included a computer-generated "spider" jumping across the screen and an animated stick-figure boy swinging from a hayloft rope. Toward the end of the video, a student discussed the important lessons he had learned: always be nice to each other and help one another.

The teacher explained that her students were so enthusiastic about the project that they chose to go to the computer lab rather than outside for recess. While she seemed impressed by this dedication, it underscores the first troubling influence of computers. The medium is so compelling that it lures children away from the kind of activities through which they have always most effectively discovered themselves and their place in the world.
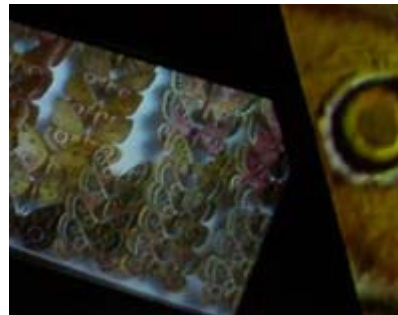
Ironically, students could best learn the lessons implicit in *Charlotte's Web*—the need to negotiate relationships, the importance of all members of a community, even the rats—by engaging in the recess they missed. For recess is not just a break from intellectual demands or a chance to let off steam, but also a break from a closely supervised social and physical environment. It is when children are most free to negotiate their own relationships, at arm's length from adult authority. Yet across the U.S., these opportunities are disappearing. By the year 2000, according to a 2001 report by University of New Orleans associate professor Judith Kieff, more than 40 percent of the elementary and middle schools in the U.S. had entirely eliminated recess. By contrast, U.S. Department of Education statistics indicate that spending on technology in schools increased by more than 300 percent from 1990 to 2000.

Structured learning certainly has its place. But if it crowds out direct, unmediated engagement with the world, it undercuts a child's education. Children learn the fragility of flowers by

touching their petals. They learn to cooperate by organizing their own games. The computer cannot simulate the physical and emotional nuances of resolving a dispute during kickball, or the creativity of inventing new rhymes to the rhythm of jumping rope. These full-bodied, often deeply heartfelt experiences

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educate not just the intellect but also the soul of the child. When children are free to practice on their own, they can test their inner perceptions against the world around them, develop the qualities of care, self-discipline, courage, compassion, generosity, and tolerance—and gradually figure out how to be part of both social and biological communities.

If children do not dip their toes in the waters of unsupervised social activity, they likely will never be able to swim in the sea of civic responsibility. If they have no opportunities to dig in the soil, discover the spiders, bugs, birds, and plants that populate even the smallest unpaved playgrounds, they will be less likely to explore, appreciate, and protect nature as adults.

Computers not only divert students from recess and other unstructured experiences, but also replace those authentic experiences with virtual ones. According to surveys by the Kaiser Family Foundation and others, school-age children spend, on average, around five hours a day in front of screens for recreational purposes. All that screen time is supplemented by the hundreds of impressive computer projects now taking place in schools. Yet these projects— the steady diet of virtual trips to the Antarctic, virtual climbs to the summit of Mount Everest, and trips into cyber-orbit that represent one technological high after another—generate only vicarious thrills. The student doesn't actually soar above the Earth, doesn't trek across icy terrain, doesn't climb a mountain. Increasingly, she isn't even allowed to climb to the top of the jungle gym.

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During the decade that I spent teaching a course called Advanced Computer Technology, I repeatedly found that after engaging in Internet projects, students came back down to the Earth of their immediate surroundings with boredom and disinterest—and a

desire to get back online. Having watched Discovery Channel and worked with computer simulations that severely compress both time and space, children are typically disappointed when they first approach a pond or stream: the fish aren't jumping, the frogs aren't croaking, the deer aren't drinking, the otters aren't playing, and the raccoons (not to mention bears) aren't fishing. Their electronic experiences have led them to expect to see these things happening—all at once and with no effort on their part. The result is that the child becomes less animated and less capable of appreciating what it means to be alive, what it means to belong in the world as a biological, social being.

W HEN I WAS GROWING UP IN RURAL IOWA, I certainly lacked for many things. I couldn't tell a bagel from a burrito. But I always and in many ways belonged. For children, belonging is the most important function a community serves. Indeed, that is the message that lies at the heart of *Charlotte's Web*. None of us— whether of barnyard or human society—thrives without a sense of belonging. In my case, belonging hinged most decisively on place. I knew our farm—where the snowdrifts would be the morning after a blizzard, where and when the spring

runoff would create a temporary stream through the east pasture. I could tell you where I was by the smells alone. Watching a massive thunderstorm build in the west, or discovering a new litter of kittens in the barn, I would be awestruck, mesmerized by mysterious wonders I could not control. One of the few moments I remember from elementary school is watching a huge black-and-yellow garden spider climb out of Lee Anfinson's pant cuff after we came back from a field trip picking wildflowers. It set the whole class in motion with lively conversation and completely flummoxed our crusty old teacher. Somehow that spider spoke to all of us wide-eyed third graders, and we couldn't help but speak back.

Though the work of the students in the video doesn't reflect it, this kind of experience plays a major role in E. B. White's story. *Charlotte's Web* beautifully draws a child's attention to something that is increasingly rare in schools: the wonder of ordinary processes of nature, which grows mainly through direct contact with the real world. As Hannah Arendt and other observers have noted, we can only learn who we are as human beings by encountering what we are not. Substituting the excitement of virtual connections for the deep fulfillment of firsthand engagement is like mistaking a map of a country for the land itself
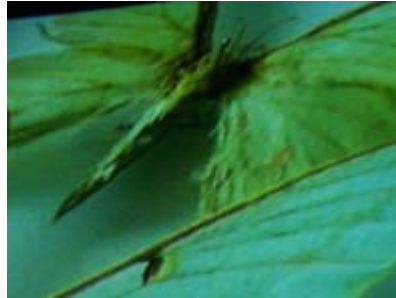
Rather than attempt to compensate for a growing disconnect from nature, schools seem more and more committed to reinforcing it, a problem that began long before the use of computers. Even relying on books too much or too early inhibits the ability of children to develop direct relationships with the subjects they are studying. But because of their power, computers drastically exacerbate this tendency, leading us to believe that vivid images, massive amounts of information, and even online conversations with experts provide an adequate substitute for conversing with the things themselves.

As the computer has amplified our youths' ability to virtually "go anywhere, at any time," it has eroded their sense of belonging anywhere, at any time, to anybody, or for any reason. How does a child growing up in Kansas gain a sense of belonging when her school encourages virtual learning about Afghanistan more than firsthand learning about her hometown? How does she relate to the world while spending most of her time engaging with computer-mediated text, images, and sounds that are oddly devoid of place, texture, depth, weight, odor, or taste— empty of life? Can she still cultivate the qualities of responsibility and reverence that are the foundation of belonging to real human or biological communities?

During the years that I worked with young people on Internet telecollaboration projects, I was constantly frustrated by individuals and even entire groups of students who would suddenly disappear from cyber-conversations related to the projects. My own students indicated that they understood the departures to be a way of controlling

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relationships that develop online. If they get too intense, too nasty, too boring, too demanding, just stop communicating and the relationship goes away. This avoidance of potentially difficult interaction also surfaced in a group of students in the "Talented and Gifted" class at my school. They preferred discussing cultural diversity with students on the other side of the world through the Internet rather than conversing with the school's own ESL students, many of whom came from the very same parts of the world as the online correspondents. These bright high school students feared the uncertain consequences of engaging the immigrants

face-to-face. Would they want to be friends? Would they ask for favors? Would they embarrass them in front of others? Would these beginning English speakers try to engage them in frustrating conversations? Better to stay online, where they could control when and how they related to strange people—without much of the work and uncertainty involved with creating and maintaining a caring relationship with a community.

To develop normally, any child needs to learn to exert some control over her environment. But the control computers offer children is deceptive, and ultimately dangerous. In the first place, any control children obtain comes at a price: relinquishing the uniquely imaginative and often irrational thought processes that mark childhood. Keep in mind that a computer always has a hidden pedagogue—the programmer—who designed the software and invisibly controls the options available to students at every step of the way. If they try to think "outside the box," the box either refuses to respond or replies with an error message. The students must first surrender to the computer's hyper-rational form of "thinking" before they are awarded any control at all.

And then what exactly is awarded? The child pushes a button and the computer draws an X on the screen. The child didn't draw that X, she essentially "ordered" the computer to do it, and the computer employed an enormous amount of embedded adult skill to complete the task. Most of the time a user forgets this distinction because the machine so quickly and precisely processes commands. But the intensity of the frustration that we experience when the computer suddenly stops following orders (and our tendency to curse at, beg, or sweet talk it) confirms that the subtle difference is not lost on the psyche. This shift toward remote control is akin to taking the child out of the role of actor and turning her into the director. This is a very different way of engaging the world than hitting a ball, building a fort, setting a table, climbing a tree, sorting coins, speaking and listening to another person, acting in a play. In an important sense, the child gains control over a vast array of complex abstract activities by giving up or eroding her capacity to actually do them herself.

The computer environment attracts children exactly because it strips away the very resistance to their will that so frustrates them in their concrete existence. Yet in the real world, it is precisely an object's resistance to unlimited manipulation that forces a child (or anyone) to acknowledge the physical limitations of the natural world, the limits of one's power over it, and the need to respect the will of others living in it. To develop normally, a child needs to learn that she cannot force the family cat to sit on her lap, make a rosebud bloom, or hurt a friend and expect to just start over again with everything just as it was before.

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We hand even our smallest children enormously powerful machines long before they have the moral capacities to use them properly. Then to assure that our children don't slip past the electronic fences we erect around them, we rely on yet other technologies or fear of draconian punishments. This is not the way to prepare youth for membership in a democratic society that eschews authoritarian control.

That lesson hit home with particular force when I had to handle a trio of very bright high school students in one of the last computer classes I taught. These otherwise

nice young men lobbied me so hard to approve their major project proposal—breaking through the school's network security—that I finally relented to see if they intended to follow through. When I told them it was up to them, they trotted off to the lab without a second thought and went right to work—until I hauled them back and reasserted my authority. Once the external controls were lifted, these teens possessed no internal controls to take over. This is something those who want to "empower" young children by handing them computers have tended to ignore: that internal moral and ethical development must precede the acquisition of power—political, economic, or technical—if it is to be employed responsibly.

Technology can provide enormous assistance in figuring out how to do things, but it turns mute when it comes to determining what we should do. Without any such moral grounding, the dependence on computers encourages a manipulative, "whatever works" attitude toward others. It also reinforces the exploitative relationship to the environment that has plagued Western society since Descartes first expressed his desire to "seize nature by the throat." Even sophisticated "environmental" simulations, which show how ecosystems respond to changes, reinforce the mistaken idea that the natural world conforms to our abstract representations of it. Such reductionism reinforces the kind of faulty thinking that is destroying the planet: we can dam riparian systems if models show an "acceptable" level of damage, treat human beings simply as units of productivity to be discarded when inconvenient or useless, and reduce all things, even those living, to mere data. The message of the medium—abstraction, manipulation, control, and power—inevitably influences those who use it.

OUR TECHNOLOGICAL AGE REQUIRES A NEW DEFINITION OF MATURITY: coming to terms with the proper limits of one's own power in relation to nature, society, and one's own desires. Developing those limits may be the most crucial goal of twenty-first-century education. It is not necessary or sensible to teach children to reject computers (although I found that students need just one year of high school to learn enough computer skills to enter the workplace or college). What is necessary is to confront the challenges the technology poses with wisdom and great care. A number of organizations are attempting to do just that. The Alliance for Childhood, for one, has recently published a set of curriculum guidelines that promotes an ecological understanding of the relationship between humans and technology. But that's just a beginning.

In the preface to his thoughtful book, *The Whale and the Reactor*, Langdon Winner writes, "I am convinced that any philosophy of technology worth its salt must eventually ask, 'How can we limit modern technology to match our best sense of who we are and the kind of world we would like to build?'" Unfortunately, our schools too often default to the inverse of that question: "How can we limit human beings to match the best use of what our technology can do and the kind of world it will build?" As a consequence, our children are likely to sustain this process of alienation—in which they treat themselves, other people, and the Earth instrumentally—in a vain attempt to materially fill up lives crippled by internal emptiness. We should not be surprised when they "solve" personal and social problems by turning to drugs, guns, hateful Web logs, or other powerful "tools," rather than digging deep within themselves or searching out others in the community for strength and support. After all, this is what we have taught them to do.

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education, and computers.

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