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## Man With a Plan

### **Education revolutionary Ed Lyell has actually been elected to the Colorado State Board of Education.**

*By Connie Guglielmo*

In Ed Lyell's hopeful vision of the near future, by age 18 everyone in this country is literate, semi-skilled, and as comfortable using computers and telecommunications technology as they are using pencils.

The main thing clouding that vision is the current educational system. "Children are born learning machines," says the Denver resident. "They have a 'try' attitude: try until they do it. But if you had a school out there today to teach children to walk, one-third of the population would not be walking," he adds, only half jokingly.

As one of seven elected members of the Colorado State Board of Education and co-chair of the state's Telecommunications Advisory Commission, Lyell has plans to turn that around.

"It's one thing for me to have an individual voice on reform," says Dave Hughes, a retired army colonel and online education guru, who became acquainted with Lyell more than ten years after Lyell signed on to Hughes' political action bulletin board. "But it's quite another thing for an insider, in the sense of being an elected official representing a constituency, to continue to advocate that point of view. If it wasn't for him, there would be no elected official at the state level working on reform in education with technology and telecommunications as key instruments of that change."

But Lyell is a realist as well as a visionary, and although he shares many of the ideas of his contemporary Lewis J. Perelman (see *Wired* 1.1, page 71), he's not convinced that the school system as we know it will disappear any time soon. "It would be easier to get the Pope to become Buddhist than to get the schools to change," he says.

Lyell, however, is a man with a plan - and it begins with getting politicians, administrators, teachers, parents, and students to acknowledge that the group-oriented, regimented approach to learning, what he calls factory- or production-driven learning, is history.

"The school system today...tells little Johnny and Jane that at 2 p.m. they are going to sit in this room and be on this page," says Lyell, who wrote his own ticket out of a gang-troubled

San Francisco neighborhood by becoming the first member of his family to complete high school. "If they don't do that, they're disruptive students."

Lyell has plans for an educational system where students are treated as individuals with differing interests and learning skills. He hopes to build interactive learning devices that students can peruse at their own pace and that present information in a variety of ways. These computer-based learning systems are part of a concept he calls "Just-in-Time Learning."

"It's analogous to just-in-time manufacturing, which holds that efficiency comes when things happen just at the right time, when you have all the proper resources in place," says Lyell. "In the case of education, it means a student is able to log onto a computer to learn about whatever he or she is interested in learning about at that particular point in time."

Of course, says Lyell, educators need to agree on a general education framework - essentially, what knowledge or skills all students should possess by the time they reach certain milestones; for instance, they should master reading and writing by a designated age. Lyell also believes that the current educational structure - preschool, grade schools, middle school, high school, and college - should be divided into pre-puberty, where structured learning is still possible, and post-puberty, where the emphasis shifts to individual learning.

"Puberty is the rite of passage that shifts people from docile observers of information to active participants in society. Today that rite of passage happens at about age 13 or 14. Because we don't want people in the work force, we keep students in school longer. But we're also keeping them in the same kind of learning environment they had when they were 10, and after puberty most people want to be treated as adults."

Computers can also take the awkwardness out of learning. "One of the biggest problems in education is that you, as a student, don't want to appear dumb to another human being," says Lyell. "The computer doesn't care. You don't mind that it takes you 40 times to get it right with a computer - and it takes the embarrassment out of learning. The computer, because it doesn't care, is in a sense the most caring learning environment. Humans, because they care, at some point show frustration, fear, or bias. They're never going to be able to sublimate their own egos to the learner's ego, but a machine has no ego."

To make this individualized learning system a reality also requires that we as a society make the shift away from what Lyell describes as edifice-based learning. "We have an educational system today where 99 percent of the capital goes into buildings. The pressure to maintain buildings is high, because if you're on a school board and the people who got you elected are builders, you build," says Lyell.

Instead, a telecommunications network (which Lyell is promoting through his role on Colorado's Telecommunications Advisory Commission) that links students together and that supports everything from data to video exchange would take education out of isolated classrooms, allowing computer-based systems to be set up at home, in local businesses, and at new community-based learning centers around Colorado.

"I think we should have learning centers, neighborhood electronic cottages," Lyell says. "In a sense it's going back to the pioneer days where you had small schools with students of different ages and just one or two teachers overseeing them and teaching many subjects."

The idea of these community-based learning centers is at the heart of a proposal Lyell has authored as a senior fellow of the Center for the New West, a twenty-state nonprofit think tank that was established by Colorado-based cable and telecommunications provider US West, but is now funded by more than 200 corporate sponsors. The goal of Lyell's New West Learning Community Project is to bring parents, teachers, businesses, and community groups together to begin to design and create prototypes of the interactive multimedia lessons that would form the basis of a Just-in-Time Learning system.

"Some people think he's ahead of his time," says Jerry Wartgow, who oversees Colorado's 22 community colleges and education centers as president of the Colorado Community College and Occupational Education System, and who has worked with Lyell on various projects over the past fifteen years. "Many of the radical ideas he advanced ten years ago are now commonplace; for instance, the whole idea of computers in the classroom and the potential of telecommunications. Many of his ideas sounded impossible several years ago, but we're seeing things like charter schools and competency-based learning today, and I have many reasons to expect that the ideas people now think are on the cutting edge will soon be commonplace."

Lyell is not expecting a revolution. Instead, computer and telecommunications technology, Lyell believes, will be the driving force leading to gradual and evolutionary changes. "For the first time in my life," he says, "I'm really hopeful."

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