Good morning. I’m grateful to be here for the second year. What I would like to do today is expand the topic from using technology for teacher preparation and certification to using technology for the purpose of achieving the bottom line for all of us in our profession, regardless of our roles, and that is to enhance the learning prospects for all students; particularly for those students for whom our schools represent the only probable chance for success and upward mobility. So at the expense of being less specific, I want to be more real about this topic, and I will organize my material into three equal parts: one for information, one for reflection and commentary, and one for provocations.

Let me begin with two images. After the fall of communism in Eastern Europe, I was asked by the George Soros Foundation, later by the World Bank, to participate in a group of so-called experts whose mission was to bring democratic dynamics to the schools in former Soviet republics. I did this until about four or five years ago. I especially remember going to visit a school in Moscow. The school director—that’s their version of a principal—said, “We’re in for a treat. We’re going to... we actually have the keys today to our... to the... the room...” In Russia, when you say “the room,” everyone knows what the room is, just like when you say “the Party” nobody asks which party. The room had heavy steel doors and about three different locks. She opened the door and said, “This is our computer room.” And the teachers, who knew we were there since some of them were training with us, were stretching their necks to see what was inside that room and asking me if it was safe to come close because the perception of computers was pretty much the same as the perception of nuclear reactors and they might give off X-rays. It seems sort of incredible to us, doesn’t it? Yet here’s the second
image I want to share with you. About fifteen or sixteen years ago, when my son Mark was in high school, he proposed to the school administration and to the faculty of his school that he would be willing to help them transform their school into a paperless school. Sixteen years old, and he would be willing to stay after school and work with the administration and teachers to do that. They said no and they called us to inquire about whether our son was all right. Suggested a preliminary visit with the school psychologist might be a good idea, just exploratory, of course.

So where are we now, a decade or fifteen years later? The National Center for Education Statistics issued a report in 2000 about access to technology in schools in 1999. The report is called “Teachers’ Tools for the 21st Century: A Report on Teachers’ Use of Technology.” According to the report, 99 percent of public school teachers had access to computers at their schools in 1999. Of these, 84 percent said they had computers in the classroom, 82 percent had them at home, and 63 percent had access to the Internet at home. In the same report, one third of the teachers reported feeling well prepared to use computers and the Internet in their classrooms. These are higher statistics than we heard earlier today. And of that one third, guess how most of them said they became prepared? Ninety-three percent said they became prepared not through any formal training, but through independent learning. Eighty-eight percent said that professional development activities were somewhat helpful. Eighty-seven percent said they learned from their colleagues. And 50 percent said that college and teacher preparation courses and offerings made a difference for them.

How did they use this technology? According to the report, half of the teachers with access to computers at school used them for classroom work. Sixty-one percent of these teachers had their students use computers for word processing and creating spreadsheets. Fifty-one percent had students use computers for Internet research, 50 percent for practicing drills, and 50 percent for solving problems or data analysis. Many teachers used computers for creating instructional materials, for lesson planning, for e-mail, for participating in listserves, for communicating with colleagues.

What did the teachers in this report identify as the biggest hurdles to the use of technology? The largest number, 82 percent, said they had no release time for learning to use the technology. In other words, somebody forgot to build it into the teachers’ schedules. Eighty percent said there was no time for their students to use computers in the classroom. It wasn’t built into the students’ schedules, either. And 78 percent said there was not enough hardware or
software in their school. It comes as no surprise that urban teachers had the biggest problems. Urban teachers more than non-urban, secondary more than elementary, and teachers in large schools more than teachers in small schools.

So, with some notable exceptions, such as the high tech high school discussed earlier, technology has primarily been used to enrich at best, but not to transform education in this country. In other words, we are failing in our central mission and we are covering up that failure with glitzy applications that are merely marginal. Instead, our use of technology has contributed to the digital divide and increased the gap between the haves and the have-nots. One of the greatest promises of technology is to reduce the gulf between excellence and equity, but so far the experience has been the opposite. And, as I think I mentioned last time, excellence and equity ought not even be viewed as separate issues. Excellence without equity is not excellence; it is privilege. And conversely, equity without excellence is not equity; it is tokenism. Another of the great promises of technology is to actually accomplish what we cannot accomplish through other reforms, and that is to make schools more likely to be as successful for our most vulnerable students as for those who are most prepared. The bottom line question is not simply having technology; the question is how we use that technology. I wholeheartedly agree with Larry Rosen, who said that the important thing is not consuming technology, and with others at this conference who say that technology ought to be a means to get at what matters most, and that is good teaching. And even good teaching should be a means to serve the bottom line, which is better learning. The goal is not just better teaching; the goal is also better learning.

And now to the provocations. It has already been mentioned that the new phenomena are no longer just on the horizon but are already with us, such as Webinars®, which are seminars on the Web. Indeed, they're only new to some people, because about twenty years ago there was what I think was a groundbreaking book, called School's Out: Hyperlearning, the New Technology, and the End of Education, by Lewis Perelman. It's a wonderful example of lateral thinking. Which brings up another book that I recommend, called Lateral Thinking by Edward de Bono. Edward de Bono says there are lots of different kinds of thinking and the one that we proselytize in our society and in our schools, is logical, mathematical, sequential thinking. He says that kind of thinking can only produce incremental change. The kind of change we really need can only come from lateral thinking which doesn't ask, as incremental
thinking asks, or logical thinking asks, “How can I make this better or stronger or more foolproof?” It asks, “What else could I have other than this?” It is more akin to intuition and creativity. Lewis Perelman used lateral thinking when he wrote *School’s Out*. I don’t agree with a lot of Perelman’s premises, but I certainly respect his belief that someday learning will be a utility, not a commodity. That learning will be viewed as praying is now. That someday we’ll recognize that learning can be obtained anywhere. That most learning will occur at learning stations at homes and in places of employment and so forth. I think he’s quite right. I think that what could not be achieved by conventional reforms will be achieved by technology. Technology will beat us to the punch in transforming schools, education, and society, and the way for us to have a shot at even keeping pace with that is to take the attitude that Wayne Gretzky has held towards his professional work. Early in his career, he was interviewed on a sports program and the interviewer said, “Now Wayne, you’re strong and you’re fast and skilled, but so are all these other men on the rink. How come you are the one who always ends up scoring most of the goals?” And he said quite innocently and directly, “Well, because they all go to where the puck is and I only go to where the puck is gonna be.” For us to have a shot at societal change, regardless of our line of work, we have to think ahead to where things will be.

I would like to raise another key issue here, and that is the ethical and moral dilemmas that technology is likely to pose. How do we prepare ourselves and our children for the day when we know how to do much of what we should choose not to do? It is my strong view that ethics will become a core subject—and ought to become a core subject—no less than math and science and reading and writing.

Change is inevitable, and only growth is optional. Schools of the future, by definition, will always be in the future. So I want to end by picking up on something that Clare Kilbane said. And that is that with technology and change, as with change generally, chances are one third that things will stay the same, one third that they will get worse, and one third that they will get better. Actually that’s true for human dynamics in general. American Revolution: one third supported, one third opposed, one third really didn’t take sides. Take almost any issue. So let me take that and combine it with the philosophy of Casey Stengal on the secrets of management. Casey Stengal said, “No matter what you do if you’re a manager, one third of the people will hate you, one third of the people will love you, and one third of the people won’t give a damn. The secret of good management,” he said, “is to
keep the third who hate you away from the third who don’t give a damn.”
So I would suggest that for starters the way for us to have a shot at doubling improvement is to keep the third who think that technology cannot lead us to positive changes away from those who believe that technology will make things worse, and to keep them as close as possible to the third who believe that technology will make progress more likely.