It is fabulous to be back at UC Davis. I’ve been several times now, and I love the faculty, students, the campus, the area. It is wonderful to be here. Thank you for inviting me.

Also, later, after my talk, I’ll be having a public conversation on this stage with your Dean, my former colleague Ron Mangun. When I was Vice-Provost, we created our new Center for Cognitive Neuroscience and I had the privilege of reading the dossiers of the world’s most brilliant, interesting, creative neuroscientists and we chose Ron to come to Duke to start our program. You brought him back here again. I won’t hold it against you. He did a brilliant job at Duke and I know he is doing a great job here as well.
In my book, *Now You See It*, I mention that Ron is partly responsible for this whole new project I embarked on, ten years ago. In 1998, when I was reading dossiers of all these neuroscientists, I became especially excited by Ron's work on the biology of the mind and the complexity of the ways our brain and our attention adapts to the changing world around us.

Around the same time, in the popular press, I was reading a lot of very banal punditry on the way the Internet is destroying our brain. On the one hand, I was reading brilliant neuroscientists interested in how the brain adapts to new stimuli and then pundits sure that the World Wide Web and video games were destroying us all. I found this contradiction disturbing. You can tell me that my brain is being distracted. You can tell me that I'm becoming lonely because of the Internet. You can tell me I've got too much to do because of the Internet. That's okay. Don't tell me the Internet is “damaging” (which is a word that's often used) my brain or my kids’ brains. That to me is irresponsible. Whose life hasn't been changed in some way by the Internet? But it is not hurting our brain. As I'll be arguing today, the Internet may be rearranging our habits, we may need to learn new skills, partners, and methods to help us sort the complexity of a changing world. But that's very different than suggesting we're being damaged by the new technologies in our lives.

So partly what motivated this book was the sense that I've been privileged to read work like Ron's and other neuroscientists in the world, I can understand a bit of what they're saying, and I can help to try to be a translator to correct some of the punditry and even demagoguery out there in the press in order to find more helpful ways for all of us to live and thrive today. A lot of my remarks today are directed to exactly that purpose.

I. Four Great Information Ages

Lest anyone dispute the fact that we are in an usually tumultuous time where technology is changing the ways we interact, communicate, work, and learn it's useful to put our own information age in historical perspective. According to historian Robert Darnton, the Carl H. Pforzheimer University Professor and director of the Harvard University Library, there have only been three comparable information ages to our own in all human history. By that he means that there have been four times in human history where the ways we communicate and interact with one another have been changed so irrevocably that there was no turning back.

For the first such information age, Darnton goes all the way back to ancient Mesopotamia in around 4000 BCE, citing the invention of writing as marking the dawn of the first great information age. That information age was quite a bit slower in our own but, by 400 BCE, the Classical Age of Greece, the Greek alphabet was being finalized, and the great philosopher Socrates was still worried that this “new” invention was lessening the great powers of orality and aurality. He refused to write down his philosophical ruminations. Fortunately, he had a very fine student, Plato, who transcribed Socrates' dialogues or we would not even know how much he disliked the written form of philosophical argument. Socrates thought that writing distracted you and hurt your memory. Probably if he had been in a more neuroscientific age, he would have said writing damaged your brain. That's important to remember as we think about the pundits who claim all manner of terrible things happening to our brain because of the Internet.
The second great information age in human history starts in 10th century China and in Europe with the Renaissance and with Gutenberg and the invention of moveable type. There were people who didn’t like that information age either and who feared movable type would spell the end of the scriptorium, that special place in the libraries of the great monasteries in which monks wrote by hand authorized, beautiful, illuminated manuscripts. Many felt movable type would diminish the authority, strength, intellectual depth, and power of the written word.

I began my career by studying the third great information age. It occurred around the time that the Founding Fathers in the United States were negotiating the new U.S. Constitution, ushered in by the invention of mass printing, machine-made paper, and machine-made ink. The steam presses of the Industrial Age made books cheap enough that they were suddenly available to middle-class and working-class people for the first time in human history. A lot of people didn’t like that information age either.

In fact, part of my research on the third great information age sent me into historical societies to find extant copies of little duodecimos, the cheap books that were produced for the industrial age. Through some diary entries and the work of material historians, a few museum curators and I were even able to find little funny pockets that young people had hand sewn into the seams of dresses and the pants, exactly the right size to hide their duodecimos away from their parents. They were the video games of the 18th century! Reading novels was what older people said young people did too much of. Those mass-produced novels, the pundits said, were destroying the younger generation.

This is the argument that I’m going to make today: virtually everything we think of as “education” and as “work” was institutionalized in response to the dawning of the third or Industrial Era information age. We’re now living in what Darnton calls the fourth great information age in human history.

This fourth information age began roughly in April of 1993 when the Mosaic 1.0 browser was made commercially available to the general public. The single most astonishing transformation that characterizes our information age is the World Wide Web, which offers anyone the ability, to quote the motto of YouTube, to “broadcast yourself.” It’s an age where you can have an idea, go to your computer, put that idea on the World Wide Web, and virtually anyone with an Internet connection can see it without the mediation of an editor, without the mediation of somebody else telling you that it is or isn’t worthy to be published. Think about that kind of power! No wonder the pundits are as worried about our information age as were their predecessors about earlier information ages!

What we have not yet taken seriously is what we need to do to transform the institutions formed for the last information age into the kind of structures that will help us develop the skills needed to utilize the full potential of humanity’s fourth great information age. Some of those skills are cognitive and I’ll be talking today about the new forms of attention we need for this world and what skills our kids and our students need to flourish in a Do-It-Yourself (DIY) era.

“We’re now living in what Darnton calls the fourth great information age in human history.”
II. What Three Skills Are Most Important for College Students Today?

But before I say anymore, I’m going to turn this over to you for a DIY exercise. You have been given index cards and pencils. I have a timer. I’m setting the timer for one and a half minutes, 90 seconds. On the card, I would like you to write the three skills that you think are most important for a college student today to master in order to thrive in the world that they will face when they graduate.

Okay, my timer is now going off. So, now there is a second part to this exercise. I’m going to once again set the timer for a minute and a half. I’d like you to turn to somebody, ideally somebody you did not walk in with, look at the three things on each of your cards and in the next minute and a half, think about which you think is the single most important skill among the six that you’ve come up with together that a college student needs to master today.

[Timer goes off after 90 seconds]

Thank you everyone. May I please have your attention again. Attention, please.

Before I go any further, I’d like us all to reflect on that brief exercise. In many ways, it makes my argument for me. There are several points we’ve just demonstrated together, and we’ll be coming back to that exercise at the end of this talk as well.

First, isn’t it interesting that when I asked you to write three things on a card, the room went dead silent. I did not give the instructions to write alone and in silence. If you were Navajo or if this were Japan before the 1980s, when the western educational system fully took over that country, that would not have happened. So why and how did we all know that, when someone at a lectern asks us a questions, we are supposed to write alone and silently? The answer is historical: we have been conditioned to think the timed test, the silent, individual, timed test is the standard by which intelligence should be measured. That’s our culture. That’s the history of modernist, industrialist Western views of human intelligence. Those assumptions are embedded so deeply that we do not even think about them anymore but they are culturally and historically conditioned.

Second, think about the difference in the feel of the room when everybody was talking. It took a lot longer to have everyone pay attention to me. Why? Because collaborative
conversation over real, meaningful ideas is so engaging. You didn’t want to hear me again—you had so much to say to one another. Yet we rarely think of that kind of dialogue as “learning,” even though all of our educational research on learning suggests that the more one is invested in explaining one’s ideas, the more one learns.

“We have such an impoverished idea of what multitasking is. We have such an impoverished idea of what attention is.”

Third, every pedagogical study says that if a year from now you’re asked what happened at Cathy Davidson’s lecture, what you’re going to remember is what happened in the second exercise because the more you’re involved—writing conversation, negotiation, processing—the more you remember. Socrates was not wrong. He was a smart guy that Socrates. Process and dialogue are great learning mechanisms.

Fourth, all the research shows that when you go back and look at what you wrote down a year from now, you’re all going to remember that it was your idea that the two of you circled. That’s what memory is, that’s what history is: we remember what relates most closely to us and sometimes we skew facts to our own investment (ego or otherwise).

The final point I want to make is that no brain was damaged in the course of that second exercise. It was a pretty noisy room, hundreds of people talking ideas all at the same time, in many cases with someone you didn’t even know. That’s actually quite cognitively demanding, and certainly it is a form of multitasking on several different levels: emotional, cognitive, physiological, auditory, sensory. No brains were damaged in the course of that experience. We have such an impoverished idea of what multitasking is. We have such an impoverished idea of what attention is.

That’s another one of the reasons that I’m interested in the science of attention—to get rid of a lot of myths and to help all of us relax a little about our cognitive state so we can use this amazing tool called the Internet in a good way, in a positive way, in a productive way. It’s not going to solve all our problems for us but it is also not going to damage our brain. Our job is to learn how to use it wisely and well.

III. The Science of Attention and The Goals of Education

In order to do this, we have to realize that we need one another to help us with attention. We cannot do it alone, as was demonstrated by one of the most famous experiments in cognitive neuroscience, first done in the 1970s by Ulric Neisser, and reprised using better technology in 1999 by two young scholars at Harvard, Daniel Simons and Christopher Chabris. For those who don’t know this experiment, let me explain. Subjects are asked to watch a video that’s about two minutes long of people passing basketballs back and forth. You, as test participants, are asked to count how many times the ball is passed only between people wearing white, not black. About halfway through the video, a person dressed up in a gorilla suit walks in among the circle, is on camera for nine seconds, beats her chest, makes a face at the camera and walks away. About 60% of test subjects who are seeing the video for the first time do not see the gorilla. They might have gotten a perfect score; 15 passes, but they did
not see the gorilla. About 100% of people who weren't there to see the experiment are sure that if they saw it, they would see the gorilla.

The whole point is that we believe we see the world, but, in all actuality, we see what we're focused on. That's an incredibly powerful part of the human brain; to be able to focus, but to focus means to not pay attention to everything else. So if we're told to count the number of passes, we do. It's like the timed test. But we miss a lot, and most of us miss the gorilla.

There's dozens of these kinds of cognitive tests that gauge how much we miss because of our ability to pay attention to that on which we are focusing and, since I've taken just about every available such test, I know I'm no better at these than anyone else. However, the first time I took the gorilla test, I saw the gorilla. The reason I saw it this day, and this is relevant to what we're talking about, is because my office, when I was Vice-Provost for Interdisciplinary Studies, was hosting the luncheon at which a young cognitive neuroscientist was showing and then explaining this experiment. I wasn't paying attention to the video. I was checking to make sure that the President had arrived, that the caterer was doing what he should be doing, that everyone had a seat and so forth. Also, I'm dyslexic. I looked at the screen, saw it might be complicated and I had more important things to do that day. I didn't count basketballs. Therefore, I saw the gorilla.

Now this was an event for distinguished professors at Duke. Almost everyone there had a perfect basketball count--because getting the right answer is what distinguished professors do. We didn't keep a tally but I believe there were only about three or four people out of about 120 present that saw the gorilla that day. However surprising it is to be told that you missed a gorilla, it's even stranger to be in a room of distinguished colleagues and realize they're not seeing the gorilla.

That's institutional lesson number one; if you're trying to make an institutional change, and there's some gal insisting she sees a gorilla, don't assume she's wrong, even if the vast majority of others present are convinced that there is no gorilla.

That's one of the key lessons of attention blindness. We cannot see what we cannot see unless we delegate the right partners, the right tools, and the right methodology to privilege diversity, difference and opposite points of view. It has to be privileged. All the research shows that, without privileging diversity, collaboration can become groupthink, can mediate toward the status quo. You have to set up special conditions for privileging the different voices.

It was with this overt privileging of multiple perspectives that the World Wide Web was created. When Tim Berners-Lee wrote the HTML (Hypertext Mark-up Language) that is the basis for the Web, he created a system that favored openness instead of focus or exclusivity. In the famous if odd phrase from Eric Raymond’s The Cathedral and the Bazaar, “Given enough eyeballs, all bugs are shallow.” What that means is, if we all write computer code from the same point of view, we’re not going to catch the bugs. If you have enough people around the world contributing to the development of code, without a hierarchical assessment of whose opinion should or should not count, if you have developers working in an open system from massively different cultures, trainings, perspectives, credentials, and expertise,
you have a chance of seeing the bugs in the code that people who share the same expertise miss. Some of those who contributed to the early Web had Ph.D.’s—some were, for all intents and purposes, un-schooled hackers. All were invited to contribute, much in the manner of latter-day “crowdsourced” affordances of the Web, most notably Wikipedia.

IV. 20th Century Scientific Labor Management Becomes Scientific Learning Management

Very little about the research universities of today is designed to privilege eccentric, non-credentialed, non-expert, outlier voices. There’s a reason for that. Clay Shirky, the American writer, consultant and teacher on the social and economic effects of Internet technologies, has said, “Institutions tend to preserve the problem that they were created to solve.” The research university was created to solve a lot of problems in the late 19th century. It was the time of the second great Industrial Revolution, Taylorism, Fordism, mass production and it was a time where people were desperately and urgently trying to create a kind of expertise for the modern world of the 19th and early 20th century.

The research university is about timeliness. How do we control attention? How do we focus attention? Going back a little bit to the creation of public schooling; the school bell is the
symbol of the public school in the 19th century. Why? Because you had to train farmers to be factory workers, shopkeepers to enter to corporate firm. Everything about public schooling emphasizes timeliness: it’s math hour, it’s reading hour, it’s writing hour. Learning isn’t the issue, but what counts is the regulation of learning. Put away that book and take out another one. Thus the advent of the timed test, which, as we saw in the original exercises I set for you this afternoon, have convinced all of us, in 2011, that it’s what education is about.

What we need to remember is that the system we have now is relatively recent in human history. It was designed, theorized, implemented. Two thinkers particularly relevant to this discussion are William James and Frederick Winslow Taylor. In chapter 11 of The Principles of Psychology (1890), William James complains that nobody else in English has written about attention. He’s the first person in English to write about attention and, as he says, “what the French call ‘distraction.’” Etymologically in fact, the word “distraction” has been in English for a long time, but not in the French sense of one’s linear, undivided focus being interrupted from something external. That’s a relatively new concept for us in English.

Much of the 20th century Western history of attention is Jamesian, in this sense of distraction from outside stimuli. It’s very interesting because almost all of the research on attention in the East is about how the mind causes its own distractions. We now know from the Cambridge scientists and the work that’s being done at Washington University and other work that about 80% of the brain’s energy is used in talking to itself. If you’ve ever had insomnia you know what I mean. If you’ve ever tried to meditate and found your mind suddenly wandering far outside the limits of inner peace, you know what I mean.

The second theorist to have a major influence on our 20th century idea of productivity was Frederick Winslow Taylor. Taylor is considered to be the father of scientific labor management. Peter Drucker called him the most important thinker since the Founding Fathers because what Taylor did was insist that we needed metrics for determining what level of productivity does or does not constitute good work and then argue that these metrics should standardize not only productivity but human attention, effort, activity, task, and labor. Taylor’s ideas of standardizing human effort has had a profound influence on not just our work lives, but on how we teach, from primary grades to graduate and professional schools at research universities.
The school bell became the symbol of nineteenth-century public schooling and, by the turn into the twentieth century, scientific labor management was well on its way to being scientific learning management. By that I mean that educational rules, practices, and methods of evaluating achievement all became as standardized as labor practices. The age at which kids started and were eligible to stop compulsory school was pre-determined. Knowledge was not only neatly divided into specific pre-defined subjects but also the class day organized the teaching of those subjects hour by hour. Textbooks also ordered the amount of time spent on each lesson in a way perfect for regulating human behavior for a standardized workplace but not designed to enhance learning. When math hour ended, for example, it would be time for spelling, no matter whether kids had learned the math or not, were interested or not. Virtually every aspect of school, assessment, and learning became standardized, graded, measured, and put into the form of statistical relationships, one to the other, based on standard deviation and deviation from the mean (also products of the late nineteenth century).

I’ll briefly look at two features of standardized learning innovations of the turn into the twentieth century: grades and the item-response test. The substitution of A, B, C, D grades for written responses to essays was begun, on the college level, at Mount Holyoke in 1897. It was soon adopted as a practice by the American Meat Packers Association. While educators across America quickly embraced letter grading, it’s worth noting that many Meat Packers found the system too reductive for something as complex as sirloin and chuck and insisted on supplemental categories.

Similarly, multiple choice tests delimited and privileged a certain form of knowledge over all others. Frederick Kelly designed the Kansas Silent Reading test in 1914 as a way to make it easy for anyone to put a grid over a test paper and mark the right or wrong answer and also to be able to provide comparisons among test results from school to school. However, we now have ample research that shows that doing well on item response tests is not about intelligence so much as it is about being trained to figure out what the test requires. It’s often called, “teaching to the test.” Kelly, incidentally, designed his test of what was then called “lower order thinking” partly to address a teacher shortage in 1914, when immigrants tripled the school size in urban areas. The new compulsory age limit of 16 meant that ordinary people (not just the college bound) would be in secondary schools, and when a World War meant that men were at the front, women were in factories, and there were not enough teachers.

Even he was surprised when the Scholastic Aptitude Test, an item-response test, became the metric for college admission. He went on to become a Deweyite, interested in interdisciplinary learning, learning by doing and application, and tried to instill these principles during his presidency at the University of Idaho. Unfortunately, however, this did not please his faculty. The hiring committee had wanted the father of scientific testing, not this constructivist educator. Kelly was fired as President in less than two years.

V. Learning for Participation in the World Wide Web

The questions on Kelly’s original test will sound familiar to anyone here today who has a child in grade school. “Which of the following four animals is a farm animal. Only one

“Standardized testing is about standardizing thinking.”

Cathy Davidson
answer is correct: a. cow  b. dog c. crocodile  d. raccoon.” Of course, if you are a farm kid, you well may answer that “b” is correct. A dog is a farm animal. What bubble tests encourage is not thinking or logical connection, synthesis or analysis, but learning how to figure out which answer is the one that will be marked correct. Standardized testing is about standardizing thinking.

Now imagine today your child comes home crying because he failed the dog, cow, crocodile, raccoon test. If you're a good parent in 2011, you might consider this a teachable moment and, explain to your child that, yes, dogs do a lot of work on farms but the question had a hidden bias toward those animals raised on farms to contribute to the productivity of the farm. Of course, if your child is smart, he can find holes in that logic pretty quickly so a really smart parent might say, “Why don't we Google ‘farm animals’ and see what we come up with.” If you Google “farm animals,” you don't get four choices, you get 12,900,000 items. This is the world we live in and that our children will soon be leading. What about A, B, C, D or even all of the above possibly prepares a child today to understand a world of 12,900,000 options?

The number one ranked item on Google right now, if you look up farm animals, is a delightful site, with content made by educators and graphics made by skillful professionals, called “Farm Kids.” It works great at first, but I spent a good deal of time on it this morning, in preparing for this talk, and something interesting happened as I made my way more deeply into the site. It became kludgier and kludgier, and finally a pop-up appeared on my screen to tell me that I was having problems because I wasn't using the most recent, updated version of the Microsoft Internet Explorer browser. It suggested I ask Mom or Dad to help me download that so I could enjoy the site to the fullest. I clicked through a little more and discovered this isn't just an educational site—it's a proprietary Microsoft site that, it turns out, doesn't play well with Apple products or open-source browsers like Firefox. What about our A, B, C, D educational system prepares kids to be skeptical about the abundance of information in the world, to be critical about that information, to think about who is giving them that information, for what reason, why and how?

I would argue that very little of our educational institutions are designed to address the world in which our kids are living. On the contrary, almost all of the apparatus of our institutions is designed for the standardized, hierarchical, factory or firm of the 20th century, not for the interactive, DIY Webby world of the 21st. I don't think it is much different for college kids. I'm not even sure it’s different for us as adults. We are not doing a very good job of preparing youth—or adults—for the information avalanche nor are we giving them the tools to be able to produce and contribute to the Web. We've become complacent about the apparatus of our own era.

There are almost no places in any part of the educational system, for example, where students learn to systematically engage with the biggest issues of our Information Age: security, privacy, intellectual property, copyright issues, on the one hand. And, on the other hand, a host of new workplace issues that arise when your homelife can bleed into your workplace via the unsorted Internet, the constant barrage of undifferentiated email, and social media. Nor are they learning the forms of attention and discipline necessary to manage the way

“ It is now time to rethink what the classroom should look like in order to prepare students for the 21st century world."
work flows in the opposite direction. You check Facebook for your niece’s graduation photos on the same device that might bring a notice from your supervisor that a new accounting system means you have to redo the entire budget that’s due by the end of the week.

If twentieth-century education was standardized in its forms and metrics to prepare us for the twentieth-century workplace, it is now time to rethink what the classroom should look like in order to prepare students for the 21st century world of connected, merged, distributed, always-on, DIY, collaborative labor. “Workplace” might be an office—or my living room. “Colleagues” might be down the hall or on the other side of the world. The “workday” might be any time and, if my closest associate is in Bangalore, it might be twenty-four hours long, not eight. What preparation does school give me for handling these new demands, including self-paced ones that require new forms of motivation and self-control?

VI. Two Examples of Self- and Peer-Directed Learning for the 21st Century Workplace

So how should we be teaching today? To return to the cards I handed out at the beginning of this lecture: what three skills are most important for college students today to master and what learning opportunities and structures can we design that best support those skills? Here are two examples, one an experiment we tried several years ago at Duke University, and the other by a team of adults in North Carolina that is one of the best examples I know of lifelong peer-learning in our digital age.

The iPod Experiment at Duke

Ten years ago Apple came to us at Duke and said, “We’ve got this new idea called the ‘Apple Digital Campus.’ We would like Duke to participate. We will offer you one of our current technologies (for a fee, of course!) to offer to your students, in order to help bring your teaching methods into the 21st century.” I was Vice Provost for Interdisciplinary Studies at the time and part of the team that decided which of Apple’s technologies we’d like to experiment with. We decided on the brand new glossy white iPod. At the time, there was not a single known educational use for the iPod but every kid in America wanted one. They were, then, a one-way music-listening device. A compact, digital version of the old Walkman cassette player or, going back to an even earlier generation, the transistor radio. Do you remember the cool billboards with the brightly colored backgrounds and silhouettes of kids dancing with their hair flying, earbuds in place, the gleaming white cord looping to the music?

We gave every first year student a free iPod and instantly, the second, third and fourth year students were furious. They said, “We pay tuition. How come we didn’t get an iPod?” We said, “Oh my goodness! We made such a terrible mistake. How about this: if any second, third or fourth year student can come up with an educational use for the iPod and find a professor who is willing to change a syllabus to include the iPod in their course, we’ll give you, the professor and everybody in the class a free Duke-branded iPod.”

The experiment worked. Within one semester we gave away more iPods to students in iPod classes, where students had convinced faculty to change their syllabi to include an education
For reasons of time I won’t tell you what all of those educational innovations were but let’s just say very few disciplines were left out. Biomedical engineering students found ways to listen to heart arrhythmias catalogued at the National Institute of Health. Music students figured out how to drop one voice out of famous quartets and insert their own in order to hear how they would sound with the best, and they did similar things with their instruments in famous orchestras. The world’s first academic Podcasting conference was put on by Duke students in our (then) new Program in Information Science + Information Studies. I found the poster for it recently and was amused to see “Podcasting” in quotation marks because we weren’t sure yet what to call it. That file contains similar notes about what to call the bidirectional wonder now known as “iTunes U.”

Steve Jobs was no fool. He got a lot of free R&D out of this experiment. But what Duke gained was even more important. We reversed the terms of pedagogy, putting students in the lead, enticing them with a shiny iPod but not determining the process. More importantly, and this was pretty amazing, faculty were willing to listen to their students and make a change in their syllabus when the students explained their ideas. Students and faculty talked together about what was being planned for the semester ahead. How often does that happen? In fact, if I, as a vice-provost, had said, “This is the digital age. Faculty, you must all go forth and do something digital in your classes,” no one would have done it. Most faculty would have dug in their heels; “Administrators are always telling us to do these new things. This is ridiculous.” But, to our delight, faculty did listen and, for their part, students made a good case, reaching out to faculty and understanding pedagogical design and not just showing up at office hours to complain about a grade.

Interestingly, the Times Higher Education just asked me to write about this experiment on the tenth anniversary of the iPod. In the comments section of my post, the Apple executive who had dreamt up the Apple Digital Campus responded that everyone at Apple was shocked at how vilified we at Duke were for this experiment. The hate mail was crazy! We were vilified on NBC, satirized in national magazines. And when our iPod experiment turned out to be phenomenally interesting pedagogically? Silence from the press. The executive noted...
sadly that, one of the best lessons Apple learned from this was never to lead by introducing a new product as educationally innovative. They learned that all they’d get is flack.

That’s tragic. We have to be leading educational innovation, on an institutional and pedagogical level, or we will shortchange our students’ futures.

Building Together, Building Green: The Proximity Hotel

The second example I want to offer today of how we need to relearn how we learn comes from a group of adults, probably none of whom has a college education, who decided to take the potential of the World Wide Web seriously in their work. I particularly like this example because we do not usually think of the construction industry as a place where the Internet is important. But it is.

I learned about this remarkable story on NPR. A local affiliate was interviewing Dennis Quaintance, a developer in North Carolina, talking about building a $30 million hotel in Greensboro. I was so intrigued that I contacted Dennis, interviewed him, and visited him in Greensboro, where he is widely respected.

He and his wife were 40 when their twins were born. They were strolling along the river one day, talking about what their kids would think of them when they grew up. Dennis’ wife said, “They’re going to be proud of our achievements. We give back to our community, we’re good people, but what about the environment?” And Dennis realized he had never done any building project that was sustainable.

He decided to try. He brought together 60 of his core people, with whom he had built several past projects and posed the challenge of building a sustainable hotel. None of those people knew what that was. He said, “I’m going to do something special.” He’s a tough-minded businessman, very successful. He said, “Normally I do everything on a cost plus contract. That means that if you get in late, you pay a double penalty. If there is a cost overrun, you pay a double penalty. For this project, I’m going to take off the penalty. If you come up with sustainable electricity, sustainable plumbing, sustainable elevators, sustainable HVAC and your part of the project goes over budget, you won’t have a double penalty.”

They divided up the labor, and each tried to find out everything they could about sustainability in their particular area. They’d go online, do the research, write to people, call and talk to people, and, when they thought they had a plan, they would present it to the other contractors and builders who had other kinds of expertise for feedback (i.e. “with enough eyes, all bugs are shallow”). They relearned everything about their trade. He said his family joked about it being “toilet of the week” at their house because they would test new, sustainable toilets all the time.

“Our ability to address the most pressing needs of our nation—and indeed of the globe—depends upon our resolve to pursue a future shaped by vision and leadership.”
It’s important to remember that none of the people researching sustainable hotels is a college professor, none is an environmental engineer. These are ordinary people with a collective mission. They built the “Proximity Hotel,” so named because they decided that the most sustainable thing they could do was to train local craftspeople to build much of what would be used in the hotel, using sustainable methods. “Proximity” meant building and drawing from a local community.

At some point, the organization that gives sustainability awards heard about this Proximity Hotel project and asked if Dennis was tracking all they did. He assured them they were, since part of sustainability was to leave a pathway that others could follow. After the hotel was finished, the inspectors from LEED (Leadership in Energy and Environmental Design) came and gave Proximity Hotel in Greensboro North America’s first and, at the time, only platinum LEED designation for a sustainable hotel.

When I interviewed Dennis, I said, “This was a different kind of learning.” He said, “Yeah, we didn’t have any idea what we were doing. We were just learning from each other.” I asked, “What’s the big message that you can pass on to others?” He said, “The big message is both the saddest and the happiest thing I can tell you. The saddest thing is that it wasn’t that difficult and we’re the only ones in America who have done it. That’s sad. The happiest thing is that 60 people in Greensboro, North Carolina are now world famous.”

When the recession came, their hotel was still full because that hotel has been written about often and people want to stay in it. I’ve stayed there too. You’ve never experienced indoor air like in the Proximity Hotel. Inside, it feels as if you are at the beach—pure air, natural light, non-toxic materials. It makes you aware of how bad most of our surroundings are. The first and only Platinum LEED Hotel. And, as Dennis Quaintance says, “It wasn’t that difficult.”

VII. Institutional Change: What’s On Your Card?

When Clay Shirky says “Institutions tend to preserve the problem they were created to solve,” he is partly right—but there’s also some part of that I disagree with. My HASTAC co-founder and I like to say that “institutions are mobilizing networks,” meaning they bring together people who, together, have the capacity to mobilize and change the institutions themselves. It’s important to remember that we are all part of institutions, and perhaps the worst thing about them, is that they make us believe we are powerless to enact change within them. In fact, institutions do change. The institutions of education that we have inherited are relatively recent in human history, and were changed for the needs of the industrial age. Now, it’s time to change our educational institutions again, for this digital age. If not us, who? If not now, when?

It isn’t that institutions amorphously preserve problems. We are complacent, and let inertia take over. But it does not have to be that way.

When I began this talk, I passed out cards and asked each of you to write the three things you thought were most important for students to learn today. You then talked with one another about this. The buzz when you were talking with one another was deafening. The
excitement was inspiring for me, standing up here, to experience. I do not need to tell you what needs to be changed about this institution. You were telling one another, in heated and demonstrative ways.

We're not talking about the future. Education reform has to happen now. We're nearly 20 years into the Internet era, one generation, and that's always a watershed moment in the history of a new technology. Young people entering college now don't remember a time before the Internet. That's important. No young person cares whether technology was better the year before they were born. They want to be able to make the most of the technology that exists for them, in their life, so that they can be prepared for their future—not for our past.

It's a challenging time. In the last Information Age, during the nineteenth and early twentieth century, America saw a huge change, a push in every state in the union to taxpayer financed compulsory public education. It was considered a necessity for the future, for the good of all, to invest in education. Today, we are facing the opposite—terrible cutbacks to education, a declining tax base for our public schools and our universities, just at the time when other nations are investing dramatically in education.

I hope this negative spiral can be stopped but, even if it cannot be, in cutting back, we have an opportunity to survey what works and what does not, what is not only fiscally self-supporting (if anything is, in actuality) but which is fiscally necessary for supporting future society. Every survey of employers says communication skills, interpersonal skills, technology skills, creativity, innovation, critical thinking skills, collaborative skills, and an ability to take risks—to fail and learn to fail—are what are most prized in future employees. Are we teaching those? How? How well? Do our general education courses really train students to think about how all the specialized work of the research university can be pulled together, focused, and used to solve social problems? Do we teach our students how to initiate projects and carry them through to completion, with the help of collaborative partners who may have other expertise and skills than they do? Or are we still measuring “quality” by high scores on standardized tests inspired by the Fordist production lines that made the Model T and designed to prepare future workers for a standardized workplace?

What's on your card? I'm going to end now. It's your turn. It's our turn. If I can summarize my message today, it is that we know that our attention has been trained to the timed task but now it is time to retrain our attention to workflow, collaboration, teamwork, and a constant process, at any and every age, to be brave enough to relearn again. Together, with the right partners, tools, and methods, we can see what we're missing. Even the gorillas. We have a start with what you've already written on your card. What comes next? What do we need to do? Institutions can change. To quote Dennis Quaintance, “It's not even that hard.”

Thank you.