Higher Education in the Brave New World

A faculty sponsored symposium held and California State University Northridge
September 30 and October 1, 2013

Higher Education in the Brave New World:

How Students Learn in the Context of How Professors Teach

California State University, Northridge
A Faculty Sponsored Symposium

September 30 and October 1, 2013
Location: USU, Cal State Northridge

The purpose of this event is to serve as an open forum where ideas can be expressed and explored relative to the future of education in form and content.

- Can we get every student college ready?
- What pedagogical models will get us there?
- What has to change?
- Where do we change?
- Can we do it?
- Who needs to be at the table?

Higher Education in the Brave New World

Motivated by the circumstance of a world, where technology and globalization are changing the landscape that students will be entering, and that the student body itself is in a state of flux, the faculty of Cal State Northridge sponsored a series of open forum symposiums to explore the future of higher public education. This symposium is the fourth in that series.

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Future of Higher Ed in the Brave New World
California State University, Northridge
Executive Summary

What will graduating students encounter as they enter a brave new world?
What will it require of the student?

This symposium was another in a series of hosted open forums examining the future of higher public education. Its theme: "**Higher Ed in the Brave New World**" humorously refers to the difficult challenges higher education is encountering. The symposium raised two fundamental questions; first, what are the *best models for delivery* in this new world, brick and mortar or online? The second question queries as to *what higher education should achieve*, should it just be functional and limited in the service of getting a job or should it serve larger objectives in service critical and creative thinking?

As the symposium noted on several occasions, this "new world" is diverse in almost every respect; it is global and evolving. What is higher public education to do to prepare students for unpredictable situations as they encounter a revolution in knowledge: knowledge doubling every 5 years - not to mention the ease to its access, and of course the amazing evolutions in technology that delivers almost anything imaginable. In tandem, job market opportunities are also in a state of flux, particularly at entry levels. Added to this perplexing picture is the rising cost of higher education and diminishing political/financial support for higher education systems across the nation. The prognosis from business is that we are not producing enough qualified graduates to meet the demands of the modern work place. At risk is an ill prepared citizen ready to participate in our democratic experiment but not prepared.

Cal State Northridge is situated in an interesting place in this conundrum. Positioned in the middle of California's dense population, it is one of the larger campuses in the CSU system, the largest higher education system in the nation. As a higher education public university, its faculty and student body are diverse in most ways. Walking into a classroom would be like walking into the United Nations building. (*The Student Profile prepared for the symposium offers interesting insight into the nature of the student body teachers educate and inspire. This document, like the discussions at the event, indicated that a "one size fits all" approach to resolving educational issues would be counterproductive*.)

Dr. Koller, co-creator of the Coursera Project deftly explained the need for education worldwide, that in so much of the world there are no options for higher education and that free open online courses have been a lifeline to many underserved people. Known as MOOCs (massive open online courses), Coursera endeavors to bring education to all who are interested. This project, though a work in progress has an impressive worldwide reach with much success and yet it acknowledges limitations in some teaching effectiveness and student completion rates.

William C. Allen, President and CEO of Los Angeles County Economic Development Corporation, spoke to the critical link between education and economic development in the community and the economic health of the economy. Education does not happen in a vacuum, that it serves the community in several important ways: it prepares students for the work place, it prepares students to be contribution citizens, and it prepares students with attributes that allow them to adapt to changing environments by asking the right questions. Mr. Allen remarked: "*The challenges that higher education in California faces today are truly unprecedented. The increasing demands our economy is placing on your institutions to supply the educated, skilled and creative workforce and entrepreneurs necessary to complete in the global economy, the need for applied research to innovate in that environment, the difficulty in planning and staffing the delivery of relevant curriculum in an age when technology is rapidly disrupting*

key industries, occupations and career pathways, combined with the complexity of educating the unprecedented numbers of first generation college students representing more language and cultures than ever before in our system, all at a time when the great global recession forced our state government to dramatically, and I would assert unwisely, reduce its investment in education at all levels, and most acutely in higher education. It's nothing short of daunting with a capital "D."

Matthew Moen, Dean of the College of Arts & Sciences, University of South Dakota, in the service of defending the values of a *liberating arts education* reminded the audience that we can never teach students all that they will need to know…but we can teach them how to learn what it is that they will eventually need to know. Out of this process students need to discern truth, to be good citizens of this world and to lead satisfying lives. Life is complex and therefore education must serve the students ability to navigate this complexity. Education is about so much more than a first job out of college, or a financial return on investment. It's about better understanding, about living an inquisitive life. It's about a tolerance for complexity. It's about our responsibilities as a free people.

Cal State Northridge University President Harrison stated that: "What is important for this brave new world of higher education is that students graduate with the intellectual skills needed for the 21st Century….The most important outcomes for college graduates no matter what their major, or the mode of delivery...are an ability to think critically, to communicate clearly, to solve complex problems, skills that enable them to contribute to innovation in the workplace, ethical judgment, integrity, and civic responsibility, intercultural skills, the capacity to learn beyond the years of formal education.

Keynote speaker Dr. Debra Humphreys of the Association of American Colleges and Universities, in support of the future requirements of college graduates stated, "*In an era when knowledge is the key to the future, all students need the scope and depth of learning that will enable them to understand and navigate the dramatic forces – physical, cultural, economic, technological – that directly affect the quality, character and perils of the world in which they live*." Narrow learning is not enough. On graduation day the student needs 1) knowledge of human cultures and the physical and natural world, 2) intellectual and practical skills, 3) a sense of personal and social responsibility and 4) problem solving skills using integrative and applied learning. She noted that we have a quality shortfall on the capacities most important for student success and for economic and democratic vitality. The 21st Century workplace demands more and different capacities. Our Democracy also demands more and different capacities. Human work will increasingly shift toward two kinds of tasks: solving problems for which standard operating procedures do not currently exist, and working with new information – acquiring it, making sense of it, communicating it to others…today, work that consists of following clearly specified directions is increasingly being carried out by computers and workers in lower-wage countries. The remaining jobs that pay enough to support families require a deeper level of knowledge and the skills to apply it.

Stanford researcher, Dr. Clifford Nass shared research findings on challenges that students face in today's learning environment. There are very alluring distractions invading the learning space. He framed his findings by saying that it is common that when the average student sits to study he/she will be plugged into several devices: music in the ear plugs, the TV on in the back ground, the laptop open for surfing and of course the smart phone for occasional texting, etc. All of this is "unrelated" informational content. When measuring learning outcomes from students using traditional study techniques against students who multi-task themselves, showed that learning did occur but the multi-taskers could not connect the dots: they remember bits of information but could not use it. As a complex enterprise, effective learning requires skills and practice and is not an automatic behavior. With all the positive effects of new technology it also has had a negative effect of learning that needs reconsideration.

The symposium concluded with observations from Provost Hellenbrand. Speaking to the changes confronting higher education he stated: "*Change is certainly going quickly. But that's been a human complaint for 2,000 years from what I can tell… Institutions like the CSU began mainly as normal schools. They began focusing on education and public outreach. That is the DNA. What we're facing now is how people learn and how they learn in an era of changing technology*." In this context…"*what the liberal arts mean is that it is a way of thinking that allows you to free yourself from as much prejudice, preconception, partisanship, and provinciality as possible so that you can think clearly and act accordingly… When Cicero wrote his book on oratory, he did not see any contradiction between the liberal arts, civil service and the being in the militia: because understanding was one thing, acting accordingly was another thing…which involved virtue. And virtue meant working with others to improve their state*."

At the very least, a graduating student needs a workable knowledge. It is a reasonable assumption that if one goes to an institution of higher learning that one is thought of as *more highly educated* which would imply that with a higher level of knowledge, wisdom and creativity would follow! One cannot have wisdom without experiential knowledge; one cannot experience creativity without ideas and exercised imagination to be creative with. One or the important rewards of education is when links, euphonies, connections are made: where math connects with music, where history connects with athletics, where science and spiritual matters connect.

Leaders in business, society and government comment with concern about the state of flux and rapid change of the modern environment: that they need a labor force which can adapt to this phenomenon.

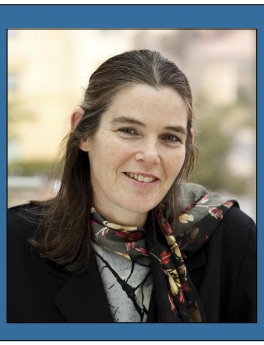
A regular comment from the work groups was the concern for the lack of "learning skills" in too many of the student body. In the science of cognition and the education process there is not just one type of learner; there are "**active learners**" who are self motivated and do well in almost any circumstance. "**Passive learners**" (the larger part of a student body) require help and motivation. On these two points the choice for the models for delivery matter in providing an effective and efficient learning environment. Even though the changing times offer teachers exciting opportunities and new challenges it is important to remember that the brain has not changed in how it learns as research demonstrates.

No matter what delivery or teaching model, there are five principles that when employed overcome obstacles to student learning.

1. Cultivate student **motivation** by highlighting the values of the course that are success oriented and supportive.
2. Build on students' **prior knowledge** and experiences.
3. Encourage the **organization** of knowledge in explicit structures.
4. Provide many opportunities for targeted **practice and feedback**.
5. Design for **deep learning** and progression to **mastery**.

Part of the learning experience is about information; the other part is about that information interacting with other people, the art of collaboration. Benjamin Bloom, among others, has also identified the phases of cognitive development (higher order reasoning). Course design and instructional strategies play a large role in moving students to the levels of reasoning and habits of mind so values both within higher education and increasingly within the world of career/professional practice.

Michael Hoggan

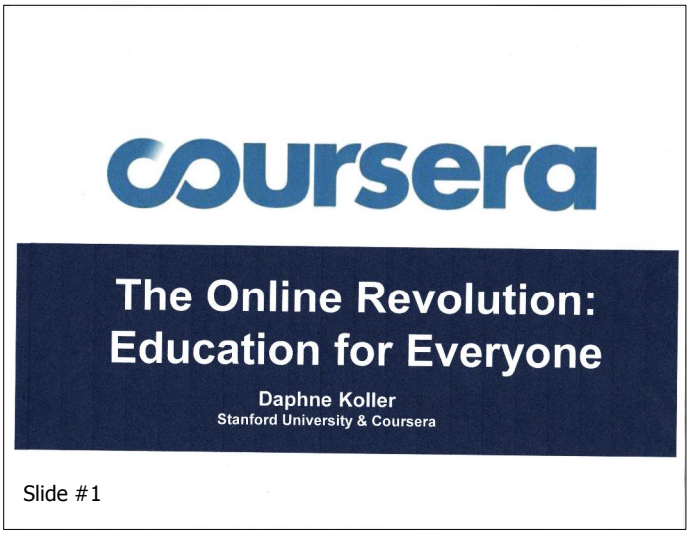


Opening Keynote Speaker

Dr. Daphne Koller Computer Science Department, Stanford University
http://ai.stanford.edu/~koller/bio.html
https://www.coursera.org/instructor/~223

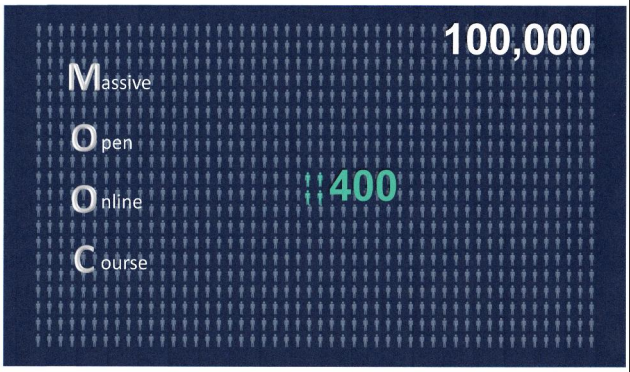
"The Coursera Model"

Daphne Koller: Good morning everyone. And thank you for inviting me to be here with you this morning. (See slide #1) So today I'll tell you a little bit about what we've been doing at Coursera and where we think this is all going.



Slide #1

(See slide #2) This project started out as a Stanford University project in September of 2011, where based on a bunch of work that a group of us had been doing at Stanford, we decided to take three Stanford classes in Computer Science and open them up for anyone around the world to take for free. We were expecting an enrollment of a few thousand people in those courses once they were opened up. But within a matter of weeks, each of those courses had an enrollment of a hundred thousand students or more.



Slide #2

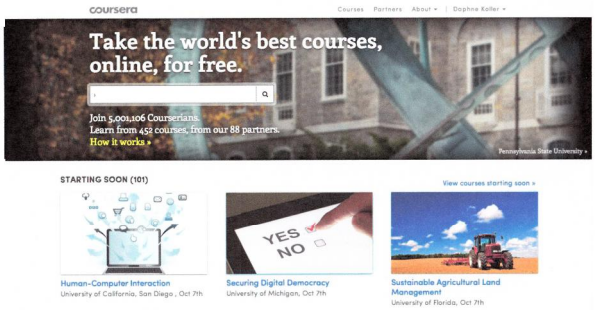
So the number hundred thousand is not one that we often hear in academic circles, so to put that number in perspective, the largest of these courses when offered at Stanford has an enrollment of 400 people. It's considered a large class even by Stanford standards. In order to reach the hundred thousand students that enrolled in that course, my colleague Andrew Eng, who teaches that course would have had to teach his class at Stanford for 250 years. [audience laughter]

But I think even more important than the number is the fact that by doing so, he would have been able to reach 250 generations of very privileged Stanford students as opposed to the students from every age group, every country and every walk of life that were able to take his class by having it be made available to anyone for free.

So when we saw the impact here, we realized that there was a tremendous opportunity that was available to us to take what is an education that had been available only to a very small number of highly privileged students and provide it to anyone around the world at what is effectively a zero marginal cost per student because the cost of delivering this education to every additional student is closer to zero dollars than it is to one dollar. And that opportunity was really too big for us to pass up, the impact of change that it allows. And so with the support of Stanford administration, in January of 2012, so about 20 months ago, we spun

this out of Stanford and opened this up as a platform that allows multiple universities to take some of their best courses from their best teachers and offer it to anyone for free.

So that was in January, 2012. We officially launched in April, 2012 with four university partners: Stanford, Princeton, Penn and Michigan. 37 courses and two hundred thousand legacy students from the Stanford courses in the fall. So that was about, what, 18 months ago or so.



Slide #3

Slide #4

This is where we are today. (See slide #3) We have over 450 courses from 88 university partners being offered to what will be by the end of the week 5 million students from every single country around the world.

So let me talk a little bit about each of those numbers in more detail. (See slide #4) So first of all, these are the universities that are offering courses with us today. On the left you can see the US Universities and you can see some of the best universities in the country, both public and private, including several UC's. Private institutions like Yale, Princeton, Duke, Cal Tech and many others. On the right you see the non-US universities that are offering courses on the platform. And we're privileged to have universities from Europe, Asia, Australia and Latin America all offering courses. Some of the best universities worldwide. So 35 of the top 60 universities worldwide including the number one or number two or both ranked universities in 15 different countries.

By virtue of being so international in both our audience and in our university partners, we're currently able to offer courses taught natively in seven different languages. So English, French offered primarily in introductory level courses aimed at students in Sub-Saharan -- French-speaking Sub-Saharan Africa, Spanish, Chinese, Italian, German and Arabic.

(See slide #5) In addition to these university partners, we have recently launched partnerships -- recently being end of May -- with 10 of the larger state systems and state flagship publics in the United States where the focus is not so much on free open access education to students worldwide, although there is that component there as well. But at the same time the focus is on how to take the technology that's been developed here of offering high quality education in a scalable high access way to provide a better education to the students in those states in a way that increases access, quality

Slide #5

and completion. And I'll talk a little bit about that at the end.

So that's the university partners. Let me talk a little bit about the courses. We started out in computer science. That is definitely not where we ended up. So you can see on the right there is a graph that shows the distribution of different course topics. And on the left you can see some of the sample courses in philosophy, in literature, poetry, business, chemistry, astronomy and medicine, entrepreneurship and many, many others. Just last week, Wharton put on the platform its entire first year MBA curriculum for anyone around the world to take for free.

One particular category of course that we're very proud of is that of teacher training. This was our response to a question that we kept on getting, which is, it's great that you're offering free high access higher education, but in many countries around the world, the problems do not start in higher ed, they start a lot sooner. What are you doing to help fix the access and completion problems of K-12 education? And we don't feel that this online experience is the right way to teach a seven-year-old how to read. And so the response that we came up with is, well what if we can just help teachers get better, become better teachers? And so in collaboration with a number of our top-ranked schools of ed that are Coursera partners as well as a number of others that are specifically aimed at teacher education, we put together a program that is intended for free teacher professional development for -- actually it's not even K-12. Some of our courses go all the way into early childhood. And so this is an international effort. Some of this is aimed at the common core in the United States. And some, as you can see in this picture, is aimed specifically at helping teachers in the developing world better teach their students so that we can perhaps help alleviate the teacher shortage of 2 million teachers worldwide.

Coursera makes studying easier for me. I could sit at home and learn like I'm at school, no distractions just me, my head phones and my books. everything is clear, the video lectures are just amazing... I could earn certificates and do quizzes to improve my learning, without spending a dime to get to my local school. It helps me a lot since my mom is in the hospital and financially, I cannot afford to attend school.

(Amanda, Dominica)

Slide #7

The last piece is the students. (See slide #7) And I can spend hours talking about student stories. I think we have hundreds and hundreds of student stories including dozens that come in every week from new students. And so I'm just going to do a few examples of the kind of opportunities that this opens up to people. And then we'll move one. So this is Amanda from Dominica. And I'm just going to read this out. *"Coursera makes studying easier for me. I could sit at home and learn like I'm in school. No distractions. Just me, my headphones and my books. Everything is clear. The video lectures are just amazing. I could earn certificates and do quizzes to improve my learning without spending a dime to get to my local school. It helps me a lot since my mom is in the hospital, and financially I cannot afford to attend school."*
So one kind of access.

(See slide #8 next page) This one arrived this week. It was one of the forum posts and the instructor drew it to our attention. This one, we read this out at company all-hands on Friday and people were in tears. I think you will see why when I read out:

"Two years ago I felt incredibly miserable. I'm coming from a traditional family, so I married young and all my

Two years ago I felt incredibly miserable. I am coming from a traditional family - so I married young and all my life I was either pregnant, breastfeeding or both.

I knew that I am talented, but all I had in life was cleaning, feeding, cleaning, feeding, working part time. I felt that all my talents and joy are buried deeply in the ground. I wanted very much to study like my classmates (and I went to study – I was sitting at the class at the real university) but it was very hard to find time. I started and left, started and left. I was deeply depressed. There was a moment when I thought that my family would be better off without me and I tried to kill myself. But we - humans are very tenacious of life and I survived.

At that time I found Coursera. My first course called the "game theory" expelled the depression and the desire to die once and forever. I feel happy and I enjoy my life and my family much more. In the last two years I have taken about 40 courses (I am addicted) and I am in love with on-line-learning. Coursera breathes life into me. It gave me hope. I know that when my kids will grow up (in 10-15 years) I will leave everything and go to Oxford. I dream about it…

As Charles Dickens once said:
"Suffering has been stronger than all other teaching, and has taught me to understand what your heart used to be. I have been bent and broken, but - I hope - into a better shape."
(Anonymous)

Slide #8

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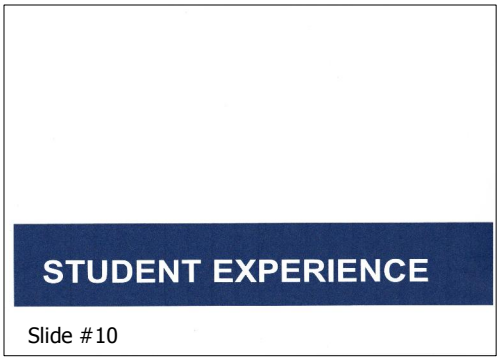
Post-traditional learners.

And finally, a yet different example. (See slide #9) This is Daniel in this picture, sitting on the right. Daniel is a 17-year-old who's severely autistic. He has a speaking vocabulary of about 150 words. He communicates by typing on an iPad designed by his father. By doing so, Daniel was the star student in the University of Pennsylvania Modern and Contemporary American Poetry class. And tells us via email that this was the first meaningful educational experience that he's had after a life of special ed. He and his father tell us that this is actually helping to diminish the severity of his illness, and he's actually spent some time travelling around the world meeting in person some of the teachers that have taught him in some of these online classes. And a couple of months ago, his father sent us this picture. This is Daniel standing in front of a wall of certificates that he has earned by performing in these online classes. We get a lot of these as well, people who for whatever reasons of disability, health, cognitive, or otherwise, are unable to come and study in a traditional college classroom. This is the reason why we do this.

I grew a lot from answering the longer quizzes and wrestling with the complex essay grading rubrics… you are not only allowing autistic people to learn, but actually diminishing the severity of the illness itself. *(Daniel Bergmann)*

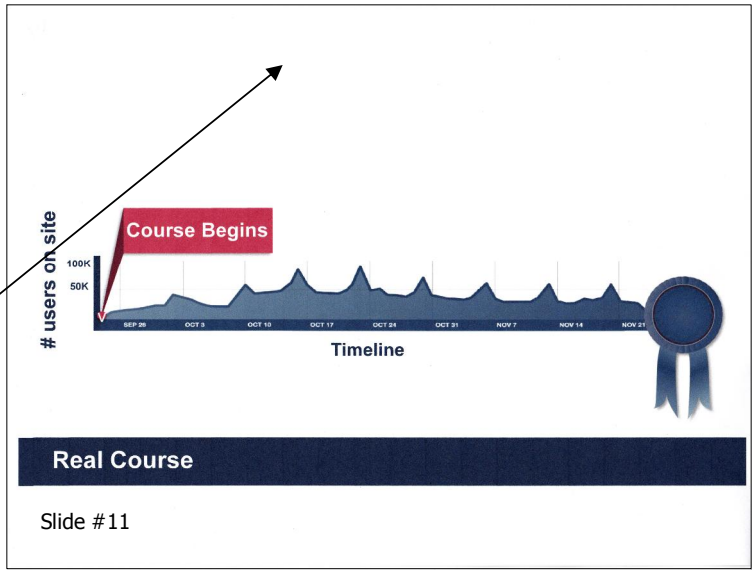
Slide #9



Slide #10

(See slide #10) So with that introduction, let me talk a little bit about the actual student experience in these online courses.

(See slide #11) So in these courses, we have tried to give these students from everywhere in the world an experience that resembles that of our college students. So this is not a bunch of static open-courseware material. This is a real course. It, just like a college course it begins on a given day. Every week there's work that you're supposed to do. There is video lectures you're supposed to see. There is homework that needs to be done. The homework is graded. So if you don't do your homework, you don't pass the course.



Slide #11

That model turns out to have the same impact on online students that it does on our own on campus students. And you can see that, the x-axis is time, y-axis is load on the site. You see that heartbeat pattern? It's the day before the deadline. Every week, the day before the deadline.

[audience laughter]

And at the end of the course, there is a credential. It's not credit-bearing by and large, but it is a piece of paper that the students can walk away with pride of their accomplishment. And we'll talk a little bit about that later on.

Playback of the video of an online lecture

Slide #12

(See slide #12) So now let's talk about the different components of the student's interaction. The first is the video lectures themselves. So let me show an example of what that looks like. This is one example. So this is from the University of Michigan Model of Thinking class. The instructor is talking. You can see that he scribbles on the slides. When the video hits the yellow notch, it pauses and the students get asked a question. They answer the question, are given immediate feedback as to whether they're right or wrong, have a chance to try again, and potentially get an explanation. So this interaction, which is interspersed into our very short video modules, they're about 10 minutes on average, is actually really important to keep the students' attention and to keep them retained and engaged.

Now, if you think about this as a comparison to a large lecture class -- and again, the comparison here is to a large lecture class, not to a 12 person seminar -- but if you have an auditorium with 150 people, sure, as instructors we can try and keep the students engaged by asking questions in class. And many of us do. But when we do that, at least speaking for myself, since as you can see I talk pretty quickly, 80% of the students are still scribbling the last thing I said. And then there's that smarty pants in the front row. [audience laughter] And it's always the same person, who answers the question before pretty much anyone else has even realized that a question had been asked. [audience laughter] At which point, the class moves on. And I'm guessing it happens in many of your classes as well, right? Here every single student engages with the question. And that helps students stay retained. Okay.

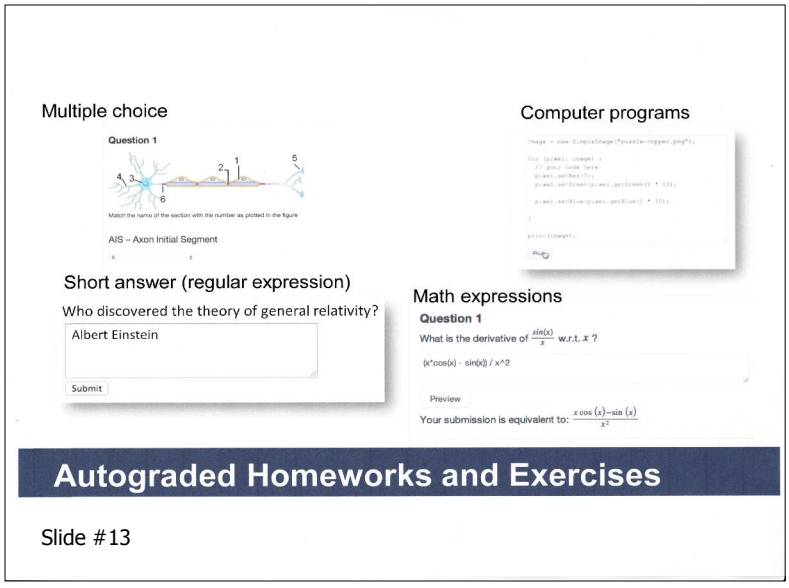
The other aspect of online, of this online interaction is that it also allows the students to personalize learning experience to their own needs and their own time and place. So they can watch it at 8 o'clock in the morning if that's their alert time, or at 2 o'clock in the morning. It depends on what their biological cycle is.

You can also break away from the constraints of in-classroom teaching in other ways. So as I said, these are short video modules. These are not hour and 15 minutes lectures. o you can break it down into well-defined modules with well-defined learning outcomes that the student then traverses at their own time, at their own pace. And that gives them a lot more control over their own learning and they're able to sit and re-watch a previous segment. Or they can pause and take notes, or anything that allows them to sort of match the learning to their own needs.

You can also tailor the learning experience to the needs of different students by, for example, providing background material that some students might require but others already have. Or by providing optional extensions that some students would find interesting and motivating but might not be of interest to everyone. So this allows us to basically move away from the one-size-fits-all model of education that's forced on us by the need to deliver an education to 150 people all sitting together in the same classroom.

Let me skip past this.

So I talked about the in-video quizzes. The in-video quizzes are actually being used by instructors on a variety of different ways. So you saw the use of the in-video quizzes for asking questions to have students practice the basic concepts in the material. But there's other things that people use them for. So for example in the Duke Irrational Behavior class, they use this as a way of conducting surveys among the students in the class. So it's kind of like a clicker. It's an in-video clicker at this point.

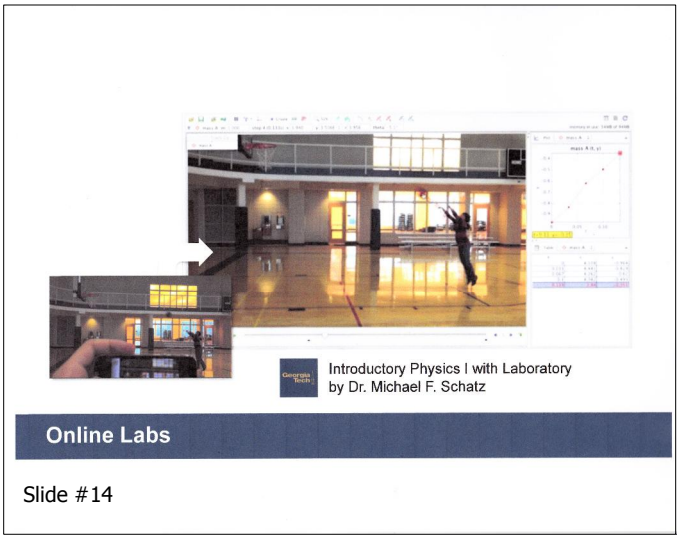


Slide #13

Okay, so that's the lectures -- that's the lecture component. (See slide #13) But that's not where the meaningful learning happens. As we all know, students learn by actively doing stuff with the material themselves. And so that brings us to the topic of the weekly homework. Now the weekly homework, as I mentioned, are graded, and that obviously poses a challenge because you have a hundred thousand students. You don't have five thousand teaching assistants. So who's going to grade all that work?

So there's two solutions that we've developed that allow you to do grading at scale. The first is computer-based grading. And it turns out that you can do computer-based grading for a pretty broad range of questions at this point. So in addition to a good old multiple choice, there is short answer grading that you saw on the video. There is grading of computer programs and computer models and Excel spreadsheets. Anything that has a structured output. And grading of math expressions that looks not just at the syntactic form of the expression, but also at its semantic equivalency so that if somebody writes 0.5 times x times x, the computer automatically recognizes it as the same as x squared over 2. So you don't have to write down all the possible variations on the answer.

It turns out the auto-grading has been used by our instructors in very creative ways. (See slide #14) This is probably one my favorite examples. This is from Professor Mike Schatz of Georgia Tech who created a course called Introductory Physics1 with Laboratory. And so you might question how students out there in the general public in all sorts of remote parts of the world are going to do a lab class when they don't have access to a lab. And so what Mike did is he created this system that plugs into our auto-grading capabilities where he has the students do the lab with materials that are available to the in their own environment, like balls and tables and things like that. And he has the students videotape the experiment on their cell phone. And then he has image analysis software that calculates velocities, accelerations, masses and things like that, and can thereby confirm the student's own measurements of those same quantities. And so you could actually do a lab class with materials that students happen to just have lying around, which is, I think, a really cool example of how one can be creative in these online courses.



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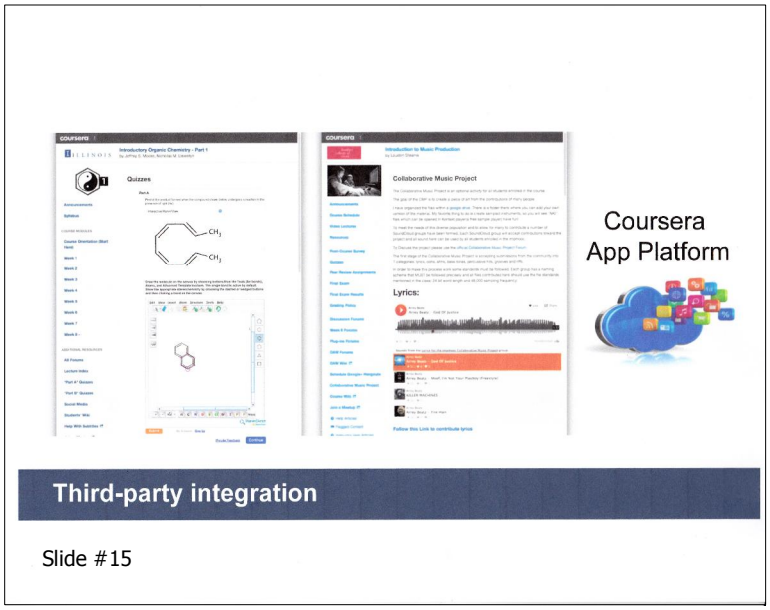
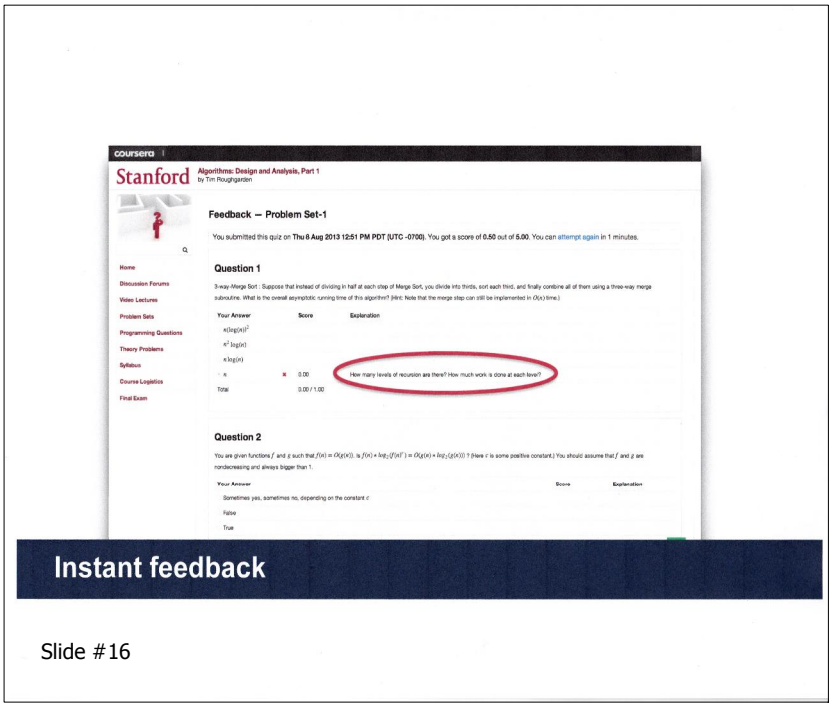


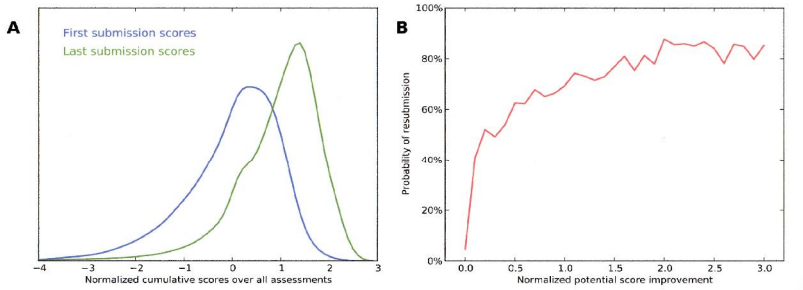
Slide #15

(See slide #15) We also support a lot of third party integration, especially for grading of interesting assignments. So here you have two examples of that. We have integrated on the left with a Pearson MyLab's Chemistry Mastery, it's called, package that allows students to do fairly sophisticated assignments in organic chemistry and have them be auto-graded. The auto-grading all is done by the Pearson tools. And we just integrate with that to give the grades back to the grade book. And on the right there's one from the Berkeley School of music that is a music authoring tool. And again, integration with that. And this is the first few steps in the app platform that we're currently building up that's going to provide an integration with a whole bunch of third party or instructor-provided tools that is going to allow people to really create a rich ecosystem for their students from a whole range of different software components, which we internally are too small to build out and maintain in the long term. So this is a way for a very rich set of tools to be all integrated so that instructors can kind of mix and match and provide to their students what they think is the best course experience.



Slide #16

(See slide #16) Okay, the important part about auto-grading is that it's not just about scalability. It's also about the instant feedback that is provided to their students as to whether they're right or wrong. This is to be compared to a lot of traditional grading where, between the time that a student learns the material, gets the homework, submits the homework and get the graded homework back, three or four weeks might have elapsed, by which point the student might realize that they didn't get the material. But at that point it's really too late to go back and do much about it because the class has moved on. Here, the students know immediately that they're not understanding. And that give us the opportunity to let them try again and basically achieve mastery by trying and trying again until they get it.

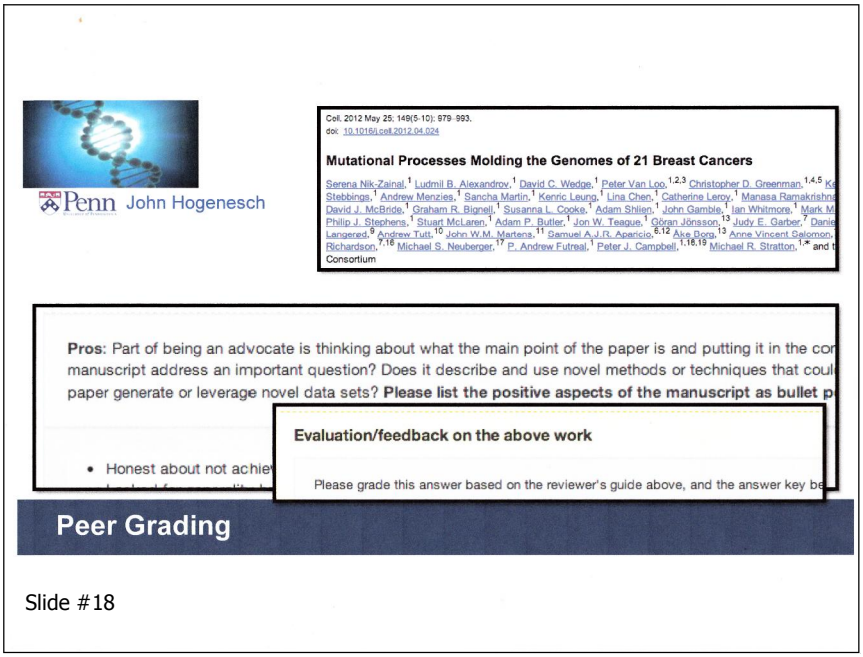


Slide #17

So here is a graph that demonstrates this. (See slide #17) This is an aggregate over 29 classes that have been offered on the platform that allow this mastery learning, that is they not only give instant feedback, but also allow for resubmission of the same work with maybe oftentimes some randomization. So what you see on the graph on the right is first that the students are incentivized to resubmit. The x-axis is how much potential there is for score improvement, that is how far you are from the perfect score. And the y-axis is the probability of resubmission. And you can see that the students who are further away are more likely to resubmit, which is great because those are the ones who are most in need of learning the material better. And you can see on the graph on the left that the scores do improve over time. That is there is a significant difference in the distribution between the first submission, which is the blue graph, and the final submission, which is the green graph.

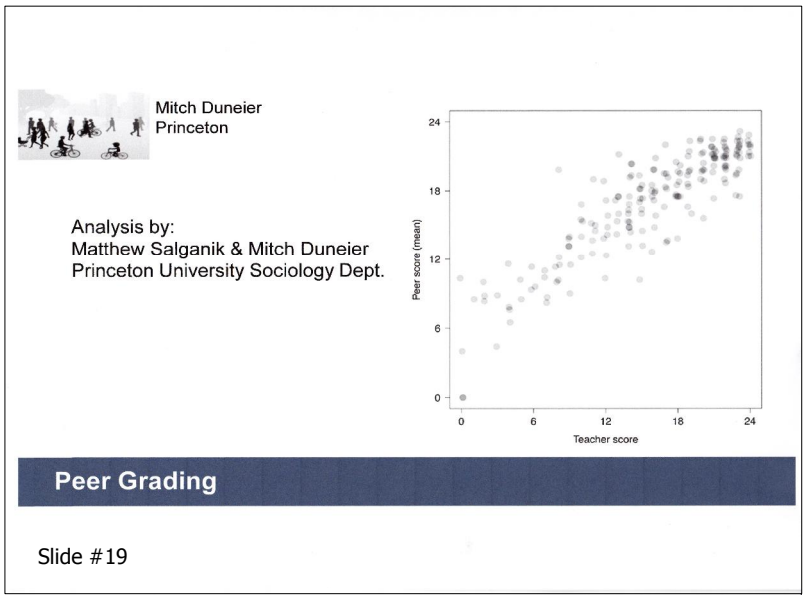
Now, this obviously begs the question of, sure you let somebody submit often enough, eventually they're going to get it. So is this indicative of actual learning that's going on or does it just indicate repeated attempt? And so we did an analytics -- we did an analysis of those 29 classes to try and gauge that. And basically, and I have the data if somebody wants to look at that at the Q and A, that shows that for students whose baseline performance is similar, those who engage in this mastery-based learning tend to do better not just on that assignment, but also on the final exam. And so this does, we believe, provide a basis for better future learning as well. So that's great.

But obviously automatic grading will only take you so far. (See slide #18) There is a whole range of assignments that a computer really cannot grade effectively right now. And that includes a lot of the open-ended critical thinking style work like essays, designs, critiques and many performances and many others. And so in order to allow scalable grading of that type of assignment and thereby support courses in the humanities and social sciences and all of the less quantitative courses, we put in a framework called peer grading. This combines ideas from a technology called Calibrated Peer Review that was developed at UCLA, integrating ideas from crowd sourcing, which is what makes Wikipedia and Amazon Mechanical Turk work. Putting these ideas together. The basic notion is that the instructor puts together a well-designed grading rubric that is provided to students generally after they submit their own work. And they are then trained in the process of grading automatically by the system. And at the end, after they've demonstrated the ability to grade, they then are given five assignments of other students in the class to critically assess relative to that rubric.



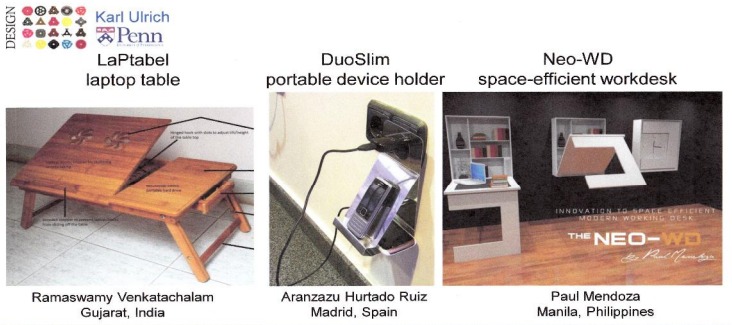
Slide #18

(See slide #19)
And this is an example of such an application in a Penn Genomics class where the assignment is actually to critique a scientific paper. And students were critiquing the critique as part of this peer grading process. You might question whether students who are not qualified in the material are able to accurately grade the work of others. And the answer is sometimes. It depends on whether the assignments and grading rubric are designed to support that.



Slide #19

So here is an example from the Princeton sociology class, which was the first humanities class -- it was a very humanitarian sociology course -- to use peer grading. And they did an experiment to test the accuracy of this by having the TA's grade separately each of the 1200 final exams that comprised three essay-style questions. What you see here, the x-axis is the TA grades; the y-axis is the peer grades. And you can see a very strong correlation, which suggests that, again, when the peer grading rubric is well designed, this achieves highly reproducible results and meaningful feedback to the students.

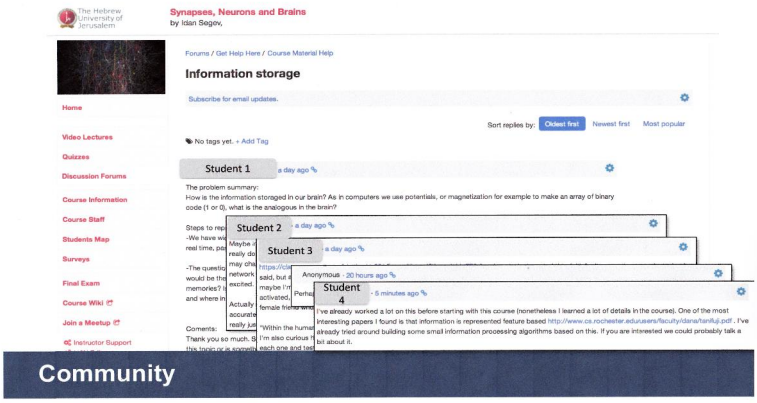


Slide #20

(See slide #20) It turns out that this approach allows us to do a much broader range of courses than you would think can be done in a scalable format. So here, for example, is the Wharton, Design Course. It was an 8-week project class. That was the assignment, an 8-week project. And each week the students submitted successively more and more elaborate versions of first a problem specification, a case study, a prototype, and finally an artifact and got five pieces of feedback from fellow students in the class. So that at the end, they were able to get some pretty spectacular projects coming out of this.

Now the other really, I think, important aspect of peer grading is that, again, just like auto-grading, it turns out to have pedagogical benefits as opposed to just scalability. Because students in these classes tell us, and this is anecdotal, we don't have data to support this, but anecdotally, that they learn as much or more from grading the work of their peers as they did from doing the work on their own because they learned to critically think about what makes for a good assignment and what makes for a not so good assignment. They learned to see how the same problem can be tackled in different ways. And then having seen all that, in many of the classes, the students are then asked to go back and apply the same rubric to their own assignment so that they are then forced to think about did I do well on this relative to the rubric and relative to other solutions that I've seen from students in the class? And that's a really powerful learning mechanism for those students. And so a lot of the faculty who have applied peer grading in the public classes are now using the same ideas in their own private classes on campus as well.

(See slide #21) The final component of the student experience here emerges naturally from peer grading, which is the aspect of community. One thing that just does not scale to 10,000 students, and frankly does not even scale all that well to 500 students or even 150 students is the instructor's ability to interact in meaningful ways by answering questions of students in the class. We all know the burden of email and how much work it is to answer emails from all these students. What we've done here is we've replaced the hub and spoke model of a single instructor responsible for answering all the student questions with a peer-to-peer interaction. That is, students post questions on a discussion forum and other students answer those questions.

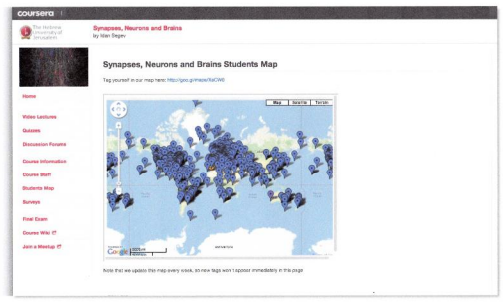


Slide #21

And because these are such large courses, it turns out that for any given question, there's usually going to be an expert there somewhere in the class who's capable of providing a really good and often a very detailed answer to the question that's being asked. And so students often get responses that are certainly faster turnaround and in many cases as good or better as what an instructor would have done simply because of lack of time.

(See slide #22) It turns out that you could also, then, start combining these things in interesting ways. So

driven by Professor Al Filreis in the Modern Contemporary American Poetry class at Penn, we put in the mechanism by which students' work is posted on the discussion forum together with their peer assessments. So each one is a separate thread. And then you have the ability for other students to go and comment on the work of others in just as a general commentary. And some of these threads have hundreds of comments of people looking at the work of others and saying, ah, I like what you did here, but I didn't like what you did there. And it really creates a very exciting intellectual discourse around, in this case, essays about poetry.



Global community

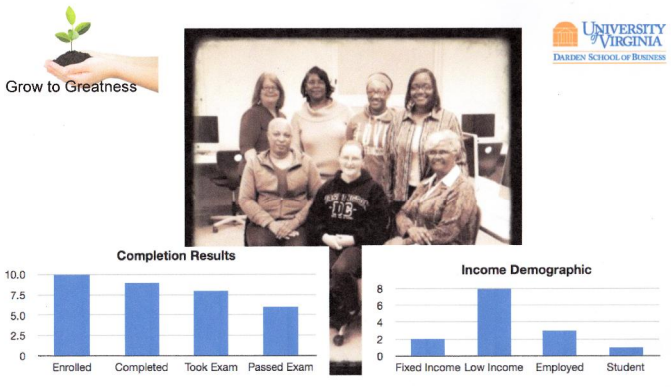
Slide #22

Global Network of Learning Communities

Slide #23

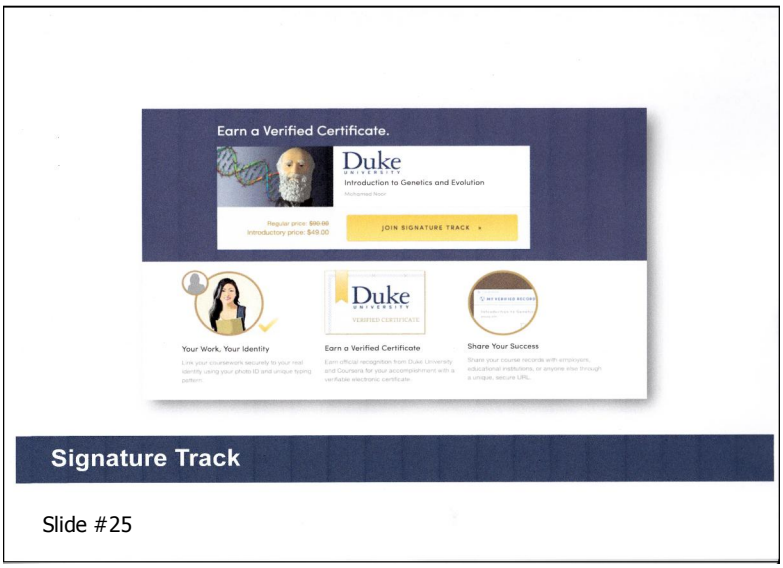
So here's an example of that. (See slide #23) Community also happens not just in the virtual setting, but also physically. This is something that emerged organically. Students basically came together just saying, hey I'm in Kandahar and I'm taking this class. Who wants to come and do a study group with me? We'll be meeting at this coffee shop Thursdays at 5. And we now have several thousand of these communities around the world in dozens of different countries of people getting together once a week to help each other over the challenging parts of the material.

I'd like to highlight one of these communities as being particularly interesting. (See slide #24) This is a community of students in Ohio who are not among life's most fortunate. These are primarily women from minority backgrounds in their 40's and 50's. Only one of them has a college education. They're all either unemployed or working in low paying jobs. This wonderful woman who you see in the top left, Sharon Watkins, brought them together and said, let's take a class together. And she brought ten of them. They picked a class. They picked an entrepreneurship class from the Darden Business School at the University of Virginia. And they took it together. And of the ten people who began this class, nine of them stuck it through to the end, and six of them completed an MBA level -- successfully passed an MBA level final exam for this course. Remembering



Slide #24

that only one of them has a college education. So I think this is a really important testament to the benefit of combining really high quality online content with the kind of support that you get from a face-to-face community. And I'll talk more about that in a little bit.



Slide #25

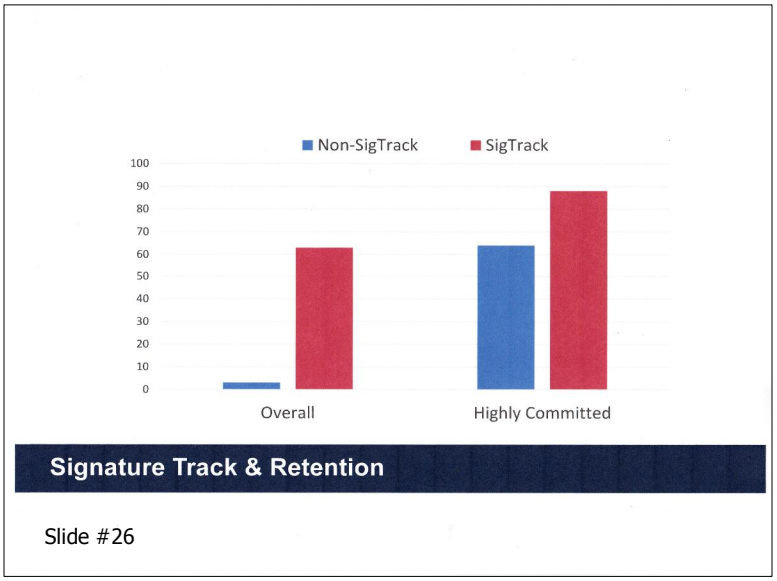
(See slide #25) Okay, so the final piece of the student's experience comes at the end. We talked about this credential. What is this credential? Well every student who successfully completes the class generally gets just a letter from the instructor, which was something called a Statement of Accomplishment. This says, congratulations, good job, you finished the class. But in addition, for those students who want something a little bit more rigorous, we put in place in January of this year something that we call the Signature track, or the verified certificate. This is a mechanism by which students authenticate their identity by submitting a picture ID which is compared to their Webcam photo by a human. And then at the same time, they create a biometric profile. In our case, the biometric profile uses keystrokes, because it turns out that if two people type the same phrase, their patterns are going to look very different. And it's really impossible to forge. How to you teach somebody to type in the same rhythm that you type? It's just not possible. And so that allows us to identify the person every time they log in and confirm that they are there participating in their own learning.

And so at the end, we're able to confer upon them a certificate that has a little bit more heft behind it, which is this verified certificate, which our university partners have allowed to carry their university brand. Even though it's not a for-credit certificate, they've said that it's okay to do that.

Now, this is an important thing for us, not only because it provides great value to those students, especially the ones who want to use it for job seeking purposes, but also because it's a sustainability mechanism for the effort. This is no longer a free offering. I mean, the course is free and you can take the course for free without getting one of these certificates, but if you want one of them, then you have pay for that identity verification process and it's costing on average between $40 and $60 to participate in this program. And for us, this is an important thing because it allows us to make this a sustainable thing financially without charging students for access to content. So nevertheless, $50 is a lot of money for some students, certainly for students outside of the United States, and so in addition to the paid version there's also basically a fee waiver, a financial aid mechanism that students who really need one of those certificates but can't afford the $50 have a mechanism for getting anyway. And I'm not going to read the stories here because we talked a lot about student stories at the beginning.

So I'd like to use the Signature Track as a way of addressing one of the criticisms that has often been levied around these open online courses, which is, oh, these courses can't be any good because only 8% of the students who start the MOOC them will complete the MOOC. And that's true. Only 8% of the students who sign up for one actually complete it. That number doesn't mean, however, the same thing that it means in a traditional college class because in a traditional college class, when a student signs up for the class, they usually do so with the firm intent of completing it. And if they don't, then it's a failure. It's their failure or the system's failure or something. Most of the students who sign up for a MOOC have no intent to actually do it. They're exploring. They are treating it in the same way as taking out a book from the library where they're intending to

read two, three, four chapters, get a sense for the material and then putting it aside. So to evaluate that you can use the Signature track, because if students sign up for the Signature track, presumably they have some intent of getting some kind of credential at the end. Otherwise why bother paying for it?

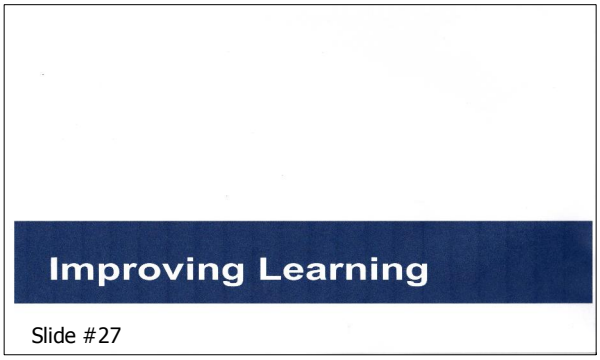


Slide #26

(See slide #26) And so here's one graph that demonstrates the differences here. So here you can see that among students that sign up, whereas students outside the Signature track completion rate. And this cohort was about 5%. In the Signature track it was over 60%. So 63%. Now the Signature track is actually not a very high bar because for a lot of students $50 is not a lot of money. And some of them are actually viewing it as a donation to support the effort. But if you look at an entry survey and ask students: Are you committed to completing the class? -- which is the next graph that I'm going to show -- you get numbers that are even more striking.

Among students who walk in to these courses intending to complete them, completion rates is about, again, 64-65%. Those who sign up for Signature track, completion rates get close to 90. So about 88%. Now 88% completion rate is incredibly high for an online activity, even an online activity that's all about fun like social games. Far less for something that requires 5 to 7 homework every week. So this is an indication that for students who are actually interested in completing the class, these classes are something that do retain those students.

Okay. And finally, I'd like to sort of talk a little bit about the other aspect of community, which is the community of institutions that's coming out of this. And that's also going to lead to the next part and final part of the talk. One of the things that we're all trying to do here is learn together. Because these online courses are sort of a new direction for many institutions. And I think that we're going to go back in three years and look at what we're doing today and say: I can't believe we so naive in how we're implementing these online courses. There's so many things that we now know better. And so to accelerate that process of learning, we are also building a community of institutions that are participating in this. And this is the Partners Portal that you can see has a lot of technical documentation as well as a community where people can show good examples of best practices or things that have succeeded in their classes and so on and so forth. So we can all learn, for example, how to increase retention rates even further, how to do good peer grading and so and so forth.

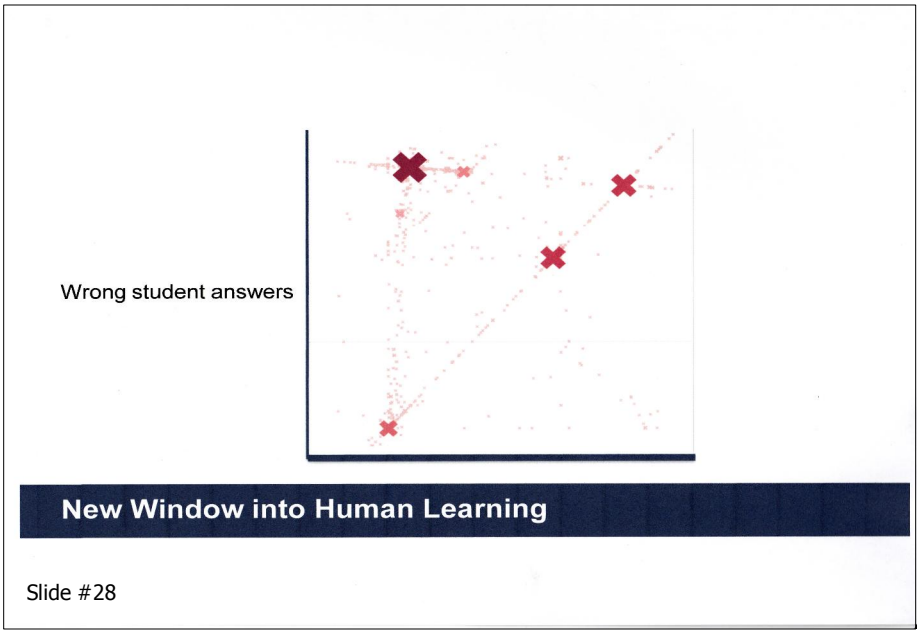


Slide #27

(See slide #27) So the last part of this talk is about how this might help us improve learning outcomes for our own students in our own campuses.

(See slide #28) And there's, I think, several different ways in which this can be done. Some that leverage the online component and some that leverage the stuff that we can do in the classroom once we have the online materials there. So in the online component, first I think, and maybe one of the most exciting opportunities that we have available to us is the visibility that the data gives us into the performance of our own students and the performance of our own courses. The platform that we have is fully instrumented. It means that we measure every single event that happens. Every

time a student pauses a video, stops watching it, rewinds to take notes, submits and incorrect answer to a quiz or a correct answer, looks at a forum post, all of that's recorded. Which means that we can now on a daily basis look to see what's working in our classes and what's not as opposed to the more traditional view, which at least in my case, is you know, you grade the final exam and you say: Shoot! I thought I really explained that concept better. [audience laughter]

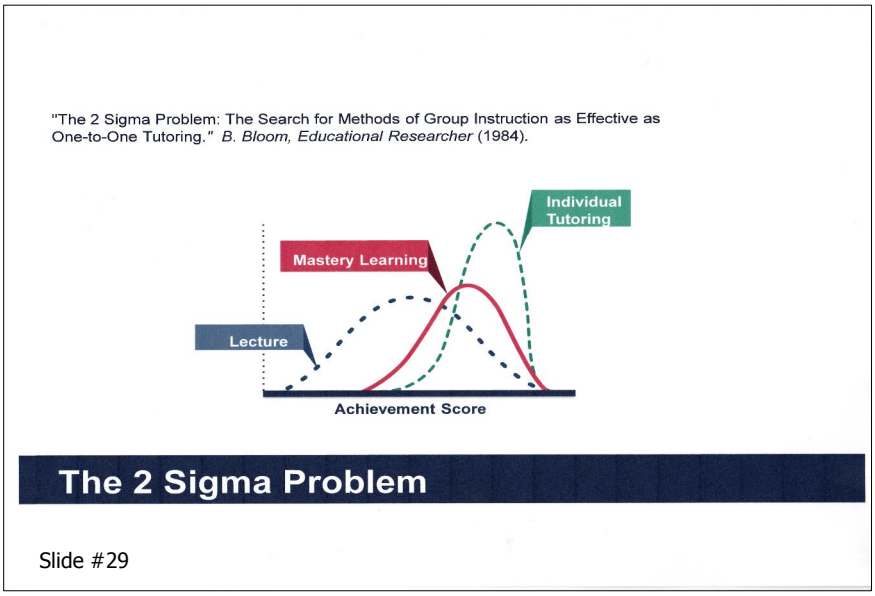


Slide #28

Here you get this immediate feedback. And so I'm going to give you one example of how that works. And there's many others that one can do. This is a distribution of wrong student answers in one of Andrew's machine learning questions. Each little cross is a one-off wrong answer, a unique -- a student that came up with a unique way to be wrong. [audience laughter] Creativity is always good. The one at the top left is where 2000 students came up with the exact same wrong answer.

Now if two students in a class of 100 make the same mistake, you'd never notice. But if 2000 students make the exact same mistake, it kind of jumps out at you. And so Andrew and his TA's went in, understood the basis for the misconception, and then used the capabilities here so that whenever any other student's answer falls into that bucket, they now no longer give a generic: Sorry you're wrong, try again. They get a: Sorry, you're wrong and you might want to think about this. And that helps channel the students toward better learning outcomes faster avoiding frustrations and so on and so forth. So this is one way in which we can benefit from big data in order to personalize the learning experience for the students.

(See slide #29) Which brings me to what I consider to be one of the bigger opportunities that we have available to us. Almost 30 years ago, renowned educational researcher Benjamin Bloom wrote a paper called "The Two Sigma Problem." In that paper, Bloom studied the achievement distribution in three populations. The first is the traditional lecture-based. Not even a very large lecture room, 35 students. And that's their distribution. The second is the distribution of students who still studied in a lecture format but in a mastery learning paradigm, which means they couldn't move on to the second topic before demonstrating competency in the first. The final distribution is that of students who were lucky enough to get an individual tutor. And you can see that each of those interventions gives rise in Bloom's data to a full standard deviation improvement in the distribu-

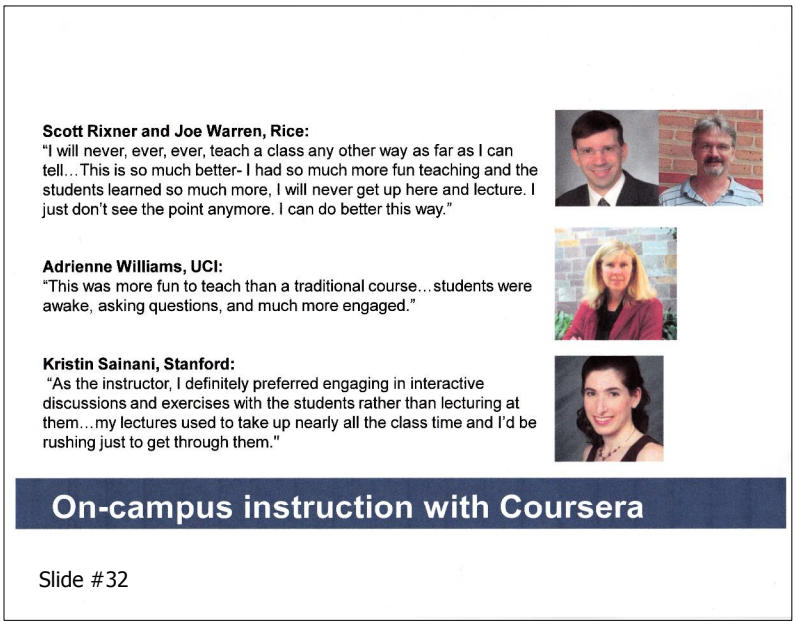


Slide #29

tion of achievement scores.

Now, a two standard deviation improvement would be an awesome thing for us to get in terms of student learning outcomes. But that gives rise to the title of Bloom's paper, "The Two Sigma Problem" because as Bloom pointed out, as a society we can't afford, as much as we would like, an individual tutor for every student. So he titled his paper "The Search for Methods of Group Instruction That are as Effective as One-to-One Tutoring." But now we can maybe reformulate the question. Maybe we can't afford a tutor for every student, but perhaps we could afford a tablet. In India, the Indian government is building this thing called The Aakash Tablet, which is not nearly as fancy as an iPad but is fully functional and costs $40 to manufacture and is subsidized by the Indian government to cost $20. So they hope to give one to every Indian schoolchild within three years. So the question is can we now use technology to move us to methods of instruction that are as effective as one-to-one tutoring? Nice thing is that mastery learning is well within the capabilities of a computer. The computer genuinely doesn't mind showing you the same video five times. They're okay with that. [audience laughter] And so mastery learning we can do. Individual personalization at the level of a gifted tutor, that's a little bit further out on the horizon, but we've seen some elements of personalization in the watch at your own pace and the personalized feedback that the data allows us to provide. So I think there's glimmers of hope and it's a really fascinating research question for us as a community.

Finally, the place where we can improve learning outcomes is in our own college classes. This is one of my favorite quotes. It's from a 19th Century educator Edward Slosson who said that, "*…college is a place where professor's lecture notes go straight to the student's lecture notes without passing through the brains of either*."
[Laughter]
Perhaps a somewhat negative view of the college education, but when you look at that example down there, you kind of begin to wonder if that's true.

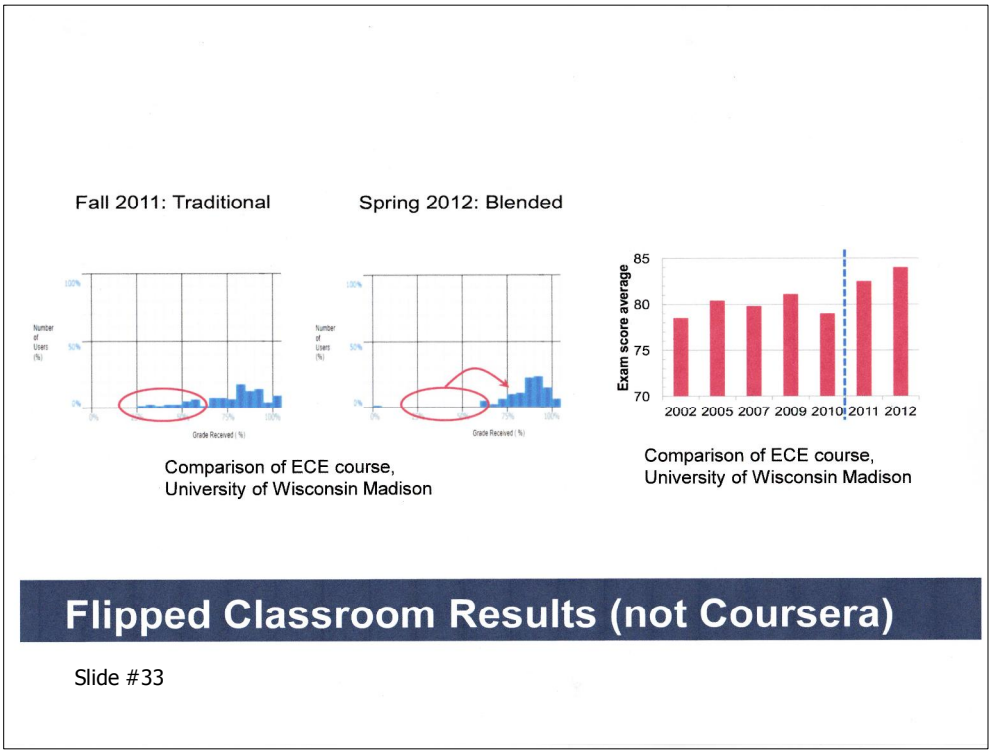


Slide #32

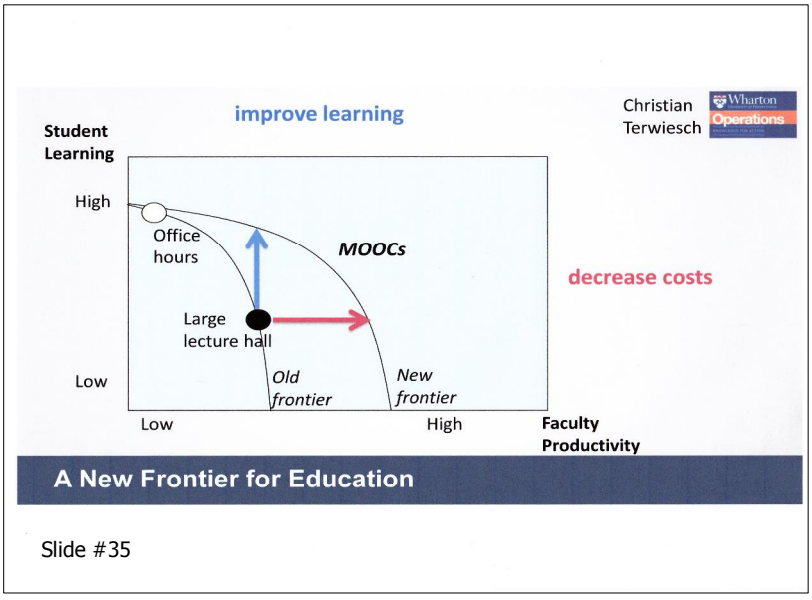
And so what we'd like to propose is this notion of, which I think has become very popular at least in discussions in the last few months, which is that of that of the flipped classroom where the students get a lot of the basic concepts and the basic skills outside of class, come into class prepared. And we know they're prepared because they have to do the quizzes and we can check that they do the quizzes because it's all instrumented. And then they come to class and they actually engage with the instructor in meaningful ways doing active learning, problem solving or perhaps letting the instructor identify the students that are struggling with a particular concept and helping them overcome that hump. (See slide #32) So we've had a lot of success with that in terms of our own instructors. Those who have offered the online courses are now bringing that material into their on campus classes in a flipped classroom model. I'm not going to read you all of these quotes, but let me just do the first one. These are two computer science instructors at Rice University who say: "*I will never, ever, ever teach a class any other way as far as I can tell. This is so much better and it's so much more fun teaching and the students learn so much more. I will never get up here and lecture. I just don't see the point anymore. I can do better this way*."
And that's a fairly common response from all of the instructors that have moved to a flipped classroom teach-

ing using this type of technology.

(See slide #33) And this is data that we didn't come up with. It was -- this is based on several years' worth of flipped classroom teaching at the University of Wisconsin at Madison where they have largely converted many of their first year engineering curriculums to a flipped classroom approach over the last five to ten years. And what you see here is in comparison and then Introductory Electrical Computer Engineering course. The big effect that happens is that the students in the DWF category, the ones who fail, are much less likely to fail in this flipped classroom teaching. So it also helps to move some of the B's into A's, but the big effect is down at the bottom of the distribution.



Slide #33

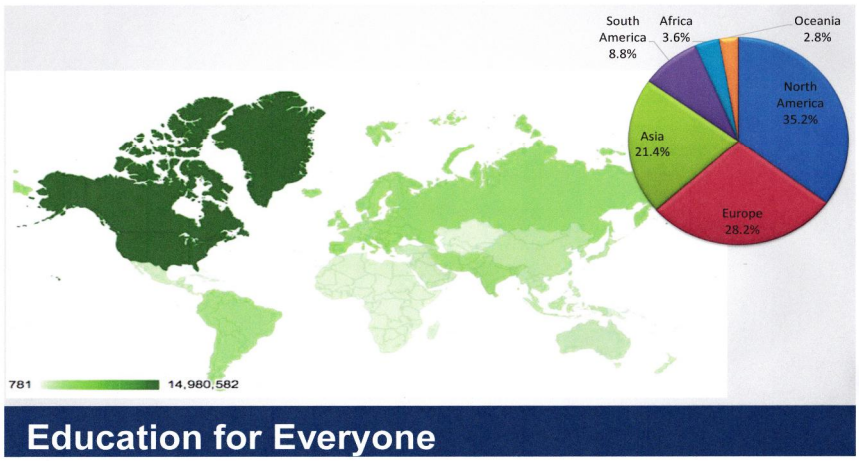


Slide #35

Okay, I'm going to -- so the next to last slide is one that summarizes what I think is an important view of what these MOOCs are and what they offer. (See slide #35) This an observation that was made by Christian Terwiesch who is an Operations Management Professor at the Wharton Business school who taught Operations Management on Coursera. In his last lecture, which is available on YouTube -- I highly recommend it -- is a case study of MOOCs. And he argues that instruction by nature is a tradeoff along a [inaudible..perado] optimal curve where you tradeoff between faculty productivity, which you might define as the number of students that you can teach in an hour, relative to students' learning outcomes. So the black dot is the large lecture hall. It's pretty productive. You can cover 300 people all at once. Learning outcomes are so-so. At the top left is the kind of individual tutoring that you get in office hours. Great learning outcomes but very unproductive in terms of the number of the students that you can cover.

He argues that this online learning technology actually what it does is it moves the curves entirely to the right. That that curve now provides us with a different set of tradeoffs than we had before. We can take the quality of instruction of the large lecture classroom and provide it to not 100 or 300 people but to 30,000

people thereby reducing significantly the marginal cost per student. That's one way of using this technology. But a different way of using that same technology is also not trying to reduce the cost, but rather trying to improve outcomes. That is, you take the same quality -- you take the same amount of time that an instructor can devote to the students in the classroom, but instead of having them spend the time delivering content and grading work, they can spend the time much more productively on actually engaging with the students in a dialog. Which right now, any of us just don't time to do given all the other responsibilities that we have. And so this is just a different way of constructing a tradeoff curve. And each institution for every class needs to decide where it wants to be on that curve.



Slide #36

(See slide #36) So I'm going to end this topic going back to the beginning of it and just talk about one aspect of this, just going back. The big goal of this whole thing is education for everyone. Only a third of our students, of our 5 million students, are in the United States. 40% of them are in what the State Department defines to be the developing world. These are not just the brick countries, not just the more emergent economies like Brazil and Russia and India, but also every country in the world is represented. Every single country, including the poorest countries in Africa, Haiti and so on and so forth.

For many of these students in those other countries, it's not a question of are their colleges good enough? There are no colleges. There is no -- the capacity in those countries is simply insufficient to accommodate the growing demand of people who need a higher education in order to have a good life for themselves and their families. India, in order to achieve its educational goal of having 30% of its students, 30% of its population have a college degree would need to build 1500 new campuses in India. Now even if you ignore the somewhat daunting logistics of building 1500 campuses, currently their existing campuses are at about 25% staffing levels because there's not enough qualified instructors in India to teach. Where are you going to staff 1500 new institutions? And this is India, relatively advanced educationally. What about Nigeria, Bangladesh, Ghana? So without something that provides a different mechanism, education is going to stay out of reach for most people for at least a generation, probably more. So what we hope to do with this effort is take education that in most parts of the world has been a privilege of the few and turn it into a basic human right. Thank you.

[Applause]

Steven Stepanek: We have some time for some questions and because this session is being recorded please identify who you are and your organization.

Paul Wilson: Hi, I am Paul Wilson and I teach Biology here. I am interested in how you audition for your instructors. How do you get great instructors.

Daphne Koller: We partner with universities, not with individual instructors. In fact, our universities are ever

so careful to make sure that the relationship is with them and not with the instructors directly. And then by and large they select the instructors themselves, which is good because they have a lot of visibility into which of their instructors are the greatest instructors, much more so than I would have. And it's very much, I think, an alignment of interests because the courses go out under their university brand. And so if you're Princeton and you put out a class that isn't so great, it reflects badly on the Princeton brand. And so they are even more careful, I think, than we would be in making sure that they select some of their most awesomest teachers.

Sharon Russell: My name is Sharon Russell and I am the system wide director of CalStateTeach, an online teaching program. What is your construction for a relationship with universities?

Daphne Koller: Our university partners are -- we split the world fairly cleanly into two pieces. The university is responsible for content and development and production and they incur all the costs. They also retain all the IP on the content. So all IP rests university-side. How it gets divided between the instructor and the university is something I try very hard not to get involved in. We develop the platform. Once the content is offered on our platform, we host and stream it and we incur the costs of that. We try and bring in revenue, for example from the Signature track and potentially other revenue mechanisms. And when we do, it gets shared back with the university. And again, there is potentially a revenue share within the university with the instructor. That's another thing we don't get involved in.

Female Audience Person: How hard is it to actually create the courses and what sort of platform do you use, what kind of system do you have>

Daphne Koller: So let me start with the second half of the question then go to the first half. The platform is the one that we've been working on since January of 2012. So it's a fairly extensive effort to create something that has the necessary scalability capabilities both on the back end and the front end. I mean the back end has to be robust and reliable for when all those students log in, you know, 15 minutes before the deadline to submit the quiz, it actually has to work. It can't crash. I mean, and some of these courses -- our largest course just finished. It was a social psychology class from Wesleyan, which is a kind of interesting confluence because the instructor typically teaches a seminar of 12 people. And he had 240,000 students in his online class. It just is sort of mind blowing when you think about it. So building all that capability of scalability on the back end is hard. Building capabilities of scalability on the front end is hard. How do you create a forum that is usable for 50,000 students? I mean, most forums are barely usable when you have 50 students in terms of keep track of threads and stuff. And we also have a set of authoring tools for instructors for constructing quizzes, peer-graded assessments and so on so that you don't need to be an expert programmer in order to offer a class. Anyone in any department including from, you know, poetry instructors and so on can offer a class.

How much work it is very much a question mostly of the kind of class that's being offered and to a certain extent of the production values that you hold yourself to. In terms of the work that's required, the biggest part is often the assessments. And that varies significantly from course to course. So for example if you were teaching a quantitative class where a lot of the questions are already mathematical expressions, or more fact-based classes that have a lot of multiple choice or short answers, it's very easy to convert the class into this format. If you're teaching a class where the primary mode of assessment is to write a 10,000 word essay that I personally, the instructor, am going to read, that's not scalable. And so you have to basically do an entire course redesign to have a different type of assessment that hopefully test the same skills but in a different way. And that can take a long time as with any course redesign.

The production value question is another big one because -- and we try and discourage instructors and insti-

tutions from striving for perfection. We keep telling them this is not a Disney Production, this doesn't have to be word perfect. You're not auditioning for the 6 o'clock news. So just make it be natural and if you flub a sentence, you can say: Oops, that's not what I meant, and you move on as opposed to trying to achieve the exact perfection. If you can do that, then the video recording's actually not that onerous once you get the hang of it. But if you strive for perfection it could easily be a 10X, 15X on the time that you -- on the overall video time. So you really want to try to stay away from that.

Michael Spagna: I really enjoyed your presentation. Michael Spagna, Dean of the College of Education, here at Cal State Northridge. So one slide that I was really intrigued by was the slide entitled, "A new window into human learning." I just wanted to ask the question about how much of your work is informed by learning theory, existing notions of teaching and learning, pedagogy. I noticed that you were relying on big data to come up with, for instance, modifiability of answers for students. The old learning, like back in the sixties, you might be familiar with [inaudible…Foyerstein, an Israeli educator who did dynamic assessments. And he found that kids with severe mental retardation that you give up on them too early because you are looking on how many prompts do they need to modify their learning. That is what is the interesting about the interchange in learning. So I wonder if you could share with us the kind of trade off the combination of big data and the latest of what we know about learning theory and interaction?

Daphne Koller: So this is -- so first of all, let me take this opportunity to say that we're actually in -- there is an ongoing search for a Director of Teaching and Learning at Coursera. So if you know of people who want to come and change the world and inject some ideas from education into how these systems are constructed, please send them our way.

We were inspired by a good number of articles that came out of the education literature. I mentioned the Bloom paper. I skipped past some others. We were inspired by the work of Carl Weiman at the [inaudible] at UBC, by the work of Roder and Karpica [assumed spellings] on retention on based -- testing-based retention and so on. So there's a bunch of papers that inspired a lot of the designs that went into this. And that's something that we would be looking to replicate in this Director of Teaching and Learning position, somebody who would come and say: Look there's a whole bunch of literature out there. Some of it's useful. Some of it's not so useful. Why don't we try these three things because we think they might help improve student outcomes?

So Kahn Academy recently did an interesting experiment along those lines with the work of Carol Dweck from Stanford on how to engage students and keep them motivated using the right language before the question begins. So we'd love to do that.

One of the things that we have, I think, that's -- I don't know if unique, but fairly novel in the education literature is the ability to test these hypotheses at scale. So we have extensive A/B testing capabilities in the platform. Who knows what A/B testing is? Okay. Even if you don't know what A/B testing is, you have participated in it because when you log on to Google or Facebook or anything else, there is usually about a 5 to 10 percent chance that you are in the B group. The B group is the one that gets a different experience from the A group. And because everything is measured, within a matter of days or if it's really slow, weeks, you have a good sense of whether the B group has better performance than the A group.

So in Google, they measure maybe click through rates. But we can do the exact same thing in terms of educational outcomes. Does the B group have bigger and greater retention, greater success on quizzes, greater whatever than the A group? Which means that in a matter of weeks we can test the efficacy of an educational intervention and know whether it's working or not. And if it's working then the next class that launches in a matter of weeks has the ability to use the new framework rather than the old one. And if you think about that and compare that to the rate of change in pedagogy over the last few decades where it takes years be-

fore a pedagogical intervention gets sufficiently vetted, published and somebody actually reads it and tries it out in their own class, I mean, the rate of change here is magnified by, I think, a couple orders of magnitude. It's really one of the exciting opportunities here, I think.

Adam Shapiro : Hi, I am Adam Shapiro, Dean of the College of Humanities, Arts and Behavioral and Social Sciences at Cal State San Marcos which is down in San Diego. I have a two part question. It's about faculty having conversations about how higher ed is changing. One of the questions that faculty have is, what is my role in all of this? I know that in the beginning of your presentation you mentioned universities that were participating in Coursera; I noticed that none of them were Cal State University. Given the vast majority of faculty in the United States come from those institutions, what role do you see for faculty in this whole Coursera mix, perhaps embedded in that answer (I know you talked about flipped class rooms) I am wondering if that is a part of it and how Coursera content might play a role in that? One of the things we do on our campus more these days is the flipped class room that faculty are creating around content. So where do the faulty play a role?

Daphne Koller: So I think this is also a multi-part answer because I think faculty can play a role in several different ways. The first is yes in creation of the content. And I don't think that creation of content should be solely the purview of tier 1 research universities because the kind of content that they teach and the kind of way that they teach might not be the right way for all students. And I think it's important to provide a range of options to people in the same way that when you have textbooks you don't have just one textbook. You have 10 different -- 5 to 10 different textbooks depending on the discipline that caters to different perspectives, different types of student populations, different student abilities and so on.

That being said, I don't think it makes sense to have, you know, there's 4100 or so academic institutions in the United States to have every single one of them prepare its own version of Calculus 1, Physics 1, Chemistry 1, Psychology 1. It's just an un-scalable model that I think can be better -- I think instructor time can be better leveraged if that's not the place where they spend most of their time. They spend most of their time not about the content but rather about engaging with students and actually teaching them.

So yes, you do need contented prepared from all sorts of different types of institutions. But I don't think every single institution should be preparing content. And I think we should be training faculty and encouraging faculty to spend a lot more of their time on a dialog with their students.

And some people -- I'm going to just go ahead and say it right -- use the pejorative words right there -- I've had instructors come and tell me you're turning me into a glorified teaching assistant. And having been in a position where I've done this in my own classroom for the last few years, I can tell you that most instructors who think that have never tried flipped classroom teaching. Because it's actually considerably more challenging to walk into a classroom not to simply deliver on autopilot the lecture from last year's notes or maybe slightly modified, but rather to actually be there, understand what the student's aren't getting, react on the spot to the misconceptions that they're having and actually engage with them is a much more challenging teaching experience. So anyone who wants to denigrate that by calling it being a teaching assistant hasn't tried it, I think.

Steven Stepanek: We the time for two more questions.

Male Audience Person: Hi, I am [Inaudible…Bob Bresis??] at Cal State Northridge here. You mentioned that you had a…did education work [Inaudible…intervenstions?..].on how you can do it much more quickly you can vet them . Have you discovered anything new? And if so is there a blog or a place where you broadcast these results so we can learn of them?

Daphne Koller: So our analytics team is actually relatively small and new and so we haven't done nearly as

many of those educational interventions as we would like. A lot of that is currently actually being done by our university partners. We give capabilities to do A/B testing as well so they can test educational interventions.

Let me talk about two that I know about that have been done by our university partners. But there's a bunch of others. One was done by Professor Dan McFarland at Stanford who tested the hypothesis of whether seeing the instructor's face in the video is conducive or non-conducive to student learning. There are –[laughter] you would be surprised -- a bunch of papers on that question presenting opposing points of view, each based on a population size of about 12. So he tried that. He, you know, because the videos are recorded using a tool like [inaudible] screen fill, so there's a picture in picture. You can either prepare the video with the picture in picture or without the picture in picture. So it's not a lot of work to do the exact same videos with both, you know, in both models.

So he did this experiment of using the A/B testing capability. And I wish I could tell you what the effect on learning outcomes is, but I can't because this is one of the difficulties of doing A/B testing in a social networking world is that the students who are in the B group that didn't see the instructor's face found out that they weren't seeing the instructor's face and other people were and they complained bitterly. And so they had to stop the experiment in the middle. [Laughter} So, you know, not all A/B tests actually work. [Laughter]

Another one that's currently ongoing and has not yet been published, but I think is actually a fascinating question from a scalability perspective is one at the University of Illinois where the question was, they want to be able to offer their classes fairly frequently, but the instructors don't always have time relative to their other responsibilities to engage with the MOOC students. So the question is, how important is that to student outcomes? That is if the instructor isn't present on the forums and actively engaged with the students, does that significantly diminish student outcomes or not? So they're still analyzing the data from that. So I can't tell you how exactly that turned out, but in terms of the quantitative metrics like the fraction of students retained and the overall forum activity and things like that, they're effectively indistinguishable.

So again, it might turn out that in terms of learning outcomes it makes a difference. But at least the initial results are quite interesting in that respect. But there's a bunch of others that people have done like Carol Dweck-like experiments on, you know, encouraging comments and stuff like that people are working on right now. But it's all a fairly new effort and so we don't have a ton of that stuff ready to report.

Ken Moore: Yes Ken Moore, Business Economics here at CSUN. I am very impressed in terms of the results for access. One access issue we have been trying to come to grips with here in terms of fully on-line courses or hybrid courses is access to the deaf and hard of hearing. I notice that given the extensive video content and audio and so on, this might be an issue. I am curious whether that is automatically entered into the platform and handled on your end or is the instructor and university partnered to have to provide the material at that point?

Daphne Koller: So first of all, the content is subtitled by us in English as a matter of course. When an instructor clicks the button saying ready for subtitling, it gets sent over to a third party provider that basically provides English language subtitles for all of the videos.

In terms of subtitles for visually -- in terms of the support for the visually impaired, that's a little bit trickier. We have -- I mean the platform itself is designed and constantly monitored for ADA accessibility so that you can actually use it with screen-reader software very effectively. It's also instrumented so that people with motor disabilities can still use it. And we actually spend a lot of work on that.

For visual impairments, the complexity has to do with video content that is not text-based. Because the text-

based stuff if the instructor uploads the slides, then a screen reader can still read what the text says, but if you have an image, that becomes more complicated. So we have a protocol that I can talk to you about later if you want that we talked with about -- that we have with our partner universities about providing alternative text descriptions for images. And it's supposed to be done as a matter of course for anything in the exercises or in the assessments that blind student can do the assessments without needing the help of a sighted person. But on the videos themselves, not every visual image is currently all text unless we have an accommodation request, which we have not yet had for that.

Steven Stepanek: OK, last question.

Darlene Yee-Melichar: Thank you. Good morning. I am Darlene Yee-Melichar, professor at San Francisco State University and also a member of the executive committee of the State Wide Academic Senate. I have two very brief questions. One has to do with how you address faculty intellectual property rights. I mentioned that you work with educational institutions but how do you work with those institutions and individual faculty property rights? And my second question has to do with the students themselves in terms of student outcomes, learning analytics. Based on what learning analytics you already have to date, what could you say to us a faculty advising students on which courses to take. What advice would we give students in terms of when they might take an on line course such as Coursera?

Daphne Koller: Okay, so in terms of -- let's see. Let me answer the second half first because the student -- I mean, we're challenged by the fact that the student population that takes these online courses right now is very different from a traditional on-campus population. As I said, only a third of them are even in the United States. Many of them are continuing education professionals who already have degrees and that tends to bias the population. Their thoughts and intents coming into this are very different from your traditional on-campus student, which means that any statistics that we gather about performance in those classes is hard to translate over to what would work for an 18-year-old Cal State freshman.

And so we can certainly provide data about what seems to be effective for our population and hope that it translates over to other populations, but it does provide a challenge in interpreting the data. And certainly if you're trying to compare the, you know, performance of these online classes to the on-campus version, it's very hard to compare because the populations are so distinct.

The IP rights, I think I partially answered that earlier, which is that we do not lay any claim on the IP rights of the faculty in these courses. All IP rights stay entirely on the university side. Now, in terms of the way in which that gets divided out between the faculty member and the institution, there is a tremendous amount of variation in how this decision is made. There are institutions that view this as work for hire, which means that the institution owns the entire IP on that content. There's institutions that view this as the same type of IP rights as patents where the IP is held jointly. And any revenues split typically according to the same formula. And then there's institutions that say this is like an online textbook and therefore in the same carve-out that has traditionally protected faculty rights to textbooks as being IP of the faculty. The same thing holds here. I've seen every one of those opinions represented on the spectrum. And this is really an institutional decision between the faculty and the institution. And I was very serious when I said I have no intention of getting involved in this.

Steven Stepanek: Let's once again thank Daphne Koller for her incredible presentation.

[Applause]

END

Panel—Day One: "MODELS FOR DELIVERY: Online vs. Brick and Mortar"

Moderators:	**Michael Spagna**:	Dean, Michael D. Eisner College of Education, Cal State Northridge
	Gerald Schutte:	Chair, Education and Resources Committee Professor, Department of Sociology, Cal State Northridge
Panelist:	**Sharon Russell**:	Systemwide Director of CalStateTEACH Program, Cal State University
	Erin J. Smith:	Course Mentor Performance Coordinator, Western Governors University
	Merle E. Price:	State Professor, Education Graduate Programs at UCLA and Cal Northridge
	Sydni Powell:	Past Student Body President, Technology Officer for Associated Students and Graduate student, Cal State Northridge.

Moderator Spagna: Good morning and welcome. I am Michael Spagna and I am the Dean of the Michael D. Eisner College of Education and along with my colleague we will be co-moderating this panel and really we will be talking about models of instruction, responding to Daphne's presentation and so forth. With me is Jerry Schutte.

Moderator Schutte: I am Jerry Schutte, Professor in Sociology and Chair of the Economic Resources Committee on campus.

Michael Spagna: So as we start we will have each of the panelists introduce themselves, their name, their title and role in terms of technology and models of instruction. Why don't we start with you Erin?

Erin J. Smith: Thanks for having me. I was really happy to be here and this is my first chance to be on this campus. It is so beautiful. My name is Erin Smith and I work for Western Governors University. Western Governors University is a completely on-line, competency based university. I personally work with our full time academic faculty, for delivering the content, teaching our students. We have something of a different model, we have what we call a Disaggregated Faculty model where different faculty play different roles. Some are developing the content and some are working with students in an advisory capacity, but the faculty I work with are the ones doing the teaching, in some cases one on one, but also in small groups with our students.

Sharon Russell: Good morning, I am Sharon Russell and I am the Systemwide Director of CalState TEACH, which is an on-line site support teacher preparation program that is housed in the Chancellor's office. It is a CSU program.

Our on-line program is different than many other on-line programs. We are doing teacher prep and we are considered a hybrid and all of the curriculum is on-line. We have one curriculum and it is spiraled so that any folks in teacher prep out there working with our students have support with pedagogy management or content pedagogy: so it can build a complexity. And from their first week of their time with us to the time to their completion of their program they are in public schools with a site mentor and a faculty supervisor who also corrects or gives informative feedback on their academic work. So it's a different model from other on-line models and it is a different model from other teacher preparation programs.

Merle E. Price: Good morning, I am Merle Price and after 38 years in K – 12 education in the Los Angeles Unified School District where I was a chemistry/physics teacher for 18 years, then a high school principle and then eventually a chief academic officer when Roy Romer was Superintendent. So I over saw technology projects, even as a Principle in one of the first digital high schools in my role in overseeing instruction and rolling out technological applications and projects in LAUSD. But I have been privileged in the last 8 years, after retiring to join the faculty here at Northridge in the Educational Leadership Policy Studies in the Eisner College of Education. And through that department teach in both the Masters and EDD Program which we have at CSUN. But in the Masters Program in the Tseng College for Extended Learning has created on-line learning courses that lead to Master's Degrees that are equivalent to face to face classes for students who attend CSUN. Through that experience with platforms like Blackboard, Moddle, etc. we were given permission to develop some hybrid courses so we could combine some face to face with online tools that range from 25% to 50% in some courses that we teach. In addition I advise the Dean at UCLA on setting up one of the pilot schools in Los Angeles at the old Ambassador Hotel site that is now the RFK Community Schools that has asked to teach a couple of classes on research and evaluation for their Leadership Institute Program.

Sydni Powell: Hi. My name is Sydni Powell and I have the privilege of sitting up here because last year I served as the Student Body President for Cal State Northridge. The years before that I served as Vice President and the year before that I served on the Board of Directors. But particularly, on the California Student Association, I served as the Technology Office in my junior year. So I was able to speak on behalf of some 30,000 students of the CSU about technology. So thank you for having me.

Moderator Spagna: We have assembled a great panel so let give them a round of applause. [applause]
To get started, we have assembled a document that handed out that we will use over the next two days. It is entitled "**Higher Education in the Brave New World, A Student Profile**" and we will start by asking you to turn to page 3 of this document. On page 3 at the top you will see that it is entitled "*Teaching and Learning models for 2020*" with the opening preface that says, "*…as technology advances so does the nature and quality of teaching tools available for proficient instruction. How will this impact best learning and best teaching now and for the future?"* And you will see in the upper left quadrant some description of teaching models, this panel will be talking about that and reacting to Daphne's presentation. I will turn it over to Jerry now to start with some opening questions. We have three sections planned for this panel; open questions for the panelist, an open area for you all to respond to her presentation earlier this morning, and then also a period for questions before we break for lunch where we encourage more dialogue. Jerry.

Moderator Schutte: I am very encouraged by our panel today and believe we will get some very interesting responses. I was hoping that Daphne could have stayed to be a part of this dialogue but unfortunately it is the last day of the fourth quarter at Stanford and she had to be back by 2 o'clock.

One of the questions I was to ask Daphne, so I am going to ask the panel in abstentia. After hearing her talk and having seen some of the literature dealing with Coursera, "what if anything do you see as the difference between the Moodles and Blackboards of the world and Coursera as a platform?

Sharon Russell: Well I am happy to wade into that. I think that there are three major issues; first is the piece of engagement. I don't think that black board or Moodle and any management system on its own truly engages the student the way Coursera is engaging them. And I think that engagement is one of the key pieces that about in the next decade of teaching. All of us as teachers need to think about how our students are engaged. So I think Coursera does that in a brand new way.

My second point is the assessment. We are watching a video of a lecture and it breaks and asks you a ques-

tion, gives you an opportunity to answer it and then my third point immediate feedback. In most online LMS you don't have engagement capacity, you don't have assessment that is formative, it's usually an outcome evaluation, AND you don't have immediate feedback.

Erin J. Smith: The other thing that I would like to add is just about community. I was really impressed about the spontaneous community that was coming up around Coursera. I found that very encouraging that this sense dialogue and engagement is available and extends past the system itself: it actually encourages connections which in this instance are global or local depending on how you are accessing the information. A lot of the LMS's that are designed in terms of community possibilities are set up so that a professor states a question and then the student have to respond three times in certain ways to certain types of students on certain days. It's not really this sense of dialogue that I am responding to from Daphne's presentation today. I found that really exciting. It has a lot of potential relating to how we learn, how we engage, how we stay retained through how the material is presented in a live way. I was really encouraged by this potential as shown in the Coursera model.

Merle E. Price: I did not respond because of my lack of knowledge of Coursera, but I will say this about Moodle and blackboard earlier versions that I used 8 or 10 years ago were much less flexible and adaptable and I am encouraged by the flexibility in learning management systems using video clips, online on time assessment and immediate feedback. Some of the attributes that I heard in Coursera are things I am seeing in the newer versions of that platforms that have evolved.

Sydni Powell: Something that is often forgotten in the dialogue about massive online courses is about access. One of the biggest things about a California State University is that students need to be able to access their courses. And so when they are online more students can get access to higher education. So that is why I thought to support that as opposed to just a Moodle or Blackboard model where it is just written only for the student who go to this campus or university.

Moderator Schutte: So that we don't keep this too self contained if the audience has some comments let do that now.

Male Audience Person: So I have been playing around with this in our Moodle. We just went up to Moodle Two and it has lesson capability so I can put a video in, and then I can put a series of questions in, and then prevent the students from moving on to the next lesson until they correctly answer those questions. And then I loop it back to if they don't, which they almost never do. They usually think they know the answer and they try it and then they kind of muddle through it. And so it's pretty clunky but it is possible to do.

Moderator Spagna: So one of the issues is that came up, and I thank you Sydni for mentioning it, is the issue of access. So in thinking about this in terms of access are there tradeoffs in terms of access that you see with Coursera: the charge level that while it might reach a million people, how many people actually finish, what do they get out of it? I know that before we came in there was some discussion that in education at large there is a search for silver bullets. Is this a silver bullet or is this something that we need to think deeply about in terms of a paradigm for teaching and learning going forward? So Sydni, a reaction from you on a student's perspective, how do you react to the pros and cons of this kind of instruction?

Sydni Powell: Well sometimes when we think about access it is very narrow: it's more about getting access into the system from the very beginning. The conversations that I have been a part of, access really means the non-traditional student; the person who started school but it now doing a comeback, a person who is probably my age and has children but wants to continue their education. I know students who literally commute over an hour each way just to come to CSUN. So, open online courses etc. guide them to

access, so that there is more access to their education than to the admission process. I think this is where the conversation gets halted, the thinking really stops. Right when they don't have the resources to be in the university system. Not how do we keep them here and make sure that they do graduate.

Merle E. Price: I would like to respond in terms of this week's Time magazine which addresses the issue of the class of 2025: "**How Will They Learn, And How Will They Pay**". There were great articles but the one that I was struck by is the president of MIT, L Rafael Reif. He comments on the access issue in the positive perspective he has in a partnership with MIT and Harvard University that over the last 17 months has enrolled 1.25 million learners to their online offerings that are similar to the MOOCS that we were just described, in fact his perspective is that they have tracked over 150 million learners worldwide and that this represents many times over the number of graduates that MIT has ever bestowed on students. But he states, "*I am convinced that digital learning is the most important innovation in education since the printing press. But how do we make education better?*" So he distinguishes the features of online learning that are remarkably good at teaching content, the basic concepts of discipline like chemistry, electronics, and architectural styles: the immediate feedback reinforcement, etc. and again accessibility. For all of these strengths, I am again quoting from Reif at MIT, "*Today's mutual technologies do not deliver some things. Some of the most important elements of true education are transmitted most effectively face to face: the judgment, competency, humility and skills in negotiation that come from hands on problem solving and team work. The perseverance, analytical skill and initiative that grows from front line lab research, the skill in writing and public speaking that comes from exploring ideas with mentors and peers, the ethics and values that emerge through being a prentice of a master in your field and living as a member of a campus community. Online may not help students arrive at such lessons correctly*."

Now I think we saw in Coursera some ideas in addressing some of these issues. But I will reference my own experience anecdotally. And then I will give you an analysis that underscores the same thing. The blended combination of some face to face interaction with an instructor with online tools that allow students to pursue part of the course independently in a hybrid or blended format has been the most successful implementation that I have been able to do for graduate students and the school of education because of some of these aspects that President Reif was concerned about strictly online learning. And the extended learning only courses I have even found that even graduate students who are not good at self managing their time in relation to the course and absent the professor's ability to motivate them directly, to cajole them if they are not submitting things on time, some of them just fall through the cracks. So that I think is an issue.

Sharon Russell: I would like to talk about access in two different ways. So first I would like to agree the there is no "silver bullet" out there. But there are some really remarkable tools that will become even more remarkable as we work with them or refine them: we fashion them for our purposes. And that is what we have to remember, that no tool is better than the task that is in front of it.

So first of all I would like to talk about using mobile delivery. That is a tablet, smart phones, leaving the lap top which is difficult to move with you, allowing students to learn in <u>their time and place of choice</u>. So that learning is not ending. So it's open learning, open on demand. When the student is available that is when they can partake in the learning cycle.

The second, I think is more profound. MOOCS are dealing with adult learners who have for the most part proved their ability to be learners. I would like us to think about students with special needs and are they going to be able to take advantage of these digital possibilities? Right now there is a system of learning that is called "**Mass Customization Learning**." In the state of Maine there are quite a few sites set up and that in New York City there is a project supported by an I Three Information Grant from the Department of Education called "The I Some." And what this is that students choose the mode in which they wish to be instructed, so it might be a small group led by a teacher, to watch a video all by myself, or I need a one to one guide. After the

student has the learning experience, then they are assessed using alga rhythms that are very much like the A B system professor Koller talked about. Then in using the alga rhythm the next instructional decision is decided and then they may switch to a small group. And so every day there is a record of what the child has learned and then a new educational system so that it's customized to what their learning style is. They have choices as a student. And what it is all about is what is the student learning, how do they best do that learning, and how3 can we best support them? That is I think we need to encourage, especially for children at a younger age so that we are encouraging everybody to learn without any kind of obstacles in their path.

Erin J. Smith: I really like that and I think that one of our goals in using this technology is about identifying those obstacles that are keeping the students from gaining access no matter what point they are in the educational process. One of the things I love about Western Governors University is that we use a mentoring model. The idea is that our faculty serves as mentors getting at what the Time magazine article was addressing there, that as faculty we are more experienced students. We have walked a few steps ahead in our education. We may have experience in the field in which these students are going into. And these are most likely adult students who never have had someone sit down with them and say, "Let me explain this to you. Where are you getting stuck?" Try to demystify it and walk them through the steps – someone to listen who goes well beyond a Learning Management System.

I would also like to pick up on this idea of personalization. We can provide a menu of options for students to help them overcome obstacles. The online world gives us access to tremendous possibilities to reinvent this paradigm of sitting in the class room and have a one way flow of information. The demonstration of the flipped class room I think is applicable here.

And for us by combining that mentor aspect to the faculty role is that we are able to spend time understanding who they are, where they are coming from, and with that understand how we might best get them to the goal. So this is how we address some of the questions about access. But predominately and most importantly we can access independent time and place so we are not trying to remove those obstacles of time and place. It may be different from course to course, from day to day, from week to week, but that's OK, that's why we are here.

Merle E. Price: I would be remiss on the issue of "silver bullet" if I didn't reference what is going on in the K through 12 world right now: and NOT just LAUSD which is the subject of daily reports in the local media. With the adoption of the Common Core Standards that demand much more rigorous and enhanced literary skills, mathematical skills, exceptional understanding, problem solving, a lot of public K – 12 institutions, maybe even some private one too, have jumped at the notion of tablet technology as ways to engage kids differently. In the courses that I teach for CSUN cohorts meet in regional areas so I have some in LAUSD. I have another one in Ventura. Six of my students have boxes of tablets that have arrived. They are clueless as to what they are supposed to do with them. Even the developers, whether its Pearson,…and there is another article in the New York Times, Sunday addition a week ago, what Joel Klein amplified. They are trying to develop software and applications for the tablets – they are not there yet. So of course the media has made lots of grist of the LAUSD: example of where kids figured how to get on their face books accounts and everything else.

But the lessons learned are the ones I learned as a high school principle and certainly when I was in charge of instruction is that these magic "silver bullets" that vendors put before educators as solutions absent of some understanding from trying to pilot and also some understanding what teachers need in order to navigate in how they can apply the technologies to curriculum and learning goals. They just become another toy in the hands of the kids, and don'ts necessarily improve learning outcomes. The LAUSD example is most egregious because it appears that even on the operational side there was no thinking about the roll out in terms of accountability for a kids and responsibility if they take them home for who is going to pay for them when they

get vandalized or stolen and all those kinds of issues. But I think of more concern to me is the lack of preparation on the instructional side for, "*What are they going to do with these things? What are the applications and software that are going to teach proportional reasoning and allow then to differentiate?*" Some of my students in the Venture cohort…I have Kindergarten teachers who have who have these boxes of IPads and they are trying to figure out how, with the literacy rate for the kids who do not understand the alphabet … at Sound Spelling systems to some to decode and comprehend at very high levels, how can this technology be used to meet the kids where they are at and move them to the next level? And I don't think that higher education is going to make those kinds of mistakes it's more thoughtful.

Sharon Russell: And let me tell you about some interventions that we have done that have been successful in public schools. My program went to a one to one adoption of IPad in 2010. And we had a program where our student teachers go into the classroom with their IPad. We loaned the school master teacher, the school site 25 IPads for that class. So the seminars in which we prepare our teachers in how to use the IPad. The master teachers, the principles come and then we roll it out. And there are such things as software for the [inaudible] so that you can children in the center practicing their words. There is an app for response to intervention, a way to manage who are your children in their intervention and what tier are they in. There is another app call "Reading Remedies." And so we introduce all of this, our master teachers practice it along side our student teachers.

A wonderful success story: we were working with a teacher in the far Sierras, a logging town, extremely depressed, behavior problems, attendance problems. This one 5th grade class of 20 boys and ten girls. Really rowdy! We began the IPad around, still lots of confusion in that class room. By December the class room attendance had increased 29 %, by April every pupil was coming every day, and their CST Scores in math and English improved by 5 %. The Principle was so impressed with what was happening with these children and this teacher; he encouraged business in that town to support getting IPads for every child in that school. And we had a training that summer for all of their teachers. The rollout, if it is thoughtful and it is planned and it is done with faculty works if you have a plan and you think about your learners will work. It's the easiest thing in the world to break an IPad or a smart phone, my 5 years old granddaughter can do that so, you know our instruments and what can be expected of them and don't make promises that we can't keep. Thank you.

Moderator Spagna; So we have another round of questions, and again we want to open it up to the audience for dialogue if you have a burning question that has not come up yet. I thought it was interesting, that comment about that T.A. notion: "*Do we find ourselves in a place where potentially you have 20 super star people giving the online lecture and everyone else is in the mode of facilitating on site project based learning?*" And then I add a wrinkle to it as I experienced at Berkley in learning about statistics, the variety you have in higher education of teaching strategies: from one person at Berkley who applied everything wonderful project based learning, the other faculty member who wrote with his right hand and erased with his left. [laughter]
Doesn't this require a whole different paradigm in how we prepare people to come into a class room in higher education in terms of supporting this? And then Jerry do you want to add a thought to this?

Moderator Schutte: On a slight side-bar note, we have come to understand that hardware is not a magic bullet. Perhaps software is also not a magic bullet as well. But if you look at the landscape you see that there are basically two 800 pound gorillas on the horizon. One is the edX version with MIT and Harvard, who have steadfastly maintained their affiliations with the university, I suppose in part because they were funded initially with $60 million dollars for the tow of those universities. On-the-other- hand, we have Coursera which has taken steps to divest itself from Stanford and become a private organization. I asked Daphne on the way over from the airport: "What caused you to do that?"

And the answer was not what I thought it was going to be. They considered the number one priority to have the flexibility and agility, and by being wedded to the university campus they did not have that.
And so I asked: "What does that portend when you are getting $40 some odd million dollars in venture capital in the last couple of months? What is your model?" To her the model was, we will keep this free. Two thirds of the people are outside the country, 80% of those people do not have credit cards, it would crash the system to try and charge, but more philosophically it is their position NOT to charge. So I guess my question for the panel is: "Whether it is on campus or off campus, if you are accepting money eventually the people that are giving the money are going to expect some sort of return on that money. If you are going to keep the courses free there are only a couple of degrees of freedom left to make that model work. What do you think might happen?

Erin J. Smith: I really want to jump on the T.A. question. One of the most fascinating parts of my job is that I have to work with other people to try and get our courses created and delivered. We work as a team. In our course creation, at the core of our academic strategy is to find the very best learning resources that are available. If we can't find them then we will build the course ourselves. But we have lots of options these days, as Coursera demonstrates, with third party vendors to help with that effort. Also the idea of the flipped classroom approach here. I feel quite confident in my colleagues that if I can free them up to do some of that work by doing more of the one on one approach in working with students that I am happy to do that. We were talking about videos earlier: if some of my colleagues excel at and enjoy doing video production I am perfectly happy to have them do that. The part that I love the most is getting to work with those students who are struggling and who need extra information or just have a question. Or I may be spending time with them for days and days. Part of the model in my division with Western Governors is that we are available to them, we work with them, and they can come to us with concerns and questions. I can monitor their progress and I can intervene when it is necessary because again access to rich data can help us determine some pretty amazing things about their learning path. But I am a resource and as a faculty member I am there to help them understand who they are as learners, what they need to overcome obstacles, and usually help them problem solve in a collaborative effort the student" "How are we going to get to the goal, and what is the process we are going to take to get there?" So I guess the argument could be made that, am I a T.A. or am I a colleague? I don't think of myself as a T.A. because of the rich instruction that I know happens well beyond what the course content often is. That's only a start. One of the things that's pretty unique is that I actually talk to students. In this role we spend a lot of time on the phone working with students. It's not just about the course delivery. So there is a personal touch to that which I think is the better side of that argument.

Sharon Russell: Well I will kind of jump in on that. I will jump in on the MOOCS and cost factor are being framed. I think one of the reasons we don't see the MOOCS in the CSU is that we are an FTE driven institution. In a way we are very self-supporting because we must have a certain number of students who pay for our services. These are large R-1 research institutions that have significant endowments that allow them to buy out faculty time for innovation. And I might be a little idealistic in what I am going to say, but I believe that they are using the MOOCS as a way to advertise their brand. And what I am more interested in seeing is that are they going to capitalize on it in other ways? But I don't think as a system the CSU has any resources in which we could induce faculty to do pro bono work. That we need to pay for the faculty and our students need to register for courses. Whether we can make it more efficient or more economic for our students, that remains to be seen but I don't know if that model would work for us in the CSU. I am open to innovative possibilities but the cost is an issue for us I think in a very real way.

Moderator Schutte: We are coming up on the lunch hour and we want to make sure that if the audience has any questions of the panel, so if you have a question would you please raise your hand?

Joyce Feucht-Haviar: As people are talking I was thinking about the fact that sitting here with this little IPad I can type in "learn Algebra" and get a wealth of possibilities. I think the notion you brought up about indi-

vidualized instruction is actually something that is exploding. That students are choosing their own path, finding not just these MOOCS but these resources like Kahn Academy, Online Text, E-Text, a variety of ways in which they can pursue their own learning. And I think that as people start earlier in life with that, their facility with it is going to be greater, not just because of the technology but they haven't been conditioned to wait for somebody else to tell them what they need to know. So if we move in that direction one of the things that come to mind for me is this notion of: right now you choose higher education because of its credentialing ability. Because they verify that you know this are therefore the employer has confidence in that. I think institutions like Western Governors as an outcome based institution and the number of degrees that one has read about in just the last six months that have been approved as basically outcomes based degrees may change that and you see other sorts of things like the Badge System, which I don't know is going to go anywhere, but it is an attempt to say if you know these things we can test that outcome and tell employers or others that you are ready for the next step. In that changing arena doesn't that seem that we have a very large box of opportunities to craft learning? And that we are sort of asking old questions in many ways.

Moderator Schutte: No further comments, next question?

Female Audience Person: I missed the first part of this morning so I may have missed this, is there some certification thing, like we have to always go through processes in each department and each school where other people from outside come in and look over our programs. Is this done for the courses on the internet?

Merle E. Price: You raise a good issue about something that leads to some sort of certification; qualification if you will for practice. Of course in the traditional high ed settings and even in high schools and K – 12 there are accreditation processes. We go through various processes here at CSUN just to be sure that our programs meet criteria, like the Commission on Teacher Credentialing. I would be wary if someone who participated with something online that wasn't necessarily accredited. You could say that a physician could pass a medical exam but I would still feel more confident when there is a certificate on the wall that shows institutional certification from a proven institution that is fully accredited and has a reputation.

Moderator Schutte: I think we have time for one more question. The gentleman here in front had his hand up.

Male Audience Person: We talked a little about intellectual capital and about how the online MOOCS can help us there. But the experience on campus is much more than learning new material, it has to do with building say, social capital. How do you see MOOCS online planning out in this arena?

Sharon Russell: One of the major points of our curriculum redesign that we designed for our 2.0 version curriculum was that we appropriated collaboration in all of our activities. So our candidate even though they are online, in all the different counties in California, they need to collaborate with other people in Cal-StateTEACH to do collaborative projects. They do project based learning, they create lesson plans together, and they are using their digital tools to collaborate. We are using video conferencing such as Zoom. They are using a variety of tools, Goggle Box, Drop Box, to share materials. And then we are building social communities where we have Twitter accounts, faculty have their candidates set up in their own twitter groups so that is how they do short communications, ways to celebrate victories in the class room etc. And we are also encouraging instagram for the instant moment when your collaborative project has gone well. So we are using social media as a way for them to build community. And then we are building community by requiring that their major assignments, at the end of each of our terms they have a major collaborative assignment that they must do, they must video tape it and then they must annotate it. We need all member of the team to annotate that video that they created together.

Moderator Schutte: Well with that we are at the end of the hour so let us thank the panel.
[applause]

Keynote Speaker

Mr. William C. Allen: President and CEO of Los Angeles Economic Development Corporation
http://laedc.org/william-c-bill-allen/

"Role of Innovation in Economic Development"

William C. Allen: Thank you Steve for the invitation and for the opportunity that you and Michael Hoggan extended to me to join you all. I am always inspired when I visit this campus because to me there is no more shining example of resilience and promise in the San Fernando region that California State University Northridge.

We're only three and a half months away from the 28th anniversary of the devastating Northridge Earthquake of 1994 that literally shook this campus to its very core and rocked our entire San Fernando Valley economy. The earthquake was felt as far away as Los Vegas and took nearly 60 lives, injured about 8,000 of our neighbors in our communities, sending 1,600 of them to local hospitals and doing nearly 20 billion dollars in damages to this region, including more than 400 million dollars in damage to this very campus at that time--the single greatest impact of a natural disaster on any American campus at that time. But despite those traumatic impacts, Cal State Northridge and its student, faculty and administrative leadership showed remarkable courage and determination not only to continue to move forward with classes and university life in the aftermath of that tragic event but also to lead this institution through higher heights in every way since.

1994 Northridge Earthquake

CSUN today is a larger, stronger and better university within more beautiful and modern campus and a magnificent performing arts center that beckons and welcomes visitors to this campus from near and far to share in the extraordinary energy of this campus. CSUN does in fact truly shine in this San Fernando Valley. After the earthquake, I actually had the pleasure of working with your then President Blenda Wilson as she was rebuilding this campus, and we worked together to attract a world class biomedical device manufacturing firm called MiniMed, founded by a friend of mine, a serial entrepreneur named Alfred Mann, to build a state of the art research and manufacturing facility at the north end of this campus. And just last week, that company, since acquired by Medtronic, announced the US FDA approval of their MiniMed 530G system, a new type of insulin pump for people with diabetes. A device that is being hailed as the next best thing to an artificial pancreas that consents when a person's blood sugar levels get dangerously low and then withhold insulin accordingly. My own involvement in helping bring that company and the associated 1,500 jobs that came with it to this campus also came as result of the Northridge Earthquake.

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Until that day in 1994 I had spent more than 15 years in the entertainment industry. About half of my career with the CBS television network as a programmer of primetime television series and, later as president of MTM Television during the era when we produced Hill Street Blues, St. Elsewhere, Remington Steel, Newhart, WKRP in Cincinnati and many other popular programs of the 1980s and early 1990s. But on January 17, 1994 our studio was rocked by that very same earthquake forcing us to shut our production of the then number one show on television show called Seinfeld and forcing us to close the headquarters building where the roof collapse, and had we been in that building then many of us would have been severely injured if not killed. My colleagues and I were faced with the daunting task of rebuilding our production facilities and studios while keeping as much of our work operational as possible. Our situation was not unique. It was faced by hundreds of businesses and thousands of families across this valley and it was faced by this university. *Our situation required all of us to think differently and to reach out to others for help. Formal and informal networks of friends and colleagues, neighbors throughout the valley came together and eventually coalesced into an amply named Economic Alliance of the San Fernando Valley. And because of the critical importance of higher education to our regional economy, even then one, of the first investors and most active board members of that alliance was then CSUN president Blenda Wilson.*

Our situation required all of us to think differently and to reach out to others for help. Formal and informal networks of friends and colleagues, neighbors throughout the valley came together and eventually coalesced into an amply named Economic Alliance of the San Fernando Valley. And because of the critical importance of higher education to our regional economy, even then one, of the first investors and most active board members of that alliance was then

Since that time, her successors Jolene Koester and Diane Harrison had been deeply involved in the work of that alliance. In 1995, the then business government and education leaders of the valley formalized the existence of what was until then an all volunteer alliance by developing a well-defined consensus oriented and comprehensive strategic plan for economic recovery in the valley and incorporated the economical alliance as a nonprofit public benefit corporation in early 1996 to lead the implementation of that plan.

One of the foundational elements to that plan was the importance of improving education at all levels so that we could better attract new businesses, investment and jobs to the valley and ensure greater participation in our economy, and a pathway to prosperity for more of our 1.7 million valley residence at that time. CSUN School of Education, not yet endowed by Michael Eisner's family foundation, was critical to our successful implementation of that plan given its large role in preparing quality teachers for our K-12 schools--as were the college of business, economics, engineering and computer science, health and human development and other professional schools here which were needed to help prepare and improve the workforce foundation of key sectors of our valley economy, including business and financial services, aerospace, biomed, healthcare and entertainment among the others.

Many of the key planning and implementation meetings were held right here on campus and informed by the work of professors like Shirley Svorny and later Dan Blake and Bill Roberts as they shed light on the realities of our economy through the leadership they provided of the **San Fernando Valley Economic Research Center** here at CSUN. They helped us all make more informed decisions about the strategic and tactical steps necessary to advance our economy and its key clusters of economic activity.

In 1995, I stepped down as President of MTM television, sold my interest in the parent company and spent a great deal of volunteer time helping develop that strategic plan for the valley's economic recovery. And in 1996 I agreed to become the first full time CEO of that alliance of the San Fernando Valley. Over the next few years, the alliance helped plan public meetings and conduct them that conceived and even developed the mode grade and alignment strategies for what is now known as the very successful metro Orange Line public transit system across the valley floor. We partnered with my present employer, the LA County Eco-

nomic Development Corporation, to provide free business assistance to hundreds of businesses struggling to recover from the effects of the earthquake and the other economic crises of that era including the closure of the General Motors plant that used to manufacture Camaros and Firebirds in Van Nuys. And the downsizing of the aerospace and defense companies in this valley that had supported the aerospace and defense industry which was downsizing at the end of the Cold War.

Now, we brought education reform efforts like **Project Red** to the San Fernando Valley seeking support from the Eisner Foundation which made two successive 1 million dollar grants to launch that very successful effort in our most challenged areas of the northeast San Fernando Valley. And then wisely, recognizing that the success of Project Red was largely dependent on the quality of the teachers implementing it, the Eisner Family Foundation chose to endow the Eisner College of Education here at CSUN because this is where the largest number of K-12 teachers were coming from to serve the schools in our valley. The more I traveled across the valley meeting with business, government and education leaders to implement the noble mission of that economic alliance the more I ran into graduates of CSUN in key leadership positions in each of those sectors. So flash forward to January 2006, when I was recruited to become the CEO of the **Los Angeles County Economic Development Corporation** serving the 88 cities, 200,000 businesses and 10 million residents of LA County, *and the first thing I did was recommend a similar strategic planning process to include not only businesses who were there to--who were the primary members of the LAEDC but also a government and education institutions like CSUN because of the critical importance of higher education to the LA County economy*.

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Over the next two years, we surveyed and conducted focus groups with 5,000 businesses of all types and from all across the county and we asked them about the challenges they were facing. Then we compared the challenges that they identified against the regional strategies being employed by some of the world's most successful economic regions across this country and throughout other nations. We conducted 26 public meetings that more than a thousand in 80 stakeholders groups attended. They were from our region's business, government, education, labor, environmental and other sectors, and together we planned LA County's first ever consensus oriented comprehensive strategic plan for economic development--a plan to ensure a strong, diverse and sustainable economy for the residents and communities of Los Angeles County. That plan has since been adopted unanimously by all five county supervisors and 84 cities across this county either through direct council actions of their own or through votes as participants in their regional councils of government.

The first major aspirational goal and set of key objectives developed by our broad coalition of stakeholders was to prepare a better educated workforce by improving education at all levels and ensuring that businesses could find enough workers with the right knowledge and skill sets to meet their needs. And that job seekers and incumbent workers would both be able to enter sectors of our economy offering high value jobs and built-in career ladders. Specific strategies to achieve those objectives included conducting and publishing research on the workforce shortages, skills gaps, and required proficiencies which the LAEDC Economic and Policy Analysis Group has since done, and evaluating education, training and placement programs for continuous improvement which work is ongoing today throughout our county and is exemplified by this symposium today. We've been specifically called for integrating

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workforce training activities and higher education from entry level through college and university based through enhance professional education to create seamless career pathways leading to high value jobs in targeted industries like aerospace and life sciences, just for two examples.

One of the first people I invited to help us both plan and execute these strategies was Blenda Wilson's successor, Jolene Koester. I developed a strong appreciation for Jolene's character, intellect and leadership while serving as a member of the CSU Search Committee that selected her as President of CSUN. Jolene agreed that CSUN would become a member the LAEDC and helped us plan and implement strategies and tactical initiatives to benefit the entire county and all of its economic regions. Since then we've had many wise members of the faculty and administration on our key strategic advisory committees including the dean of the Tseng College of Extended Learning Joyce Feucht-Haviar and her Director of Programs and Partnerships Julia Potter. It was through them that I was introduced to your dynamic new President, Dianne Harrison, and your provost and a brilliant provost I might add, Harry Hellenbrand. And I think it was they who suggested to Michael Hoggan that I be invited to join you today. And to all of them, I am indeed grateful. I've been enjoying reading by the way President Harrison and Provost Hellenbrand's various speeches and letters to the faculty in the CSUN community expressing their visions and insights into this extraordinary institution.

The challenges that they and all of you in higher education in California face today are truly unprecedented. The increasing demands our economy is placing on your institutions to supply the educated, skilled and creative workforce and entrepreneurs necessary to complete in the global economy, the need for applied research to innovate in that environment, the difficulty in planning and staffing the delivery of relevant curriculum in an age when technology is rapidly disrupting key industries, occupations and career pathways, combined with the complexity of educating the unprecedented numbers of first generation college students representing more language and cultures than ever before in our system, all at a time when the great global recession forced our state government to dramatically, and I would assert unwisely, reduce its investment in education at all levels, and most acutely in higher education. It's nothing short of daunting with a capital D. One must truly be very brave in this new world to be willing to take on the challenges that you all do each day, and for that I salute each and everyone of you.

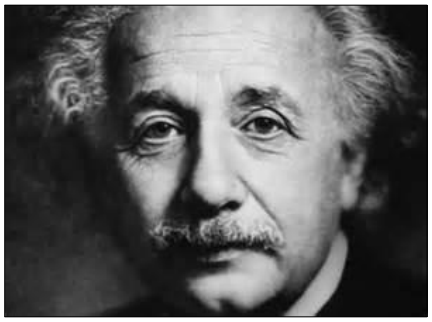
But brave we must all be as frankly the future of our economy, our democracy and our quality of life all depend on our getting this right. We have long accepted the fact that a sustainable democracy requires a well-educated population. But as we continue to transition globally from an industrial economy to a knowledge-based economy, it is becoming increasingly clear that human intelligence, knowledge and creativity, are becoming the most valuable economic resources of all. As urban theorist **Richard Florida** writes in his best-selling book, The Rise of the Creative Class, the ability to come up with new ideas and better ways of doing things is ultimately what raises productivity and thus living standards. Florida goes on to explain that we live in a time of great promise. We have evolved economic and social systems that tap human creativity and make use of it as never before. This in turn creates an unparalleled opportunity to raise our living standards, build a more humane and sustainable economy and make our lives more complete. But there is no guarantee that this promise will come to fruition. It can just as easily go unfulfilled.

Right now in the United States that is unfortunately exactly what is happening. The transformations we have given rise to stands incomplete. *The great dilemma of our time is that having generated such incredible creative potential, we lack the brother social and economic system to fully harness it and put it to use*. "*No one is going to do this for us*," he says, "*it is us to each of us, all of us, to complete the transformation to us society that taps and rewards our full creative potential*." And his follow up book, The Flight of the Creative Class, Florida goes on to emphasize the importance of tapping the full creative capabilities of every single human being. He notes that the creative class is already doing well in our society. They're taking care of themselves. But he cautions that addressing the needs of the 30 percent of our nation's workforce that make up this creative class, not just artists and writers and musicians, but also engineers and scientists, architects and engineers, and anyone who uses creativity as a key factor in their work and business, education, healthcare, law or some other profession, is not enough.

He stresses that to both prevent widespread social unrest and benefit economically from the creative input of the maximum number of its citizens, the US and other countries will simply have to find ways to bring the service and manufacturing sectors more fully into the creative age. In this respect, *our greatest challenge involves growing--involves both the growing class divide that the creative age is producing, and the huge reservoir of untapped creative potential that is being squandered. Addressing this divide is not only socially and morally just; it is an economic imperative for our society or any society interested in long term innovation and prosperity.*

"...our greatest challenge involves growing--involves both the growing class divide that the creative age is producing, and the huge reservoir of untapped creative potential that is being squandered. Addressing this divide is not only socially and morally just; it is an economic imperative for our society or any society interested in long term innovation and prosperity."

Considering the complexity of the challenges we face as a society today and the urgency to improve our response to them, I'm reminded of the greatest to academic of all, Albert Einstein. Professor Einstein once famously said, "**We cannot solve today's problems at the same level of thinking we were at when we created them**." No-



where is this statement more to the point, more fittingly targeted and more applicable than with the current state of education in America including higher education.

As everyone here already knows, there is an important battle being waged in America. It is the battle to prepare our students at all phases along the educational continuum for the jobs that will be foremost in tomorrow's economy. It is the battle to chip away at the growing and accelerating imbalance between the demand that exists for well prepared workers today and its current supply. And it is the battle to prepare deeper pools of human talent to not only help build the next Space X or Silicon Beach innovation hub here in our county but also to solve some of the world's most intractable problems such as curing devastating diseases, combating global warming, or simply figuring out a way to provide enough clean water to millions of people around this planet. We are as, you all know, losing this battle to fully develop, empower and unleash our nation's most important resource, its human capital. But whether we ultimately lose or win the final decisive war which, make no mistake will also determine whether we prosper or decline as a society or nation. Well, that's still to be determined. *What I do know, however, is that to eventually win we must all heed Einstein's admonishment, to change our level of thinking in a way to adapt to what is actually in front of us*.

As everyone here already knows, there is an important battle being waged in America. It is the battle to prepare our students at all phases along the educational continuum for the jobs that will be foremost in tomorrow's economy.

For as another greater leader from the world of business, the former **General Electric CEO, Jack Welch**, correctly understood, *if the rate of change is faster outside your organization than within then the end is near*. So, at the very least I hope we can all agree to work together to better synchronize our levels of thinking to match the rate of change occurring outside these sanctified university walls. What are some of the ways we might consider thinking and acting differently?

Since my remarks today are largely about the nexus between higher education in our regional economy, and most of your institutions, particularly those in the CSU system, play a primary role in preparing the workforce for your regional economies. I would suggest you begin by first ensuring that you truly understand your existing regional economy, whether your institution is here in the San Fernando Valley or the Silicon Valley or any other region of our state, nation, or world. Many well-educated, well-read, and well-meaning leaders right here in our community, in our own regional economy, mistakenly ascribe unduly large attention and importance to the industry that I came from, in the entertainment industry. Some newspapers provide a disproportionately large amount of coverage on that industry, and even refer to LA as a company town much like Kohler, Wisconsin, which was largely dependent on that one great plumbing company for jobs in its community, or Hershey, Pennsylvania with that world-famous chocolatier has long employed a large percentage of that community's residence in the manufacture of their chocolates, and many of the dairy farmers in that region in the supply of milk for that chocolate.

Make no mistake, Hollywood is profoundly important to our regional economy and has helped to attract countless related creative companies engaged in the design and manufacture of movies, television, music, and even fashion, toys and games, helping our region become the creative capital of America. And they have brought untold wealth into this region from the export or sale of movies and television shows throughout the world. We need to help them return production to this state. We need to help continue to nurture and grow that sector. But did you know that there are actually many more people employed today in Los Angeles County in manufacturing than there are in the entertainment industry? That's right, there are almost twice as many people employed in manufacturing in LA County as in the entire entertainment industry. 350,000 people working in more than 13,000 companies, the greatest number of manufacturing employees and employers of any county in the United States.

We are not only the entertainment and creative capital of America; we are in fact the manufacturing capital of America. *We make everything from Budweiser Beer to Boeing cargo planes, from See's Candy to satellites, from handbags to Hot Pockets to helicopters. And so that's right. We make more commercial helicopters than any other county in America. And traditional manufacturing in our county is becoming more mechanized, more computerized, more advanced by necessity as each day passes. So preparing our manufacturing labor force will require substantially more education than in the past. Now whether you drive an Audi, BMW, Ford, Honda, Toyota, Volkswagen, or Volvo, there's a good chance it was designed right here in the automotive design capital of America, Los Angeles County, a region that is home to more than 20 auto design studios.*

And as the technology and our vehicles becomes more sophisticated and connected, the levels of education required to design and engineer them continues to escalate. So, be sure you know what all the clusters and sectors are that make up your regional economy and make an effort to understand which of them are traded clusters, otherwise known are as export-oriented clusters, that serve markets beyond your own with goods and services produced in your region, but sold and distributed elsewhere. The sale of which brings wealth back in to your region that can then be circulated through your more local serving populations-serving sectors and clusters to help more of your residence share and potentially growing regional prosperity. Be sure also to determine and analyzes the actual supply and demand in your labor market. What are the high, middle, and

low skills sought by employers in your region? Who in your market possesses those skills? Is there an abundance or scarcity of people with those skills or talent in your region?

1. Give thought to how global economic forces and advances in technology are likely to impact and change the clusters, sectors, occupations and related skill sets required for each of those sectors in your region in the years ahead.
2. Consider specifically how your institution, its students and your regional economy and the regional economies that compete with yours, will be impacted by disruptive, transformative advances in energy discovery, development and distribution, in healthcare drug and device innovation, food preparation and agtechnologies, water resource production, management and delivery, digitization of content production and distribution, gene sequencing, nano productivity, robotics, artificial intelligence, data security technology, adaptive manufacturing technologies, et cetera.
3. Then develop your higher education priorities, programs, faculties, courses, delivery methods, and the associated budgets for each, all of those regional and global economic realities and prospects in mind.
4. And in your process, please involve the civic stewards in your region who have emerged and accepted responsibility for leaving a stronger, healthier, more robust and just economy for the next generation.

They want to help you succeed because they understand, as Richard Stengel said in Time Magazine's October 29, 2012 issue on reinventing college in America that *a higher education has been the great engine of American prosperity, innovation and social mobility and we weaken it in at our own peril*. We must find a way to do better. I would bet that most of us in this room consider ourselves stewards of our environment who recognize that we have a moral responsibility to leave this earth a better place or at least a more sustainable place for future generations. If so I trust that which endeavor to behave accordingly in our use of scarce natural resources in our impact on the environment as a result of our own behaviors, and in our rule as champions of the environment persuading others, our children, our employees, our mentees, to accept that environmental stewardship role and its accompanying responsibilities themselves.

"...each of us has a similar moral responsibility to help ensure the health, vitality and sustainability of our economy for future generations."

Well, I would suggest you all that we need to additionally accept the fact that *each of us has a similar moral responsibility to help ensure the health, vitality and sustainability of our economy for future generations*. Are we willing to take on that responsibility as stewards of place and more specifically as stewards of our regional economy to ensure as best we can that the economic prosperity that we have enjoyed in this region and other parts of this great state and nation during our lifetimes will still be available to future generations? Or are we willing to stand by and watch our regions decline like that of Detroit?

As you think about that future, be sure you also study and contemplate and work to truly understand the emerging economy in your region. It is essential that curricula be developed, conceived, and offered in a way that it is fully focused on what will be needed in the key sectors and clusters of the emerging economy as opposed to what may have been needed in the past or may simply currently appear to be invoked. For example, the Green Economy, please don't misunderstand my mention of the Green Economy here, it is important and growing, especially in our state of California. But during the recession, untold millions of dollars of federal stimulus programs were spent training people in our communities for green-collared jobs that were all the rage in the medium of political campaigns but it did not actually exist or emerge after the students who trained for them had completed their training, which amounted to a cruel waste of their time and money in pursuit of skills for jobs that were not yet present in sufficient numbers, or coming anytime soon in their local or regional economies.

"Think about serving both of your clients in your regional economies, both the students and the employers..."

Think about serving both of your clients in your regional economies, both the

students and the employers, understanding that a successful and results-oriented curricular structure, one that results in employment for your students within six months after graduation, is best achieved if industry is actively working with higher education providers. Continue to innovate in your delivery of curriculum to students on campus, in workplaces and through the internet.

Higher education must become more responsive to the needs of the increasingly diverse range of students whose futures are now and will increasingly be more dependent on what you have to teach them. Industrial-age systems of education will not serve them or our economy or our society well. Develop and incorporate flexible and more information-age measurements to evaluate higher education success, not just traditional employment but for example how about levels of our entrepreneurialism. An endeavor to balance short-term success, with tracking and reporting, that tracks long-term meaningful change in the individual's career levels. I know that CSUN and many other CSU campuses are developing programs, courses, and student and alumni networks to encourage and support student entrepreneurs in the successful conception, planning, development, funding, staffing and operation of their own enterprises, whether scalable, high tech, high growth in nature, or modest visions for opening a single boutique retail outfit or a community focus-service business on one's own. This investment in enabling entrepreneurship in our regional economies will be an essential piece of the puzzle of how to create jobs in what has been still a relatively jobless economic recovery today.

The Southern California Association of Government is working with our own LAEDC economist, recently projected that our LA County economy will not replace all the jobs lost in the great recession that began more than five years ago until at least 2018. And that does not even include the numbers of new jobs that we must create in this region to accommodate the population growth taking place between 2008 and 2018. **Focus also on removing the artificial barriers and the stigma between what constitutes education and what constitutes workforce training, understanding that higher education is workforce training in the information age**. Endeavor to institutionalize system-wide approaches and collaboration encouraging and embracing active and seamless collaboration between regional system players, K-12 schools, community colleges, universities and industry. With integrated system-wide approaches and reporting to move individuals forward through a series of steps from basic education to employability.

In order to keep pace with the rapid advances in science and technology that are increasing the value and demand for knowledge workers and to compete against the many nations in the world today that are investing more time and money in the education of their citizens, we must improve both student access and success here in California and all across this nation. Our educational attainment rates must improve and the rate of improvement must accelerate.

Recent university study projected that by 2020, two out of three jobs in America will require some post-secondary education or training. About 33 percent will require a bachelor's degree or better, an additional 30 percent more will require some college or an associate's degree. And yet here in LA County, our LAEDC economist report that only about 28 percent of our adults, 25 and older, have completed a bachelor's degree or better. Fortunately to help encourage us to improve these levels of educational attainment, there is ample evidence that education increases both individual and regional prosperity. For individuals, we know several things. The unemployment rate for college graduates is about half that of the rate for the American workforce as a whole.

Looked in another way, the unemployment rate for people in their 20s with only a high school diploma is about three times higher than the rate for those with at least a bachelor's degree in that age grade. We also know that from studies of Census Bureau Information, the average lifetime earnings of a bachelor's degree holder are currently about 84 percent more than that earned by the average high school graduate, a difference of more than a million dollars over their lifetimes. And that premium on college education has been steadily increasing in our society overtime. 30 years ago that premium was only about 48 percent, but as our economy continues to transition from an industrial-age model to an information-age model, that pre-

mium will likely continue to grow as it has for the past 30 years. And according to a Milken Institute study, published earlier this year on the effect of educational attainment on regional economic prosperity, a region's economic fortunes are closely tied to the quality of its workforce. Simply stated, education increases regional prosperity.

Milken found that adding one year to the average years of schooling among the employed in a metropolitan area is associated with an increase in real GDP per capita of 10.5 percent and an increase in wages per worker of 8.4 percent. Now what's more, the benefits of additional schooling to regional economies are even greater for better educated workers. **Adding one year of schooling to the average educational attainment among employed workers with at least a high school diploma is associated with an increase in real GDP per capita of 17.4 percent, and an increase in real wages per worker of 17.8 percent**. In contrast, an additional year of education for workers with just nine or 10 years of schooling have little effect on real GDP per capita or real wages per worker. And clusters matter, as the returns are even higher if your regional economy includes clusters which involve high skill jobs like business and IT service industries as ours does.

The Milken Institute completed--when it comes to education a rising tide really does lift all those. It is a location's most important source of sustainable competitive advantage. The Milken Institute looked specifically at our Los Angeles, Long Beach, Santa Ana, and Metropolitan Statistical Area and projected that if our employed workforce had the same average years of schooling as the Washington-Arlington-Alexandria MSA, our real GDP per capita in 2010 would have increased to $59,428 from the actual $51,959. Imagine what that could've done for our regional economy with the families who participate in it and the taxes that would have flowed from that additional income to help fund further higher education in our region and our state. As a result, Milken made a several specific policy suggestions, including:

"...for every dollar California invests in students who'd go to college, it will receive a net return on investment of $4 dollars and .50 cents as the increase on higher earnings of graduates are taxed in ensuing years and as the state saves money in social services and incarceration costs."

1. boosting college access and affordability through government investment and incentives, institutional efficiencies to help control the affordability of education, and
2. business assistance with scholarships and paid internships.
3. They also recommended government remove barriers to educational choices, that educational institutions provide more flexible and technology-enabled formats conducive to adult learning and that businesses provide more tuition assistance and encourage further professional development through work-related certificates and degrees for incumbent employees.
4. Additionally, to increase higher graduation rates, they recommended better analysis of the patterns and causes of dropouts. Actions to minimize obstacles to degree completion, the provision of effective counseling systems for students and improve policies on credit transfers.

In 2012, the **Institute for Suicidal Studies** at UC Berkeley published a study on California's economic pay off from investing in college access and completion, and concluded that *the benefits of higher education extend well beyond the direct pay-off for students and regions, and in fact includes substantial gains for the state itself as it receives increased tax revenue and reduced cost for social welfare and incarceration*. In fact they reported that for every dollar California invests in students who'd go to college, it will receive a net return on investment of $4 dollars and .50 cents as the increase on higher earnings of graduates are taxed in ensuing years and as the state saves money in social services and incarceration costs.

Now, what's more those who complete college show the highest gains, double the return for those who at-

tended but did not graduate. And importantly, they found that college pays off for every Californian, regardless of ethnicity. The advantages of earning a baccalaureate degree relative to a native born, non-Hispanic, white, high school graduate, yields about 1.2 million more for African-Americans, 1.5 million more for native born Asians, and about 1.1 million more for native-born Latinos. **They concluded that by the time our next generation of college graduates reach age 50 they will have repaid than early 4.5 billion dollars the state originally invested in them plus an additional 10 billion**.

"So just as the investment in higher education is critical to our regional economy, so too is it critical to the ultimate success of California."

So just as the investment in higher education is critical to our regional economy, so too is it critical to the ultimate success of California. As I prepare to concluded my remarks today let me share with you that the authors of that UC Berkley study on investing in college access and completion, report that there are nearly 2.8 million young adults in their prime college-going years in our state, ages 20 to 24, one of the largest age groups accounted in recent California census in 2010. They are outnumbered only by those ages 15 to 19 on whom future decisions about college going weigh most heavily. Together, the sheer size of these two groups highlight the urgency of higher education access and completion in California.

So, I applaud your gathering today and tomorrow as you have regularly for some time now in these series of symposia on the future of the California State University System and higher education in the brave new world. As you said about the process of redesigning and retooling your system and your campuses to better and more efficiently meet the needs of both your clients, the students who seek what you can offer to improve their lives and the eager employers who increasingly need your help to supply their more precious resource, human capital, please know that organizations like mine, the Los Angeles County Economic Development Corporation, and many of our peer organizations throughout this region and in the entire city California, stand ready to offer whatever support and encouragement in what we can because we simply cannot succeed in achieving our missions and our visions of helping everyone of our neighbors to meet their basic human need for a job, unless we help you and the K-12 teachers that you are preparing in your schools of education to equip our residents with the knowledge and skills to do so. Failure at this essential task has been an option for far too long in this state. Let's restore the ambition and vision and guiding principles of the master plan and take that option to fail off the table for good. Thank you very much.

[Applause]

Stepanek: Are there any questions?

Michael Hoggan: Thank you very much. Given that a great number of our current jobs did not exist a decade ago, how is your organization looking at that phenomenon?

Bill Allen: We actually have started some research at the LAEDC into this. We've been projecting for the city and county of Los Angeles Workforce Investment Boards, jobs that do exist in our economy and which ones are likely to grow, and then are starting to analyze emerging technologies and what jobs may grow from those. It requires a more sophisticated level of analysis than simply looking at large clusters and observing their growth rate over the years and assuming they'll continue to grow at that level and therefore we'll need X number of additional engineers or Y number of additional teachers or artists or bankers. It is challenging and it really involves closer communication with industry and not just with those people who are assigned by some industries to interface with their community, with their local government, or with their broader community organizations but with the engineers who are designing the future of technologies that these companies will bring to the marketplace. We conducted a meeting, actually it seems to me a couple of years now ago at the Northrop Grumman Headquarters in the San Fernando Valley. Things that are electronic system's division that's over there in the Warner Center Area, but they brought all of the Division

Heads, the actual operating Division Heads at each of the three major sectors of Northrop Grumman which employ 20,000 people in LA County. And we had two dozen of our university members of the LAEDC there to engage in a meaningful dialogue with Northrop about where their technology was going and where their need for workforce was going based on entirely new technologies, new processes, new demands from their government contractor. And so I think bringing in those engineers, futurists, corporate partners in your community be part of identifying what are these emerging jobs and skill sets, is going to be essential to doing what Wayne Gretzky did when he used to say the reason he was successful was not because he skated to where the puck was, he skated to where the puck would be, and was ready to score that goal. That's what we need to be doing as educational institutions is, moving ourselves to where the demand will be in the years ahead.

Harry Hellenbrand: I have a question. When you take a look at the education cluster in the L.A. Region it is very large particularly when you look at the privates and public together. Indeed it is bigger than the one you see from San Jose to San Francisco, bigger than the one from Tacoma to Seattle, bigger that the one from Boston to Portland, it's very very big. And yet we have these problems that you describe that are before us and so the million dollar question for me is, what are we not doing and not seeing that given the size of our cluster and the strength [inaudible] how can we have these regional problems that these small clusters in education do not have?

Bill Allen: Harry, with my bad hearing and the speaker system, I'm not sure I heard all of that, but what was the sense that given the size of our cluster and economy or the size of our education--help me understand, I want to—

Harry: The size of size of our educational cluster.

Bill Allen: So the size of our educational cluster when compared to these others. And then given that, what are we not doing to improve the local economy. I think the size of our cluster is, you know, enormous because of the size of our population. The question is whether the leaders on both sides of the equation, industry and education, are communicating regularly enough, candidly enough about what the needs are of the workforce and of the industry clusters in this region. Industries and businesses are quick to blame the educational institutions were not giving them a sufficient supply of the skilled workforce that they need to compete in the global economy. And we regularly push back on our employers in our community that they need to do a better job of articulating what they need, and sharing that with the institutions and supporting the institutions in the transformation of their curriculum, the make up of their faculty. I had lunch a couple of weeks ago with Bill Covino at Cal State LA, the new president there. And he was talking about the need for institutions like the Cal State University system to think as a member of the faculty retires whether they should immediately hire someone with the same basic educational background and ability to teach the same basic courses because of that vacuum that appears when a talented faculty member retires or moves out of the system. Or rather whether they should review, whether those courses are still as relevant. And this might present an opportunity to bring in a new faculty member who can teach that which may be more relevant today and tomorrow than that which was taught over the last 20 years. So I think that sort of thinking at our educational system level and the clearer articulation on the part of our businesses, large and small, about what they need today, what they're not finding in the market, what they anticipate getting in the future is essential. And I don't think we do that as well because of the size of our region. Because of the number of institutions, we've got more than 120 college and universities throughout the 4,000 square miles of LA County. And that gets daunting for some businesses. They don't know who to talk to and who to share. And so they don't share at all. We have to create a better system such that as you learn something at Cal State Northridge that's important to the companies that operate in this valley, or the broader service area that your students supply talent to, that you are sharing that with your peer institutions and state university system. And at somehow organizations like ours become aware of that. And share that more broadly because it can be easier to do that in a smaller community, one of the smaller areas you mentioned where more people from more institution see each other. And the connections are more frequent, regular and intimate in a smaller community. It's much harder in a large diverse region like ours.

Audience Person: Harry, I think the problem is that students are spoiled. They don't want to take hard stuff. They don't want to learn science and mathematics, they don't want to learn values. Its real tuff stuff! So what we need to do is to inspire in our students the urgency for learning some basic skills as well as the traditional curriculum. And I think those basic skills at this point includes computers.

Bill Allen: And we would agree with you that that should start at a very early age. There need to be career awareness programs in elementary, middle and high school. Don't wait until we're doing college and career counseling in high school or college for that process to begin. And educate parents of these children about the potential pathways that their children can pursue. And what are the required educational foundational elements that they will need to pursue those pathways. Some of our largest employers by the way feel that they have to do a better job. Northrop is another great example of indicating to children the appeal of working in their structures. Many of the brilliant computer science students want to work in the video game industry because it just seems cooler and fresher and more fun. And when some of them come to an opportunity to learn about Northrop's electronic systems, they discover that heads up displays that are developed years later in the video game market had been employed by Northrop for years if not decades. And that much of the technology that they enjoy as consumers of consumer technology was developed in our aerospace and defense Programs and they can actually--more at the forefront of cool technologies if they were in traditional sectors of our economy. And again I remind you, Northrop has more than 20,000 employees in our county. All the video game companies put together don't have that many. So many of our students come out all competing for a very few jobs in certain sectors because the popular culture told them what was popular. And there wasn't an informed process of identifying real opportunities for them so they--in many cases limit their career options by not fully understanding the economy. So helping those students and families understand the economy on the current available as well as are institutions, I think, is necessary and helpful.

Terri Lisagor: So one thing I did want to say is to reflect on what Mr. Allen had said that the majority of the working force in the San Fernando Valley and the southern California Region comes from the Cal State system. So I would like to ask us as professors to be very careful about putting together that statement that students don't work, they're lazy, etc. because I found that at least in our college and throughout the university that that is not the case. We have some very hard working students and I would like to give you one.

Bill Allen: Nice segue. You have a future in entertainment.

Female Student: [inaudible] I am a student studying science and science is to me something I find so interesting, that's why I am here and that is why I am getting a college degree because I want to learn and I want to learn more about science. Just reading on current events and seeing our future and how important it is. Everyone needs to be educated in order to work today and the industries in the future. That is something I am here for.

Bill Allen: Can I have one thing by the way? We have a member of our board for many years named Carol Rowen who was very active in the valley for many years as well. She was a harbor commissioner with the Port of Los Angeles. And she was troubled when she looked at the school. I hope I remember the name correctly. I think the Phineas Banning High School down in the Wilmington, San Pedro area, that when I share with you its graduation or drop out rates, they're almost the reverse of the already very unfortunate statistics of the LA Unified School District. The LA Unified School District has something like 60 percent of its students graduating high school and now and 40 percent dropping out. They were the reverse of that; they had only 40 percent graduating and 60 percent dropping out. And she was troubled as a harbor commissioner by that and so she created some of the International Trade Education Programs that one of our former LAEDC employees is now the president of. And it worked with that high school to divide that high school into five different theme-based academies around maritime-related industries, port-related industries. So it might be goods movement, port security, hospitality for the cruise ship industry. But it identified at that high school career pathways and opportunities for those students. And they took those students down to

the port and introduced them to people from their own community who were working on these jobs. And the kids saw crane operators who were in jeans and sweatshirts operating these very cool cranes that lift containers off ships and put them on trains and trucks. Then they found out those crane operators earn more than 100,000 dollars a year as do many of the other people working at that port. And their eyes were opened to jobs they had never heard about in elementary and middle school, did not realize were available to them, people who looked like them in their community. And they redoubled their efforts in school and their graduation rate improved from 40 percent to more than 80 percent. That was a dramatic turnaround by making the career opportunity present and relevant in their lives. So I think helping students understand what's out there for them can help inspire them to do the hard work necessary to achieve their dreams.

Male Student: [inaudible] …six year student here at Cal State Northridge. I like what you said and I think it is as much a charge to the students as much as the faculty. I think that students are responsible for figuring out what we want to do early on. And I think it is a charge to the university to help us do that [inaudible coughing in the back ground] …the student services that are provided for us and made available to us we should be of a more practical face rather than looking at the theory [inaudible] students need to get more involved [inaudible]. I was a biology major myself for five years with 150 units. I changed my major to political studies to pursue higher education because of my exposure to the university possibilities. So I think it is up to the undergraduates to search for those opportunities but it is also our charge as administrators and as students to have a stab at the university to help open up different options or to allow to see where their strengths lie and how we can leverage and put strengths to go into a career that's going to be lucrative for them, that going to be progressive, that's going to help change lives.

Bill Allen: Well I agree completely and I think that speaks to that stewardship concept I was mentioning. And I wasn't suggesting that just our educational institutions to be stewards of our regional economy but that all of us be. And the same as parents, we raise our kids to turn the lights off and not waste energy. And, you know, be good stewards of our environment. I think from an early age if we as parents can educate our kids to be good stewards of the economy, we can have a generational impact on the economic fortunes of our regions, our nation and eventually our world.

Stepanek: All right, one more question.

Joyce Broussard: I program I saw recently was on Germany and how Seamans is working directly with schools and in their case it was a community college: a trade school as they call it. But they are literally making those jobs apparent, they take the students to those jobs, they show the various aspects, what they would need in engineering skills, what they would need in corporate skills. And then they developed that in their curriculum and out that they not only had a job at the end of the schooling but they also have a degree. And they because Germany is so in support of education they then make the higher education available as kind of a carrot: as an insensitive. Ok, you have a job for this long and it will take you here. And this idea is largely missing in America today. I came up in corporate America and there were work training programs, there were apprentiships, there was all kinds of way you experienced the job and figured out, hey this is for me or I want no part of this or let me out let me out of here and back to school. And we don't have anything like that now. Is there any plan for that?

Bill Allen: Well we call for that in our strategic planning work and much of our advocacy, and the Germans do an incredible job in a number of different educational approaches because they're an export-oriented economy, and manufacturing-oriented economy, and they have to train the highly skilled workforce to sustain the high standard of living that they've built as a nation with their prowess as manufacturers and exporters. We think it's needed in all different sectors of our economy. I serve on the board of a community on the last community owned independent hospital in this valley, the Valley Presbyterian Hospital. And for--not also a noble reason, we started a program a few years ago working with this university and LA Valley College and an organization I think called COPE Healthcare Solutions to train nurses for our hospital. We have hundreds of nurses at our hospital and there were frequent shortages in the supply of nurses available to us. And to address those shortages because there was a state law requiring a nurse-patient staffing ratio,

we would go out and hire traveling nurses and registry nurses that required upfront bonuses to be paid, very high wages. They were coming here from other states or other cities. They had no long term commitment to our region or our hospital or the people in our community who we were serving. And so there was turnover in that and very high expense. Frankly you'd be spending north of a hundred thousand dollars to fill certain staffing positions. And we thought there had to be more people in our community who given the opportunity to train to provide nursing skills in our community. And so we set up a series of 20 student cohorts working with our hospital and our own nursing staff, and LA College and this university, to train nurses. And we hire almost every single one of the 20 in each cohort over and over. And it has brought down the cost of nursing for our hospital which makes us better able to provide better care and better equipment for the care of our patients in the community. It's created longer term relationships between our nurses in our institution which is important to the doctors practicing in our institution. And the patients who like the fact that if they come back there's friendly face they recognize. And so just in our one hospital that sort of model has worked beautifully. And I think we need to apply that model to different sectors of our economy. I couldn't agree with you more.

Thank you all very much

[applause]

Participant Observers Report Out from Day One Discussion Break Out Groups
Theme: "Models of Delivery: Online vs. Brick and Mortar"

Moderator:	**Dan Hosken**:	Associate Dean, Mike Curb College of Arts, Media and Communication, Cal State Northridge
Panelist:	**Elizabeth Adams**:	Associate Vice President of Undergraduate Studies, Cal State Northridge
	Joyce Broussard:	Professor, History Department, Cal State Northridge
	Diana Guerin:	Chair of Academic Senate of the CSU [ASCSU] Professor, Department of Child and Adolescent Studies, Cal State Fullerton
	Darlene Yee-Melichar:	Professor Coordinator, Department of Gerontology, San Francisco State, Member of the ASCSU

Moderator Hosken: Good morning. We had three different groups that got together in breakout sessions and we identified a series of broad topics that we thought that most groups talked on. So we are going to start with the very first line (refer to work chart) with is the "On-line vs. the Brick and Mortar" and that this is fundamentally about the false dichotomy, for instance it might be the wrong thing to join those two words.

Darlene Yee-Melichar: I will chime in Dan, thank you. I observed the group that Associate Dean of the College of Social and Behavioral Sciences, Maggie Shiffrar, who has been at CSU Northridge for only two months, facilitated. The group talked about how it is important for the CSU system to have better communication externally and get the word outside our system to let people know that since the early 1990s we have been offering both in class and on-line models for delivery. So we have CSU faculty who have taught fully on-line courses and even more hybrid, also known as blended or mixed courses for a long time. Consequently, our courses have not been an either—or, it's both models for delivery. We need to let people know that so legislators and others can see what the CSU is doing on-line. We need to get that message out.

Joyce Broussard: We sometimes wonder, because so many of us already incorporate, modules of technology, we incorporate some sort of video , we incorporate all kinds of technology that may not be known on the campus necessarily unless someone takes your course. So for instance in the case of using the library as an information competency resource, or in making some of the things that are available known in a better way, as Darlene said, to those who are going to take our classes, those students we already teach. But it seems to me that Sacramento doesn't have a clue what we really do on the CSU campuses. Maybe is time we are a little more vocal.

Diana Guerin: We also had a perspective from a student in our group that it was very important for students to have experiences on the campus and develop with the campus. That by doing that it also developed greater interest and engagement in their courses. So I thought that that was a very interesting point that by getting student engaged on campus in other activities that it would build their interest and engagement in the course work.

Moderator Hosken: There were several comments about the value of brick and mortar to engagement and other values that actually showing up and seeing people in class would have and I am wondering if any of you want to speak to this?

Darlene Yee-Melichar: I will respond to that. The group that I was in was concerned about going fully on-line or

going to the next wave of massive open on-line courses (MOOCs) for the very reason that most employers are seeking employees with good verbal skills, interpersonal skills, who have patience when working with customers, clients, and patients. They are fearful that if we went to totally on-line that students would not be in a situation where they would develop all those important, much needed skills without being exposed to other students and faculty. So they were hopeful that if there was an opportunity to do something on-line and hybrid, where they could perhaps see each other, they could perhaps interact with each other on-line too.

Elizabeth Adams: One of the interesting conversations in our group was between two of the Social Work faculty who posed a theoretical question: "*Would you want to work with a therapist who had never worked with a liver person?*" [laughter] To which I said, "**No!**" But then one sited a student of their in a on-line MSW is in a remote village in Alaska and she has no access to higher education and she is doing it remotely and then she will then in tern serve her community, so all of a sudden my flip answer that "*No, I would not want to work with a therapist who had never worked with a liver person!"* became less sure because I do want someone to be able to provide social work services to the people of Alaska and if on-line is a way to do it, then on-line is a way to do it.

One of the questions that came up is whether or not on-line creates or enhances or exasperates the social economic divide that exits in the CSU where students who are relatively privileged have the technology and the skill sets to be able to do it, and those who don't.

Joyce Broussard: They have mentioned my session as well, that they are very concerned that we are creating an early tiered system if it becomes associated with on-line delivery in how you get access if you go to the CSU but it is going to be different if you go to USC. It can create a problem. There was some concern expressed that we moderate that is some way.

Moderator Hosken: And so the next broad topic was referred to from the speaker this morning from Coursera, Daphne Koller. This has to do with *MOOCS for credit*: yes, no, good idea, bad idea, what came up?

Elizabeth Adams: Generally an awful idea. [laughter] But then it's not an exclusively an awful idea. There were a number of issues that were brought up: one, *how do we measure student learning*. We sited the 170,000 people in it but had an 8% completion rate, Wayne can do the calculation on this, we have 13,000 who theoretically get credit, how would we know how those students would be evaluated? But even if you want to give some credibility to peer evaluation, it can't be the only way students are evaluated. So there is a real concern about *the quality of the measurement of the content*. This is the conversation is a few groups that there are a few MOOCS that are being geared toward a CLEP test: which is a test which accepts for credit various lower GE classes. So there is a possible external measure for a Cal student who took a MOOC to get the content and the CLEP test is not easy. And they can just pass the CLEP test just because they sit in front of a computer.

Joyce Broussard: Another concern that came up was the issue of MOOCS and FTES. If we do use MOOCS who will decide which subjects will be used and which subject will not? Are there going to be certain gateway courses that MOOCS will afford and are those going to be individual courses that may or may not affect certain departments more than others? For example, the issue came up about Title V. If you have a MOOC that is presented as satisfying that GE requirement for Title V then what does it do to the FTE with the history department? What do you do in a math department where that becomes an issue? There were also some good things sited about outcomes but that was primarily a concern for *who is going to make these decisions* and how is that going to be implemented?

Darlene Yee-Melichar: The group I was in we were talking about MOOCs for transfer credit. A couple of items came up: One was when those courses they were taken would they be counted for credit? Would they be taken for transfer to the CSU? Would they be taken while they are enrolled in the CSU simultaneously to get transfer credit? Who would monitor the courses they are taking, in other words who would do the faculty advisement? You know, if they wanted to take a MOOC course who would advise them as to the courses to take not knowing what the curriculum was in another institution? Other than this, we talked about the mechanism for the transfer credit. We talked a little bit about the transfer credit by AP Exam, the Advance Placement Exam and credit by exam. But basically we were concerned about faculty work load, staff work load, in terms of the transfer mechanism.

Moderator Hosken: "Well a couple of the topics were the issues of the cult of personality and the singular voice that a MOOC might convey."

Diana Guerin: One of the things we talked about having a very homogenized, very vanilla curriculum, you know one curriculum for everyone regardless of who your students are, and who your faculty are, and the stiffening of academic freedom. So we thought that these were all important and wanted to put them out there. You know, the faculty have degree perspectives and in talking about those we can advance the field and also make teaching more relevant to our students.

Moderator Hosken: So if it were a largely negative take on MOOCS for credit, how can MOOCS be used? There were several ideas around that, notably MOOCS for content.

Elizabeth Adams: We talked about this a fair amount, that there is often, and this is about the flipped class room model, but done on a larger scale, that there are MOOCS that have content that faculty want to give to their students and not necessarily go over it in class, that it is OK to use it as a module. To view the MOOCS as somehow more like book publishers and less like competitors in education. One of the questions our folks asked was, "*Are the MOOC providers offering education or are they offering courses*?" I think in some ways they are often offering courses but even if you don't attend the course doesn't mean that you can't take the content.

Joyce Broussard: As MOOCS are brought up as supplemental then it is a question of faculty controlling that content much in the way you would use a streaming video if you decided to use additional content as an additional blurb on whatever you want to present. The question is, what kind of control would we have over these MOOCS? Would we be allowed to use part of them? Again, thinking of it as a book publisher, what are you actually buying, or like the library use of electronic resources once we buy this package what does that mean if we decide to keep using that will prices rise? There is a lot of unknowns right now with MOOCS.

Diana Guerin: In our group there was talking about the interest in evaluating, incorporating the content and then evaluating the content and how exciting that would be. And it just reminds me that faculty in the CSU already use a lot of technology and incorporate technology in their courses and are constantly trying to assess the effectiveness of that in working with our students, the very diverse students that we have. So I think of those facts from our first slide in terms of "On-line vs. Brick and Mortar" it's really technology that we are incorporating in helping our students to be more successful.
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And the onus on our faculty to try and take advantage of the well produced materials that are out there and make them available to our students. Maybe then our students will go to the other content and augment their own learning beyond the course content which would be exciting.

Darlene Yee-Melichar: The group I was in actually brought into the discussion about the potential use of MOOCS. And so what we talked about was not only credit by exam but we talked about how MOOCS are not so good for remediation, but that they could be a useful tool for self study in remediation courses. In-other-words, like our speaker this morning Daphne Koller said, you could go back and study on your own. So that is something that a MOOC might be good for. The other thing we looked at was how it could be used for teacher training in education courses, looking into peer grading in getting instant feedback was very helpful.

Moderator Hosken: We also had the topic of faculty intellectual property

Joyce Broussard: There is some concern in, I think, any kind of product that's being generated today, particularly online as to your intellectual property rights, and this came up a number of times in discussion, as to what your arrangements are. I think Daphne answered this morning that it depends on the institution. I think at this point my understanding because of the digital world and our transfers on campus to digital, I know the library's going digital, what exactly if you create something do you own, or does... is it like the corporations where if you create it on their time, their server, they own it? And so there are concerns about for any of the product that we might create, is this going to used in perpetuity long after we're gone? And these are issues that are larger issues for media and people

that make this kind of product every day. So I think for some, probably most faculty members, it's kind of a new issue thinking of themselves as a entrepreneur, but if you're creating this material, it is your intellectual property. So it is a concern.

Diana Guerin: Well maybe something that we didn't put up there that we might want to talk about is keeping the content current, and who's going to do that? And we really didn't talk about that much in our group, but since you talked about using it in perpetuity , it does, you know, does beckon the question.

Dan Hosken: So most of the groups went from MOOCS as specifically to online teaching more generally, and by and large we talked quite a bit in our group about the hybrid in the flipped classroom as being positive developments.

Joyce Broussard: There was some conversation, we had one, a member from [inaudible] in our group who was talking about how they're assessing what they're doing. Her feeling was that they did not have yet enough assessment outcomes to know how it was all working, but that a lot of their programs, I believe, you said were blended, correct? So, again, it's the kind of issue in which we're going to have to get on in front of this in terms of if we are teaching and we are controlling the products, how are those going out, and how are they being used best to help our students, to help our particular campuses, and to help in some way preserve our curriculum, our sanctity as opposed to having it brought in from the outside? If somebody brings a MOOC in, that means somebody's packaged it and created it. So these were issues that we talked about to some degree as well in the group.

Darlene Yee-Melichar: In the group that I was in, the group felt that it would be helpful to faculty if we as campuses, as we as a system, had operational definitions that we could all reference. What I mean by that is we sometimes think we know what a hybrid course is and we know what a MOOC is. The question is if you're talking about a hybrid course, what percentage of that course do you have to teach in person? And how much of it do you have to teach online? Are there set percentages for campuses, or is that something that we're going to talk about as a system?

The other thing is when we talked about the MOOC and the presentation from the speaker earlier this morning, she talked about reaching out to 100,000 people. And we in our group did not see us reaching out to 100,000 people. We thought maybe 1,000 people, and so we talked about SMOOCS, which is a small MOOC. [Laughter] Once those definitions have been kind of clarified and you know what you're wrestling with and what kind of animal you're playing with, we really felt like as we moved ahead as a system, as campuses looking at online education, it was really important to reiterate what we already know so well, and that is the importance and need for shared governance. Faculty have to be involved as well as staff, administrators, and students.

The other thing that we need to differentiate is looking at system-wide faculty oversight and looking at the statewide Senate resolutions that speak to faculty oversight of the curriculum review and approval process. Also recognizing the campus autonomy and the campus sovereignty in terms of their policies and procedures - that they may already have in place in terms of online education or intellectual property rights. And for those of you in the room who are not familiar with it, the statewide Senate under Diana's leadership last year did produce a white paper on on-line education, and if you haven't seen it already or if you already have, I would really encourage you to look at it because it really kind of goes over what campuses already have in place in terms of policies.

Diana Guerin: When we talked about the... I think there was universal agreement that flipped and hybrid courses were good things, but we did have an issue with that, and that is that it's difficult to schedule them on campus. That is, how do you set up and make efficient use of the facilities because we are set up on a Tuesday-Thursday mode or a Monday-Wednesday mode or whatnot, and so we did talk about the challenge of scheduling on a campus and still making effective use and making sure that the students know when they're online and when they're face-to-face. So the scheduling was... we spent some time talking about that in our group.

Moderator Hosken: So naturally at some point, we have to start talking about money. Among them were the need for faculty financial support and faculty development.

Joyce Broussard: In part a lot of what has come down lately for faculty have been largely unfunded mandates. So the issue is in terms of workload, in terms of how this will be incorporated into everyone's teaching, what everyone will be expected to do or not to do, those are all issues that we don't really seem to have much of a dialogue about yet, and so there was some concern about how we get one. How do we begin to address some of these issues before they're suddenly just imposed and then we really haven't talked about them? So that was one concern that came up in terms of funding. Where will the money come to make... Some of these hybrid courses can cost a lot of money to implement because you're going to be presenting multiple kinds of media, multiple kinds of educational experience. Where's that funding coming from when we're talking about this? Is the state going to provide it or is every campus going to be responsible? And these are issues that are largely unspoken right now.

Diana Guerin: I think we did have some agreement that, you know, what you'd like to do is match the faculty's preference for instruction and the students' preference for learning environment so that you maximize, you know, the satisfaction of both parties, if you will, and students' success, but to produce a course in multiple formats and modalities is an expensive proposition, and then when you layer onto that the cost of production and the cost of making materials accessible without, again, additional funding because it's clear that the governor and others think that these are no-cost items, that you just flip a switch and the students are learning, that makes it a little bit challenging. So the idea of, you know, online and incorporation of technology costing money seems to be a message that we need to communicate clearly to those who want to tell us how to deliver instruction.

One basic fiscal consideration that came up for us was the technology logistics. In other words, should the CSC build it, or should we buy it? You know, there are lots of organizations that would love to sell it to us. So the question is, do we want to build from within, or do we want to import something from outside and use it as is? A secondary question that came up is, if we do build or develop and grow our own MOOCS, the question would be, who would do it? If it is the faculty who are going to be expected to build this curriculum, how do they know how to do it? So a lot of concerns came up about faculty development opportunities. Who would attend? How would they attend? Would they have time to go and attend? And once they do get the training or the information to build these MOOCS, how will they be sustained? In other words, where will the technology support come from? Will it be staffed? That kind of stuff...

One final thing that the group really looked at was what about outside of the teaching? What about the faculty advising and the supervision? Where does that fit in on a one-to-one basis? You're going to work with people on-line, but will we be doing e-Advising, or will we be meeting with people on the phone or on-line? Those are things that came up and needed serious consideration because when you're doing academic advising and not so much teaching in the classroom, some confidential stuff comes up that you might not want online and accidently land on a platform somewhere.

Elizabeth Adams: Students don't like e-Advising either. They won't come to it. Every time we've tried to do e-Advising, they just... they don't come, but one of the pieces that we alluded to earlier but that I want to sort of return to now is the issue of not only FTS but campus-to-campus coordination. We often have a tendency to think that the CSU isn't capable of doing coordination across campuses in any meaningful way, but if we don't figure out how to do this and do it effectively, then we are going to be stepping all over each other's toes, or we're going to be seating our responsibility on the campus to another campus to educate our students. Some of you are probably familiar with the current program that the CSU is running called "Intra-system Concurrent Enrollment." We're going to change the name of it, but... and there are currently fewer than 200 students statewide enrolled in ICE courses. CSUN actually has the largest number of students enrolled here, and we have 40, and there is one CSUN student enrolled in one course at Fullerton. Now, they're going to grow it, but, you know, one of my concerns about it, and I shared this with the group and the group seemed to share my concern, is that, you know, it would be easy to have this system set up in a way that the large campuses like Fullerton and Northridge and San Francisco State, which are the campuses represented up here, would end up having to do high cost, low yield courses for the small campuses that can't afford to offer those courses, and I think that's a real danger, and so I'm all for coordinating across the system, but only if we do it in a really thoughtful way, but the problem is all of our money is tied up in FTS. Diana point out that Brown wants to disconnect the money from FTS, but then what do we do? There, you know, there's not sort of magic floating money that we can say, "Oh, well, you know, Northridge gets this much, and Fullerton gets this much," without having some way to measure it. So I think we really have some very, very big questions that we don't have good answers to.

Joyce Broussard: One other piece to that workload issue that comes up as you start talking about increasing or the potential of increasing these numbers, Daphne was speaking this morning about the, sort of, grading component. Well if you have 10,000 people taking your course, you have, of course, peer reviewers. Well we don't necessarily have those on... in any workable form. We might be able to get a grader or two occasionally, but by and large every time the numbers of your course goes up, even if you have a small MOOC at 400, let's say, that's 400 papers, 400 responses. So then do you end up because it's economy of scale limiting their experiences so you don't really teach them too bright? You give them short answers so that they're easier to then handle the grading or those response... In other words these are all factors that it's very easy to talk about this and to say, "Oh, we'll grant more access," but who ultimately becomes responsible for the day in, day out, not only designing, maintaining, and ongoing perpetuity of it, but who's doing the work? So, again, another issue that came up.

Moderator Hosken: Well, so the dollar sign paper here was largely concerns so we decided we needed a big old post-it note that had some positive aspects, and that is resistance is futile.

Elizabeth Adams: Which we meant ironically. [Laughter] Except for that we didn't because technology's here and we've got to figure out a way to incorporate it, but, you know, one of the things that is possible using technology is to work on saving small programs across the CSU. I know Beth Say is working on a project with some of her humanities dean colleagues across the system to try to save French. We don't have enough students at CSUN to support a French major, but there may be the possibility of doing on-line French instruction so that you can save the major on multiple campuses without having to hire new faculty, which is not something that we can commit to given the enrollment. So there are some positives to it. It's not the easiest thing to coordinate. They've been working on it for a couple of years, and it has pieces that are ready and then other pieces that are still in progress, but I know that they're talking about it again this fall. So, you know, there are some positives to taking smaller programs. You know, we have 23 campuses, and, you know, give or take 22 of them, try to be all-inclusive public comprehensive. Maritime doesn't try that, which is good because they're on a boat. [Laughter] But, you know, do we need to do that? Right? Do we need to have a geology program on every campus? Do we need to have a French program on other... on every campus? Is it possible to offer students the opportunity to major in those departments or programs without necessarily having the full range of courses on a campus to acknowledge. It may allow us to come up with new models.

Diana Guerin: And I think, you know, in our group we did talk about it from both sides of the, you know, interaction. We're going to be hiring new faculty, and whether you're younger or older, more seasoned faculty, there are faculty who are interested in technology, and we're thinking that as we bring in new faculty, they're going to be more interested and move savvy in using technology. As a student pointed out in our group, you know, his family members who are younger have never been without technology, and so although we say resistance is futile, yeah, I mean it is the case that people are interested. People want to use these technologies, and we can... and the technology is getting better and better. So we do, you know, I guess, you know, you could say that we're being somewhat facetious there, but it is the case that there's a lot of interest in it-internally and externally.

Joyce Broussard: An example of that, the history department in looking to its future and trying to help students figure out what they would do with a history degree, we hired this year a public historian who was brought in from USC. She's a digital expert, and she... her assignment is to create an entire program in which students will not only get all the components of history, but they will... she will facilitate digital learning, interfacing. She's working at establishing connections with the library because they also are going digital, and so there are ways creatively to do this if we all sort of accept resistance is futile, so how can we best control it on our campus? And Jolene used to speak to this all the time-how do you control it so it doesn't control you? And I think that's what a lot of us came away with, particularly today is okay, what do we do now?

Moderator Hosken: There were discussions of sustainability. Elizabeth, would you like to respond?

Elizabeth Adams: Yeah, we did mention that, but one of the things that came up, I think, in almost every group was the notion that technology can help us contribute to a larger sustainable future. It's not just having the students commute to campuses, but it's also having part time faculty who are teaching on multiple campuses, and as I mentioned to Diana, I... the AVP at Fullerton once said to me "Fullerton and Northridge may as well be on different planets

because there's no way a student could commute from one of them to the other," which is true. I mean, we're probably, what, 50 miles apart, but you know...

Diana Guerin: Sixty-seven.

Elizabeth Adams: Sixty-seven. Thank you, but you know, the possibility of being able to do that in an hour is, you know, not, and so we really do need to figure out ways to keep people from having to come every day, and that way we can still use the facilities and we can still have the face-to-face thing, but we can cut down on our greenhouse emissions and the like.

So, one of the things that I really liked that I want to mention that got said at the very end of our session was said by our CIO, Hillary Baker. I asked her what she thought technology was going to look like in 20 years, and she said, "*One of the things we worry a lot about right now is integration. How do we make it all fit together? How do we get the degree progress report to talk to PeopleSoft, and how do we get all of that to sort of seamlessly fit with Moodle*?" And she said that she thought that in 20 years or maybe less than that, we won't be talking about integration anymore. Integration will just have happened, and so the question then becomes back to what I think Joyce was saying, which is how do we use all of that stuff to help with our teaching and learning effectively?

Darlene Yee-Melichar: And in the group that I was in it was pretty clear to us that public higher education institutions are being encouraged to increase capacity, reduce the time to degree, to increase our graduation rates, and also to manage costs. So looking at online education whether it be hybrid or MOOCS or SMOOCS is one way to perhaps address this.

Moderator Hosken: Great. Well, that's our summary of our breakout sessions. I don't know if we're getting on near the dinner hour, but if there's anything that we missed desperately that any of the participants in the discussions would like to bring up.

Elizabeth Adams: Or anything that we said that provoked further thought that maybe you didn't say in your discussion. We have 6 minutes, which is not to say we have to use it, just that we have it. Jerry?

Jerry Schutte: We didn't get to touch on this very much in our discussion, but I'm curious as to what your answers might be to this question. It seems to me that the reoccurring problem in technology is that you always have to wonder where you're going to step in the stream because the stream is just raging past you at all times, and whether it's Coursera or Udacity or edX or, to quote Harry, Schmedex, the idea is it's going to change. There's going to be something else tomorrow. So how do you think that we as an institution can take that into account in trying to deal with strategic plan?

Elizabeth Adams: That is a good question. I mean I think we've got to figure out ways, whether it's from the system or for the individual campuses, to put money behind developing these kinds of things for... from our faculty for our students because if we take the products from the elite institutions, you know, I think we're missing who our students are, we're missing who our faculty are. I mean, you know, I'm flabbergasted by the fact that the Stanford people are defending what happened at San Jose with the supposed MOOC in developmental math. I mean, anybody who knows anything about developmental math, and let me say that I'm a folklorist, so it's not exactly like this is my field, could've told you that wasn't going to work, and that the in person developmental math is going to work better. You know, why take somebody else's product? We have a product that works. Kate Stevenson does it every day. That could've been turned into an online product, but that's not what we did. We went and got somebody else's product. You know, the CSU is the largest public university system in the country. Why are we not trying to get ahead of it? We don't have to necessarily swim in somebody else's stream. We can create our own, but we have to have the money to do it, and we have to give faculty the time to do it and to make it about what faculty thinks should be in the curriculum because the minute we give that up, we've lost who we are.

Joyce Broussard: That was also the concern that was brought up about this sort of if we do take the outside product, aren't we, in fact, sort of defaulting to a personality cult? I mean it's so easy for young people now to sort of

get caught up in a personality or star material. We have great teachers on this campus, on every CSU campus statewide. I was lucky to be in a history council with all 23 CSU's. They're marvelous. I really think maybe the faculty senate can push Sacramento on this. Why take outside product, and why not sponsor at least those interested within each and every campus to develop their own? If my understanding is that the CSU has a deal with Google because of our digital content because now we've got Scholarworks and we're putting up the theses and so forth. So all of this is going to become much more accessible. They're obviously willing to think about that sort of thing, so why don't we push the envelope on getting them to allow each campus to develop product or to have a committee that is brought together from all 23 campuses that takes charge of establishing this? Maybe it's they just haven't thought of it, or maybe somebody's cut a deal. Who knows? But that's... I come from media long before teaching, so it's kind of the way that works, right? So take it back. That's what I'd do.

Darlene Yee-Melichar: I think the CSU has a lot of talented faculty, staff, and students. What we need to sit down and collaborate and look to see how we can move forward on this online education endeavor. The statewide senate has taken small steps. As I said, under Diana's leadership, we have begun a White Paper on online education. In addition, this past semester, spring 2013 we did initiate a joint task force on MOOCS, and we are working on a report that relates to MOOCS. My hope is that we can perhaps do the research that identifies the faculty who are interested and willing to explore MOOCS. I'm hopeful that we can identify disciplines and students who want to be consumers of MOOCS and who have the option - I think the word option came up in my group a lot. It's sort of like going into a store, going into a restaurant, having a selection menu, and having a choice but not being told what you have to take and that you have to take it a certain way, but if we have options for our students in way of classes and we have options of ways in which our faculty can teach, I think we can succeed.

Diana Guerin: You know as to the state, the system, let's just say, the academic senate statewide has passed resolutions in the past many times on the primacy of faculty and the curricular process, and increasingly I think we are becoming concerned about the distinctiveness of campuses and the autonomy of campuses, and it was a full court press on Steinberg's 520 bill last year from all segments of public higher education including K12. So there is resistance, and we did, you know, I think we were all concerned that that appeared. I think that Senator Steinberg understands the strong feelings of the educational community, and we are ready to go again if necessary.

Moderator Hosken: Okay, I think we are at time now. What is the... for somebody that knows what's going on, what is our next step? [Laughter]

[Applause]

END

Keynote Speaker

Dr. Matthew Moen: University of South Dakota
Dean, College of Arts and Sciences
http://www.usd.edu/arts-and-sciences/matthew-moen.cfm

"Short Shrift: The Liberal Arts and Sciences in Higher Education Reform."

Steven Stepanek: Dr. Matthew C. Moen is Dean of the College of Arts and Sciences, Professor of Political Science, and Lohre Distinguished Professor at the University of South Dakota. He currently serves on the board of the Al Neuharth Media Center and of the South Dakota Humanities Council, where he is chair-elect. Before returning to his native state in 2002, Dr. Moen worked for sixteen years at the University of Maine as a faculty member, department chair, and special assistant to the president. He published five books and was named University of Maine Trustee Professor. Past leadership roles include president of the New England Political Science Association, chairperson of the Professional Ethics Committee of the American Political Science Association, and president of the Council of Colleges of Arts and Sciences—the national arts and sciences dean's organization. He received a Ph.D. through the Carl Albert Congressional Studies Center at the University of Oklahoma, serving as a Congressional Fellow in the 1980s. He received a B.A. with honors from Augustana College, which honored him with its Alumni Achievement Award in 2005. Dr. Moen is part of a collaboration on interdisciplinarity in the academy that will be published by Oxford University Press, and he speaks and writes about the place of the liberal arts and sciences in the academy. [Applause]

Matthew Moen: Good evening everyone. Thank you for turning out tonight.

When I travel around the country talking about the liberal arts and sciences, I'm often met with a greeting, "*Whoa, I've never met anyone from South Dakota before!*" And this has me thinking that actually meeting a person from South Dakota is some sort of a "bucket list" item, so...my California friends, you're welcome. I'm happy to be here.

[applause and laughter]

I'm pleased to be with you this evening and have a chance to talk a little bit about the liberal arts and sciences. I commend your university for having the foresight to think about the future of Higher Ed. I wish to give a "shout out" to your provost who I see sitting in the back, to Dean Beth Say, who is a great CCAS colleague and serves on our Board of Directors, and to Professor Hoggan sitting here, my contact for this event.

And this may seem obvious to you, but my remarks tonight are the remarks of a guy who observes higher ed and is writing a book, not those of a USD official. My remarks tonight are entitled: "**Short Shrift: The Liberal Arts and Sciences in Higher Education Reform**."

How we preserve the richness of the past and the present, and blend it with inevitable and often desirable change, is one of the quandaries of human existence. A successful example is the way that our nation's founders blended the major features of the European Enlightenment – **rule by law, religious tolerance, and scientific progress** – with unique American innovations, such as an intricate system of shared and separate government powers. Ben

How we preserve the richness of the past and the present, and blend it with inevitable and often desirable change, is one of the quandaries of human existence.

Franklin noted that birth had been given to a new type of republic, if we could keep it. He understood that institutions could not be taken for granted, but must be nurtured in successive generations.

And so it is with American universities. They remain the world's best – confirmed again last month in the Academic Ranking of International Universities, which placed American institutions in eight of the top ten spots; in the steady stream of students who come to the United States to study; and more recently, in the efforts of other countries to imitate our creative streak by developing their own liberal arts traditions. China is the most cited example, but countries such as Kuwait and Slovakia also make that list.

But even as much is right, careful examination shows that our colleges and universities are being pulled and stretched. Cracks are apparent, especially in the liberal arts mission.

I picked the phrase "*short shrift*" to convey the fact that we are paying scant attention to the liberal arts and sciences in the whirlwind that is higher education reform; I also picked it as an inside joke, because in medieval times, short shrift was the brief period a prisoner was given for confession and absolution before execution. [laughter]

For those of us embedded in the liberal arts and sciences, it sometimes feels like we are supposed to confess that our great intellectual tradition is now passé and elitist and unemployable, and that we should just make way for some brave new world of cheaply delivered, competency-based learning.

This evening I'd like to walk us down a path together, that takes us briefly into the liberal arts, then into higher education changes and reforms that are chipping away at the liberal arts and sciences, and concludes with thoughts on how the higher education conversation should be enlarged. I'll try hard to sidestep the fate of the two House members in the 1880s, said at the time by Speaker Thomas Brackett Reed; "...to subtract from the sum total of human knowledge every time they spoke." [laughter]

I.

So what is a liberal education?

The simplest, convincing explanation is found in Bruce Kimball's book, Orators and Philosophers. He explains that liberal education has two streams. One stream – traceable to the ancient Greeks – is pursuit of truth. This is accompanied by the view that knowledge is intrinsically desirable, a contemplative life is a good life, and education promotes moderation and virtue. The second stream is traceable to the Roman orator Cicero, who argued that education is critical to citizenship.

What we want in liberal education is for students to discern truth, to be good citizens of this world, and to lead satisfying lives.

Flowing in those streams is the idea expressed in Andrew Delbanco's book, College…that *liberal education enriches life. And this encapsulates what we want in liberal education – for students to discern truth, to be good citizens of this world, and to lead satisfying lives.* But rather than nurturing that mission, we are now unintentionally, but sometimes deliberately, and often quite thoughtlessly, undermining the liberal arts and sciences as the linchpin of American higher education. Let's dig a little deeper.

II.

The erosion of the liberal arts and sciences is evident in different ways. In Education's End, Anthony Kronman argues the humanities have lost their way, and the *Chronicle* is filled with stories of decline. The debate centers on whether the decline is absolute or merely proportional. In Liberal Arts at the Brink, Victor Ferrall traces the shrinking number of liberal arts colleges, and equally interesting, explains how the survivors have a more vocational bent. For those who prefer financial indicators, last month Moody's Investor Service downgraded some of our nation's most prestigious liberal arts colleges, such as Oberlin and Wellesley.

So what's going on? Some of the problem is easily explained.

When President Reagan successfully turned liberal into an unfavorable political label, he did so to beat liberals in elections, not because he had it in for the liberal arts and sciences. But for some time, it has been hard for universities to explain that liberal education is a different thing than liberal politics, especially when entrepreneurs like David Horowitz earn a living conflating the two.

But the bigger problem is that the liberal arts and sciences are just hard to explain. People know what a nursing degree is, or what an accounting degree is. Explaining to students and parents that a liberal education is a delicious blend of truth seeking and citizenship, sprinkled with a dash of a meaningful life, is not easy.

And so we take short cuts. We lapse into describing attributes. We say liberal education is broad education. It teaches how to think critically, act globally, value diversity, learn teamwork and solve problems. It prepares students for future career changes. All of that is true, which is why a liberal education is a superior one for most undergraduates. Employers have told the AAC&U over and over in surveys that they want employees with liberal education skills. But to students, this all sounds a little vague at best, and maybe pie-in-the-sky at worst. It's as though we are promising students courtside at the Lakers, but they see mere Suns tickets in our hands. [laughter]

And then for years we have been choosing our university leaders less for their intellectual achievement – for their reputation as our best teachers or prominent scholars – than for business sense or fundraising abilities. This reorientation has considerable merit, for universities are far-flung enterprises where business acumen is more relevant than an academic's intimate knowledge of a discipline. But one result is that we now have a cadre of university leaders, with less skill and inclination to advance our hard-to-explain cause.

It is easy to see why liberal education receives short shrift. We struggle with the word liberal and with explaining liberal education. We hire leaders outside our intellectual tradition. We play rankings games that undervalue liberal education and lack leverage through accreditation.

The cottage rankings industry also pecks at the liberal arts and sciences. Most rankings place a premium on student selectivity and research, not liberal education. Likewise, the professional accreditation that ensures high standards in fields such as business, education, law, and medicine… simultaneously catapults those programs to the forefront in the contest for resources. *Taken together, it is easy to see why liberal education receives short shrift. We struggle with the word liberal and with explaining liberal education. We hire leaders outside our intellectual tradition. We play rankings games that undervalue liberal education and lack leverage through accreditation.*

Since the situation only worsens as I continue, here's a quick dean joke to keep up the spirits of faculty in the room. On a remote island, a cannibal is selling jars of faculty brains for $10, but dean's brains for $25. Asked by a local customer why dean's brains cost so much, the cannibal drily replies with a question: "do you know how many deans I have to kill in order to get a full jar of brains?"

[laughter]

III.

Now let's walk a bit further down the path of higher education reform, more into the intentional changes and policy choices that are chipping away at the liberal arts and sciences. I'll focus on three developments.

First, the massive shift toward students paying a much greater share of the cost of a college education is chipping away at the foundation of the liberal arts and sciences. A SHEEO report showed that after the stock market collapse of 2008,

college enrollments rose nationally by 17%, while state appropriations dropped by 12%. Simple math explains why universities have raised tuition and fees, cut academic programs, and hired more contingent faculty. Many people suffered in the greatest economic turmoil of a generation. Universities couldn't be spared. But the broader trend is a steady drop in state support, as higher education has become more a private than a public good.

The benefits of college accrue to the individual – this logic goes – *rather than to our nation*.

How this separation, this almost cold detachment from a shared destiny, wiggled its way into American public life is a bit unclear, but it seems to be a massive departure from a consensus that higher education is a way to lift our people and our nation as a whole. And it risks a pillar of the American dream – social mobility through education. It even toys with the future of our country, by checking the creative genius of the children of the less fortunate at the door, even as we tussle for global leadership.

In some places, state support for universities hovers near single digits. In Colorado and Wisconsin, the conversation shifted to whether state universities should be set loose because the regulatory burden offsets state funding.

The ripple effects of declining state support are multi-faceted. Students borrow more money, emerge with more debt, and attain their financial goals later in life. Understandably, they arrive on campus with a more careerist orientation. They gravitate to practical fields – like business and health professions – evident in data from the U.S. Department of Education; in the 2000s, for instance, business degrees rose by 39% and health professions by 60%. Liberal arts and sciences disciplines lagged…with biology, psychology, and communications hanging in, but English, the physical sciences, and foreign languages not so much.

Students also arrive on campus almost embarrassed to be undecided about their major and career, at the ripe old age of eighteen. They ask what they can do with such-and-such a major, as if that single decision and their first job will establish the direction of their career and life.

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I am hopeful in the sense that policymakers are consciously addressing state support in places like California, Massachusetts, and Washington. But we must remember the fix is still at the margins of the cost-shifting to students. And worrisome is that people undermine public support by being sassy about college. Economist Richard Vedder once compared the R-O-I of commodities and college. He hinted that it makes more sense to invest in precious metals than in a college education. And who knows, maybe he is right from a straight financial perspective. Maybe copper pays off more handsomely than college over the course of several decades. But even if it does, this is an impoverished conversation in a democracy predicated on an educated citizenry.

Another example. In the last presidential campaign, one candidate said that pushing people toward college made Obama a snob; the candidate who said that had a B.A. from Penn State, MBA from Pitt, and J.D. from Dickinson. I looked for a synonym, but *weird* best describes it.

And finally – with an apology if I am being a rude guest – California has created the poster child of higher education sassiness. When Peter Thiel offered $100,000 fellowships to kids under age 20, to stay away from college for at least two years in order to work on entrepreneurism, he launched Dale Stephens into the world. Dale has titled himself the Chief Educational Deviant, and he has used his money to launch "UnCollege," convincing young people to skip college.

Oh my!

For the record, I do not begrudge young Mr. Stephens his share of the American dream; I congratulate him on a book

contract and wish him well in this life. But for a young fellow – old enough to vote, but not to buy himself a Budweiser – to be cast into the world of serious ideas with money and a rummy attitude, in order to convince our young people to steer clear of college, is an appalling act. I am hard pressed to think of anything more antithetical to the spirit of liberal education…to the beautiful words of Mr. Jefferson. "*Enlighten the people generally*," he said, "*and tyranny and oppressions of body and mind will vanish like evil spirits at the dawn of day*."

For anyone wondering about the wisdom of attending college, do recall the averages – college graduates are better employed, more engaged in their communities, enjoy healthier lives, and earn about $1 million more over their lifetimes. And that barely scratches the surface. *Education is about so much more than a first job out of college, or a financial return on investment. It's about better understanding, about living an inquisitive life. It's about a tolerance for complexity. It's about our responsibilities as a free people.*
Those who erode the case for state support, by treating higher education as if it is a big sandbox to play in, need to stop it.

Education is about so much more than a first job out of college, or a financial return on investment. It's about better understanding, about living an inquisitive life. It's about a tolerance for complexity.

It's about our responsibilities as a free people.

IV.

Second, the rise of for-profit institutions has chipped at the liberal arts and sciences. Proprietary institutions grew by 225% over ten years, but their exact numbers are hard to track because they open and close. Last month's sudden closures included the American Career Institute and Chancellor University. It is pathetic that attorneys general often have to be the people who help clean up these messes, rather than us having public policies in place that stop them from happening.

So let's back up…take a deep breath…and think about how strange it is to have higher education institutions motivated less by sharing the value of wisdom, than by the value of shares.

Yes, this water has already rushed under the bridge, but as we continue to set relevant public policies like gainful employment, let's keep in the back of our minds this question: *do we really need to make a profit off the education of our kids, as if other equities, bonds, commodities, real estate, collectibles, and currency trading don't present enough options?*

The for-profits created a clever business model – admit a lot of students, take their financial aid, promise to make a college education convenient and easy, and teach the students with a less qualified faculty at a higher sticker price. The only losers seem to the students who went deeply into debt for a subpar education and the taxpayers who underwrite the loans that pay the steep salaries of some for-profit CEOs. Bloomberg News reported that Strayer's CEO made $41.9 million in 2010, or 26 times more than the highest paid traditional university president.

The for-profits undoubtedly have success stories, and their outreach to underserved demographics might even be laudable. But their collective educational track record is deplorable. Graduation rates are abysmal. Widely reported a few years back is that for-profits taught about 10% of students, but consumed 25% of federal financial aid and sported a 44% default rate.

How's that for a taxpayer return on investment?

I read this month in one of your state's newspapers that 30% of federal financial aid to Bay Area colleges went to for-profit trade schools…that their 10% of students accounted for 50% of defaults…and that 12 of the 25 most expensive

colleges in California are for-profits. Your state, with good reason, cut financial aid to 130 colleges with lousy performance.

" Earn your degree in one night a week, sitting in your jammies, sipping your coffee and petting your dog, and hitting the send button to ship your homework to a caring professor you've never actually met."

The for-profits have pressured the liberal arts and sciences in two ways. As they were first gaining a foothold, they led the race to the rhetorical bottom of educational standards by stressing that *education is a matter of personal convenienc*e. You saw those advertisements – which I caricature here to make a point – *" Earn your degree in one night a week, sitting in your jammies, sipping your coffee and petting your dog, and hitting the send button to ship your homework to a caring professor you've never actually met*."

For a long time, Kaplan won the rhetorical race to the bottom by telling students to earn a degree *on their own terms*. In my CCAS presidential address, I called it an even sweeter promise than a free ticket to see the invisible man.

At the risk of offending, let me say it plainly, out of a deep love for this country: the relentless rhetoric about earning a college degree in record time, with minimal effort, is a disservice to our children, to aspirational educational standards, and to our nation's place in a competitive world.

We must call out the purveyors because this has to stop.

A second way the proprietary institutions have bit into the liberal arts and sciences is by disrupting traditional academic cross-subsidy. The for-profits have always focused on the most profitable fields of study, such as criminal justice and education. They've skipped molecular biology and Russian because they do not make money. They've ignored organic chemistry because labs cost so much, and because it is hard to push students through those physical sciences. Instead, *they've mostly cherry-picked the large enrollment classes with comparatively few instructional costs, where it is easy to turn a handsome profit*.

In contrast, our institutions are non-profit centers of learning, discovery and service to the public. Like a family, where some earn a living for the benefit of all, we rely on some parts of our curriculum to subsidize other parts. In that way, we are able to keep alive great intellectual traditions like Classics, and lightly enrolled courses, like particle physics, graduate mathematics, and Arabic.

In that way, we make good on the observation of Cardinal John Henry Newman, who noted that *keeping a broad range of studies available at the university is a magnificent way to expose students to diverse views*.
Somehow, we skipped over a public conversation about the wisdom of extracting choice parts of the curriculum from traditional colleges and universities. But if the bottom line thinking of the for-profits becomes the principal force structuring our academic curriculum, we will leave behind a sadly impoverished intellectual heritage.

IV.

Third, the accountability movement chips away at the liberal arts and sciences, but this is more of a mixed bag. And let's be honest about why this has happened. We've brought it on ourselves. Administrators wish to climb higher in college rankings, add academic programs, move up to more prestigious athletic conferences, offer students better services and facilities, increase student selectivity – the list of expenses goes on. Faculty want more research time, smaller class sizes, less advising – the list of expenses goes on. We've shrugged too much at costs, figuring the Pell grant spigot will pour and students will find a way. Instead, we've hit a price point.

The accountability movement is impossible to date; it trickled up from K-12, but received a major push by the carefully formulated Spellings Commission. It was as rigged as a Soviet election; commission members hailed from IBM, Micro-

soft, Boeing, and the Chamber of Commerce, and also included the CEO of Kaplan, a former AT & T executive, a private investor, and a private education loan market philanthropist. Faculty were mostly excluded, except for economist Richard Vedder.

The Spellings Commission report was a manifesto of accountability and affordability. It totally ignored the liberal arts and sciences, pointed out by Phi Beta Kappa Secretary John Churchill. And yet, the Commission's themes resonate. President Obama sounded them on his recent bus tour, which is why *Inside Higher Ed* interviewed former Secretary Spellings last month for perspective. And thus do we find ourselves enmeshed in a long-running conversation over accountability – with good, uncertain, and bad dimensions.

Good things first. President Obama lessened the costs to students in his first term by bypassing private lenders…not so good for the lenders, but good for the kids. His administration built upon the efforts of Secretary Spellings to simplify financial aid, creating the Financial Aid Shopping Sheet with the catchy slogan, "Know Before You Owe."

The Gates Foundation has thrown $472 million at remaking higher education. I'm not enthused about some of what they are doing – more in a minute – but their efforts to drive the less advantaged to education is laudable. I admire their experiments with adding scholarship dollars to incentivize college completion. Early results don't show much positive impact on retention, but do show progress on academic achievement.

The Obama administration is watching out for the interests of veterans, who have been collectively targeted for their education benefits, often by for-profits in disingenuous ways. And President Obama pushes rhetorically for the U.S. to reclaim its top ranking in the world for baccalaureate completion. We dropped out of the top ten, and last I looked, sat at sixteen. Obama's laudable rhetoric is tied to his accountability agenda.

Now let's flip to places where the jury is still out. The college completion agenda is terrific in theory. This is where the Gates Foundation pours in dollars. But we must recognize this agenda has baggage – tying funding to completion is a slippery slope that tempts colleges and universities to take fewer chances on marginal kids and to make college just a little bit easier.

Flipped learning is another area where the jury is out. The premise is that students learn material online and attend class to gain perspective. This summer I attended a seminar on personalized learning in Chicago, where an excited presenter talked of reinventing education through her organization devoted to flipped learning. Well, maybe so…but learning before you come to class, where you work with a teacher to delve deeper into material isn't so novel. Before we called it flipped learning as part of higher education reform…we called it homework…

[laughter]

Before we called it flipped learning as part of higher education reform…we called it homework…

Efficient delivery to the masses online is also murky territory. This is center stage because of the creativity of Dr. Koller and others with the massive open online courses. And I'm willing to take at face value what Dr. Koller said in her TED talk about Coursera…*that we can learn how students learn…we can see where students get stuck and intervene to fix it…we can better understand cross-cultural learning*. I'm untroubled by the 5% completion rate in MOOCs that is cited as an objection, since it is voluntary and free. And I'm enthused about Tennessee's success with math using software. At my own campus, we've been using Math Emporium with success for students who struggle. The Khan Academy teaching advanced math to able and willing adults for free is a gift.

But the verdict on mass education is still out. Most MOOCs are for-profit entities with large infusions of venture capital, and they will be tempted – maybe compelled – to succumb to credentialing, marketing, and monetizing. Probably not Coursera, under Dr. Koller's watchful eye, but someone in the brave new world of online mass education will undercut quality control by faculty with a computer

and an "academic coach."

And while MOOCs seem to fit linear disciplines – computer science, engineering, math – their crossover to interpretive subjects is a stretch. *Reading literature about the human condition, but not talking with other humans about it, for instance, is about as sensible as training to become a professional golfer by taking lessons online and practicing a video golf game*. [laughter]

Faculty members do something irreplaceable. Let me to personalize this by referencing my own undergraduate experience.
My American politics professor helped walk me through authorship of a 240 page undergraduate thesis on Senate elections, and was the person who identified the Ph.D. program in legislative studies that offered this first-generation college student five years of financial support.

My Chinese politics professor had me read Fanshen, a massive book dealing with the impact of the Cultural Revolution on a single village. And yes, I learned about Mao's flawed effort to create a peasant utopia. But more importantly, I was forced to think hard about ideas such as reciprocity, complexity, betrayal, and compassion. Every day, in ways large and small, we all face these same issues of human existence.
My oral interpretation class was taught by what I thought was a crazy guy, who made us do calisthenics when class started, and occasion, led us outside to run around trees. But what did he teach me after we ran? *He taught me to stand tall publicly, to say what I mean, to have the self-confidence to find my way in this world*.

Reading literature about the human condition, but not talking with other humans about it, for instance, is about as sensible as training to become a professional golfer by taking lessons online and practicing a video golf game.

And let me tell you two brief stories of alumni from my own College of Arts and Sciences.

Professor William Farber told his political science major from Yankton, SD to quit the university until he was prepared to come back and apply himself. That's what happened. A couple years later, Farber drove the newly graduated kid to his first job in Omaha because he didn't have a way to get there. Some forty years of friendship later, that kid brought the crew of the *Today* show to our campus to film a story about Farber, his lifelong mentor. The kid? Tom Brokaw of NBC News.

Story two.

Dean Lewis Akeley knew that he had a bright kid on his hands from Canton, SD. So he tasked the kid to teach physics to other students, as he observed. The lad taught physics, got a chemistry degree from us, a Ph.D. from Yale, and later in life invented the cyclotron that split the nucleus of the atom. You know the name of Nobel Prize Winner Ernest Lawrence through Lawrence-Berkeley Lab, Lawrence-Livermore Lab, and element #103 of the periodic table, Lawrencium.

His brother John, also from Canton and a graduate of my College, is the father of nuclear medicine for experimenting with radiation on his own mother's cancer. His son lives in your state.

Mass education will never do such mentorship. And I especially delight in telling these alumni stories because they convey the power of liberal education. Brokaw and Lawrence did something quite different with their lives than their chosen undergraduate major.

The Gates Foundation's quest to create inexpensive mass education via technology and competency testing – aimed at immediate employability of students – reflects a giant leap of faith that they are correct about the best educational

product for this nation. And perhaps they will prove to be right in this brave new world, but a bit more humility and caution is in order as they tinker with higher education, in case they happen to be wrong.

After all, there are bad dimensions to accountability. For one thing, it overreaches. Learning outcomes require universities to do back flips, hiring learning specialists and testing gurus to accomplish their assessment reporting.

Second, it has spawned some zany ideas. A rubber mallet and quick reflexes would be handy, in the spirit of "whack-a-mole." A personal favorite was an idea floated by a higher education group tied closely to Lumina; it called upon universities to issue a warranty that explained, and here I do quote, "*the utilitarian purpose of the degree granted.*"

Any Californian with an inkling of what an education in the liberal arts and sciences is supposed to be, would rather go surfing in South Dakota, than issue a warranty stating the utilitarian purpose of a degree.

[laughter]

Third, and this one is deadly serious, *the accountability movement has spawned all manner of cottage industries that are relentlessly pushing, picking apart, and beating up on higher education so they can make a bundle of money*. The assessment academies, the publishers, the flipped learning groups, the tutoring and testing companies – Pearson, OWL, EduMetry, Kaplan, Straighter Line…the list is endless – they all thrive from pervasive testing, from endless accountability permutations, from the race to competency degrees that just happened with Pearson and Texas A & M - Commerce.

The cottage industries absolutely encourage the perception that college is all broken, that they need to rush in with testing to set it all straight. If there are policymakers in the room – please ask yourselves…do you think that cottage industries in search of profit really care more about the fate of those individual kids sitting in classrooms, than the faculty who chose as their life's work, to teach those kids?

The cottage industries create a buzz *around* learning and assessment, but please recall they aren't at the center because they don't actually teach the kids. My predecessor as CCAS president offered this rural analogy: "*when your hogs are skinny… you can spend time weighing 'em…or you can spend time feeding 'em*."

…the accountability movement has spawned all manner of cottage industries that are relentlessly pushing, picking apart, and beating up on higher education so they can make a bundle of money.

Far too much of the higher education conversation these days is this mix of profit and shallow promises, careerism and credentialing, regulatory compliance, standardized testing and reporting, cottage industries, and marketing and institutional positioning.

In the meantime, I wonder whether we are being even partly distracted from the critical educational tasks of our time, like preparing students to interface around the globe with Islam, or helping students negotiate personal privacy in a world where their identity is bought and sold, or helping students to operate a complicated, deliberative democracy in a rapid, crossfire culture.

Perhaps the time has come to start unraveling this strange mix.

V.

So where do we go from here? We badly need a recalibration. In no particular order…

1. Returning to more appropriate levels of state support would help break the cycle of careerism and student indebtedness.

2. Enlarging the conversation about accountability might help. One idea that sprung up in New England is to add a metric of civic engagement for college graduates as a complement and counterweight to existing accountability metrics. That's worth thinking about.
3. And while I embrace the free-market capitalism that goes hand-in-hand with American democracy, we need policymakers to help us beat back, rather than force us to adopt, the self-interested solutions of the cottage industries.
4. And we desperately need this generation of policymakers to rediscover the broader view of higher education that their predecessors seemed to hold.

Rather than nurturing their state universities, many policymakers these days have restricted their interest to what state educational institutions can do to meet workforce needs and promote economic development.

Last week I was sent a report from the National Governor's Association that built upon their earlier report, "Degrees for What Jobs?" Both just go too far in one direction, suggesting that universities do things like use labor-market data to *define* their educational goals.

Responsiveness to state needs makes sense, of course. But to ask public universities – full of challenging ideas, scientific discovery, innovation, artistry, and strains of humanistic, philosophic, and theological thought – to focus primarily on metrics of workforce and economic development is a pretty narrow vision.
Lost is the other part of it, the broad spirit of the educational enterprise. Faded is the message that education improves public life. Absent is the message of education as a path to greater understanding. Missing is the role of civility in offsetting the angry voices and bad examples of truth-telling that we see nightly on cable television.

The liberal arts and sciences play a key role nurturing democracy, and yet we give them short shrift in the conversation about higher education reform, perhaps for the reason the woman dean from Kuwait once said to me – that we take our greatest intellectual tradition for granted.

So let's enlarge the conversation, placing this student-oriented premise front and center: *in four years, we can never teach students all that they will need to know in this world. But we can teach students how to learn, what it is, they will eventually need to know*.

Thank you.

[applause]

Steven Stepanek: It's time for questions.

Hilary Baker: Good evening. One of the topics that came out this afternoon was whether our four-year institutions and you mentioned that in your last sentence whether they would ever go down to be shorter college undergraduate degrees down to the three years that some of us did grew up in other countries or went to.

Matthew Moen: Yeah, well I guess I do not know how to respond to that Lamar Alexander floated at least three years ago as one option in order to lower the costs. Sure, that would work – that would lower the cost if you take 25 percent of the credit hours out. But are the kids better educated? Well, not unless on the front end they are coming to us better than they do currently. Four years is a useful time and you can think about it all in your own individual cases, about whether or not you would have been better off with three or four years in college. Did you learn anything that additional year? Most of the examples I gave you were the things that happened to me in my last year. So I think four is a wise decision.

In four years, we can never teach students all that they will need to know in this world. But we can teach students how to learn, what it is, they will eventually need to know.

Steven Stepanek: Another question?

Female Audience Person: Have you got any ideas about how we can fight the misinformation that's everywhere on the internet? I think when we put our courses and everything into the same media, we have to figure out how to arm the students, so they demand to know authenticity with, you know. Is there some way we can do that?

Matthew Moen: I don't know. You have a lot of people are trying. What I've tried to do over the last few years is to go talk to business folks at places like Rotary Clubs. Because business people will consistently will tell Debra Humphreys at AAC&U—or in the recent survey done by Northeastern that you probably saw in the Chronicle a couple of weeks ago --that the traits of liberally-educated students are what employers seek. They want a person who can think, who can do a teamwork, who can write, who can communicate, who can figure out answers, and who can adapt because the business that they're doing now is going to be different than the business they're doing in five years, if they're even working for the same employer.
So employers tell us over and over that they want the liberally-educated students in their work force and they'll train them in the specific field. Somehow or another, we got to make those worlds meet up because we're not doing a very good job, and maybe that's our fault - that we're not explaining liberal education systematically enough to the business community. What you (the business community) want is a liberally-educated student – help us do that. Support us on that effort. A lot of people do. Many business people understand it. Many of them are products of liberal education. But for those that aren't I think it's sort of incumbent upon us to go out and explain what it is we're trying to do, and as I suggested at the outset of my remarks, we have a heck of a time doing it. And I think we just…well, we futz up the explanation when we try to explain liberal education, what it is and what it's good for. And if we can't explain it, how are we going to expect other people to absorb it?

Steven Stepanek: Another question?

Female Audience Person: How do you choose to describe Liberal Arts when just…the elevator speech you gave?

Matthew Moen: I actually just try do it in one page like I did for you tonight. People usually run off the attributes of liberal education, that we want students to communicate and think critically and think on their feet and adapt and all those things. But I actually like to pitch it in the way that the Bruce Kimball has framed it. I think that's really what we try to do, so my elevator speeches on liberal education is the attempt to teach students how to learn the truth, because that's much of what we do at universities. We try to sort fact from fiction in classrooms and labs. And we educate people so that they will be more informed, engaged and virtuous citizens.

And then if you want to add the third dimension, add what Delbanco wrote in his book "College" that came out about a year ago. He has a beautiful summary of an alum he talked to, where the two of them were talking about the purposes of liberal arts education and the respondent said to Delbanco that the whole purpose of education is that it led him to a much richer and deeper life.

And so, say some combination of those two or three things. It sounds not only noble, but that's the truth of the matter. That's what we do and then the things like being able to write, and to think, and to speak in front of other people are things that you develop. They're traits you develop. They're attributes you get. But when you think about the individual faculty member and the classroom and the philosophy class, what is that person trying to do? That person is trying to help those young people figure out what make sense how to think deeply and well, what's true and what's not. And so, I think it's so sort of intuitive to just say it, and I think we've done kind of a lousy job in the liberal arts and sciences community of being able to express that simply and elegantly.

Female Audience Person: I agree that re-calibration is necessary and I'm curious, I mean, we are being constantly told by our governor that this is a new normal that we have to adjust to, and that there are many competing demands. And even last week, he said, "I had to come up with 400 million to pay for the prisoners to--" you know, the federal sued against him and he didn't want to go to jail. So, I mean, what ideas you have in terms of trying to get our government leaders to restore funding, which I agree with you is critical, but, you know, what we get is there are a lot of competing demands and, you know, you have alternate sources of income but don't raise fees.

Matthew Moen: That's exactly the position that we've been put in, right? State support has declined. We've cost-shifted it to the students and the question is-have they finally hit a price point? Part of the price point emerges in all the cheap, substandard alternatives. That's shopping for the lower price point. I don't have a great answer to your question. We need to talk with the policy makers about the larger context. An educated citizenry is a prerequisite for a well-functioning democracy. We need to have a larger conversation than the current one. I digress, but I remember a politician of a generation ago saying that what education did for him was that it brought him a greater sense of humility.

We have to look to ourselves – to those of us who believe in liberal education, not as the only thing that is out there, but as a good thing, an inherently good thing for our students. It's incumbent upon us to get out there and explain it to whoever will listen.

Jerry Schutte: I have a more practical question. It would appear to me over the last 40 years that part of what constitutes the liberal arts education is the ability to have considered contemplation. That inevitably involves time.

To borrow the distinction from the Higher Education Act in California, the top 12 percent of the people that are in public institutions and their correlates in private schools seem to have that time. Whereas if you get down to the middle class educational world, which I take the CSU to be, 82 percent of our students work, majority of them work full-time. And if I have that one person tell me I said that a thousand over the last 40 years, tell me that they don't have time to think about things, they can barely get in their car, get across the freeway, get to the university and take their class and go home and go to bed so they can get up and be at work at 8 o'clock in the morning. So I guess my question to you is this. How does your definition of liberal arts work in that kind of stratification system?

Matthew Moen: Well, I think it's exactly to the point of why there needs to be sufficient support for these kids, particularly those who come from less fortunate homes so that they don't have to keep that sort of a schedule. And call that pie in the sky, if you want, but I really think that is what policy makers have to think about with the future of this country. If we don't have the creative and the scientific genius of the kids of the less fortunate going to college and getting a maximum experience…well I'm not optimistic that we can exclude the brain power of the less fortunate and still fare well in this global tussle.

And so, maybe we need to dot those lines for policy makers. Maybe that's another place where we've fallen a little short. But I think that that speaks to the point of having the funding available, the state funding available so that kids have the opportunity to make the most of their studies while they matriculate.

Harry Hellenbrand: Just an observation. You talked about the decision makers and Dianne talked about the decision makers and policy makers who have left us out in the dark, so to speak. One thing that sort of struck me is those very folk are by and large college graduates and university graduates, most of them from public universities. So I think one problem we face is you expect them to talk and think about democracy in the liberal arts but clearly they've had an experience in our universities who we, ourselves, have not made those connections clear for people. So part of what we have to do is not only talk to them but look at ourselves and get a sense of how we talk about views but don't really act those obvious because there's something clearly going on with the education people university and higher education in this country from the late '60s to the early 2000s. That is running amuck, 'cause we've lost a generation of leaders and decision-makers and policy makers who are born in higher education but then he got against it. And I think that's something that we have to sort of really sit down and take a look at so that we don't repeat that ever again.

Matthew Moen: Your point is well-taken. It's not that all the conversation about higher ed is wrong. It's more complicated than that. But it just seems to me to be such a narrow conversation now. It's such a pathetically narrow conversation. It's all about the massive delivery. It's all about accountability. It's all about measurability. Einstein had a great quote to the effect of everything that you can count isn't worth counting. There's a little bit of that. I see it as the excesses of this time but I'm not sure we can easily pull back. There's a lot of money and there's a lot of interest in continuing to drive it.

People are making oodles of money in higher education reform. And it's hard to stop that incentive. To go to your

point, Mr. Provost, somehow or another, we need to have an intramural conversation, but we also need to have a conversation with our policymakers because they really do need to think about what America looks like if it's higher ed institutions are not as robust as they should be.

Steven Stepanek: That is all the time we have. Let's thank Dr. Moen.

Matthew Moen: Thank you all for coming.

[Applause]

END

DAY TWO

Opening Speaker

President, Dianne F. Harrison: California State University, Northridge
http://www.calstate.edu/administration/bios/presidents/harrison.shtml
http://www.csun.edu/leadership/dianne-harrison
http://www.csun.edu/president

"Students First"

> *What is important for this brave new world of higher education is that students graduate with the intellectual skills needed for the 21st Century.*

President Dianne Harrison: Good morning. So if you're not the keynote are you a low note? Are you an off note? What are you? [Audience laughter] That would be a good puzzle to solve this morning, I think. In any event, good morning; I'm glad I am here on the second day of exploring higher education in the brave new world, and certainly I wish I could have been here yesterday.

I was doing part of my system-wide service, meeting with the search committee for the president of Long Beach at their initial meeting. I'm the Presidents' representative on their search, and I want to tell Steven and others who organized this meeting that several of your colleagues at Long Beach wished you well at the meeting. They wished they could have been here too, so we wish them well in their search.

I want to start by saying I appreciate the kind of two-part notion of the meeting. The first day talking about how we teach, what methods, pedagogy; and today focusing on what we teach. Because regardless of the delivery mode chosen, whether you're talking about face-to-face, fully online, hybrid, web enhanced, MOOC, flipped, or ten-year-old yellowed lecture notes, or whatever method you select, to me the real important issue is the student learning outcomes. *So whether course credit is based on the credit hour, or on competency, the real issue is learning outcomes. Have learning outcomes been achieved?*

The important thing is what we want our students to take away, to be capable of, to know, to be prepared to do via knowledge, skills, abilities, and values. What does it mean to complete a course of study? What does a degree completion mean? What does it mean to be an educated person? What is essential is the quality of learning? Higher education has not exactly nailed down what defines quality. How do we know across the board that students have the competencies that they need? And more fundamentally, what are these competencies? I think we have more work to do defining quality, and developing assessments that measure whether students are receiving or achieving that quality. We have work to do gathering evidence on the measures themselves, on the results of those measures, and on our teaching.

National organizations such as the *Association of American Colleges and Universities*, AAC&U, and many others recognize that whether education is credit hour-based or competency-based, it is the quality of learning that really matters.

The Department of Education, now shut down only temporarily we suspect, has acknowledged that educa-

tion does not necessarily need to be tied to the credit hour. This opens up a whole new world and possibility in designing curriculum, and for tying to a degree. Last summer in our own region, WASC gave one institution, Argosy University, a green light to move forward with a totally competency-based MBA degree. This was a first for our region, but it is extremely hard work for faculty and for students to be totally competency-based. Sometimes it's simply more convenient and easier to fall back on what we know, and what we're accustomed to, and most of us are accustomed to the currency of the credit hour.

Today higher education, I hope, is moving away from believing that there is a one-size-fits-all delivery method that is superior. We know that some of the recent evidence on MOOCs has even convinced our Governor and our Legislature that *there is not an educational super pill for our ills*. I am optimistic that more people, more key stakeholders ,will in fact come to the conclusion, at least at this point in our knowledge, that there is no magic bullet in the type of delivery method. But the real significant challenge is this – how do we define the most important learning outcomes? How do we assess those learning outcomes and know that we are achieving them? How do we hold ourselves accountable for the quality of knowledge, the skills, and the values that our students hold? Regardless of delivery method, and even regardless of the chosen major, *what is important for this brave new world of higher education is that students graduate with the intellectual skills needed for the 21st Century*, and this relies on the type of learning from a broad liberal education, as well as deep knowledge within the chosen major, and real-world experience in knowledge, including an ability to integrate and apply learning to complex problems and projects.

The most important outcomes for college graduates no matter what their major, or the mode of delivery...are an ability to think critically, to communicate clearly, to solve complex problems, skills that enable them to contribute to innovation in the workplace, ethical judgment, integrity, and civic responsibility, intercultural skills, the capacity to learn beyond the years of formal education.

Businesses and nonprofit employers surveyed by AAC&U, and you'll hear of much more about that from Debra, have indicated what they considered to be *the most important outcomes for college graduates no matter what their major, or the mode of delivery – and they are an ability to think critically, to communicate clearly, to solve complex problems, skills that enable them to contribute to innovation in the workplace, ethical judgment, integrity, and civic responsibility, intercultural skills, the capacity to learn beyond the years of formal education*. These employers are seeking college graduates who have a broad set of skills and knowledge beyond the major, no matter what the major, to fuel our 21st Century innovation-driven economy.

So think about this. Regardless of the major, we need our graduates to be able to think critically, to communicate clearly, and to solve complex problems. Consider how this applies to our journalism majors. Students need skills that enable them to contribute to innovation in the workplace. Think about how this applies to creative writing, and ethnic studies majors. Students need ethical judgment, integrity, and civic responsibilities. How does this apply to our business majors' intercultural skills? How does this apply to our STEM majors? The capacity to learn beyond the years of formal education – how does this apply to all of our majors?

Most of these employers said that what they want from higher education is more emphasis on the five areas – critical thinking, complex problem solving, written and oral communication, and applied knowledge in real-world settings. And they also agreed, *regardless of the major, that every college student should acquire broad knowledge in the liberal arts and sciences.* They see both field-specific knowledge and skills and a broader range of skills and knowledge as important for college graduates. They also endorse several educational practices as helpful in preparing college students for workplace success. These include requiring college students to conduct research and use evidence-based analysis. This is one of the reasons why we do need to redouble our efforts, at least at CSUN, on our research activities and funding.

Employers want students to gain in-depth knowledge in their majors, but also broader analytic problem-solving and communication skills, and this is why we need to focus on increasing rigor. They want students to be able to apply their learning in real-world settings. This is why we need to focus on increasing the numbers of internships for our students, on making sure that students can also have a community service learning experience and opportunity. *In short, the employers are looking for higher education to involve students in active, effortful work that involves the application of skills. They strongly endorse educational practices that require students to demonstrate both acquisition of knowledge, and its application with direct experiences in community problem solving, and applying knowledge in real-world settings*.

They also advise that an electronic portfolio or e-portfolio would be useful to students and recent graduates, allowing the students to show potential employers their work products, to demonstrate that they have gained the knowledge and skills needed to succeed in a company or organization. At the Freshman Convocation on September 12, those of you who were present, I shared that piece of advice with our freshman (this year's anyway), and encouraged them to start from their first semester on their own e-portfolio. And I expect that our technology infrastructure will support this, and will help make it happen. But it certainly is the responsibility of students to populate it, and to understand the advantages of doing so as we help them move through their degree progress and ultimately graduate.

These employers are also interested in partnering with universities to provide more hands-on learning to help students successfully make that transition from college into the workplace. They endorse providing students with research and scientific inquiry, helping students develop research questions and evidence-based analysis, and to do so collaboratively with peers. They endorse senior projects, having students complete a significant project before graduation – one that demonstrates the depth of learning in the major and the acquisition of analytic problem-solving and communication skills. They endorse internships and community-based field projects, having students connect classroom learning with real-world experience. They endorse having students work through ethical questions and issues and form judgments about these issues that are at stake; and they endorse devoting classroom time to dialog, to debate, and problem solving in groups and alone with guidance from the instructor.

Last year as President of CSUN, I was among one of the original signers of AAC&U's national initiative called the "**LEAP Employer-Educator Compact**," and most of you know LEAP stands for *Liberal Education and America's Promise*. As part of this signing, we asked some of our employers and our partners to also sign on to the Compact with us, to partner with us in showcasing our support and their support for the aims and the outcomes of a broad-based liberal education and preparing students who are tomorrow's leaders for economic, civic, and global challenges in the 21st Century. Our employer-partners who signed the LEAP Employer-Educator Compact have committed, for example, to supporting hands-on learning, including their providing opportunities for real world projects, undergraduate research, and internships.

And I just want to share a few comments about what some of our partners had to say about CSUN. For example, Pratt & Whitney Rocketdyne (PWR) has a strong partnership with our College of Engineering and

Computer Science. PWR's Chief Engineer with Energy and Advanced Programs, Chris Erickson, signed on to the LEAP Employer-Educator Compact. In doing so he noted that Pratt & Whitney Rocketdyne currently employs more graduates from CSUN than from any other university. They appreciate the high-quality education our students experience and how successfully the College of Engineering and Computer Science bridges the gap between theory and practice. They also engage in technical collaborations and design clinics with the College of Engineering and Computer Science. Engineers from Pratt & Whitney Rocketdyne teach part-time in the college, and they have active membership on the Colleges' Industrial Advisory Board.

Another partner is Boston Scientific Neuromodulation. Boston Scientific's Vice President for International Sales, Milad Girgis, signed on to the LEAP Employer-Educator compact because Boston Scientific, he said, counts on the unique interdisciplinary programs and the numerous high quality accredited programs at CSUN. Boston Scientific sees CSUN's College of Engineering and Computer Science as a vital resource for the development of highly skilled personnel to meet their emerging workforce needs. Boston Scientific partners with CSUN in several ways. They participate in the Colleges' Career Day events and the Colleges' Honor's Co-Op Program. They provide internships. They have employed many of the College's graduates in highly responsible positions of leadership. Boston Scientific is a strong supporter of the interdisciplinary Professional Science Master's degree cohort program in Assistive Technology Engineering and, like Pratt & Whitney Rocketdyne, Boston Scientific is also an active member of the College's Industrial Advisory Board and provides input into the curriculum to reflect current advances in engineering.

And a final example – Mission Community Hospital. Mission Community Hospital is a long-time partner with CSUN's College of Health and Human Development. The hospital provides student internships, collaborates with our faculty and student researchers, and implements community programs in affiliation with the university. For example, as part of the hospital's community outreach to the City of San Fernando, Mission Community Hospital installed a diabetic teaching kitchen with consultation from CSUN's Magaram Center for Food Science, Nutrition and Dietetics. CSUN faculty from the Department of Kinesiology and from the Magaram Center provide community programming at the hospital's San Fernando site.

I could go on and on with more examples, but I think, to me, my take away is that it is hard work, and we have more work to do. This morning your keynote speaker, Debra Humphries, Vice President of Policy and Public Engagement at AAC&U, will speak more about these values and go into greater detail for us. And I am confident, I've actually seen her slides. I know that she will help us understand and appreciate where we need to focus, and the kind of work we have to do. So I look forward to hearing what you have to say, Debra, and I look forward to the remainder of this morning's program. Welcome Debra to CSUN, and I thank all of you for being here this morning and demonstrating your interest in helping to bring higher education into the brave new world.

Thank you.

[Applause]

END

Keynote Speaker:

Dr. Debra Humphreys, V.P Policy and Public Engagement, A.A.C. & U.
http://www.aacu.org/press_room/experts/humphreys.cfm
humphreys@aacu.org

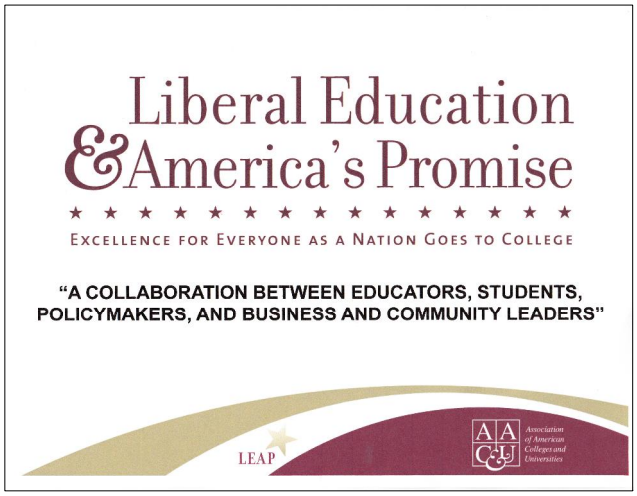
"More for Less? The Quality Imperative in the Brave New World of Higher Education"

Steven Stepanek: It's now my pleasure to introduce Dr. Debra Humphreys. As you can see from the slide, (See slide #1) she is currently with the *Association of American Colleges and Universities.* In my introduction she wanted to stress the fact that she, like all of us started out as an academic, and actually did teach English for a period of time. But then, other interest started to intervene. For Dr. Humphreys it was an interest having to do with women studies and women in education that attracted her interest and through this focus she procured a position at the AAC&U, and that led to other promotions and to her current position that she now have which is *Vice President of Policy and Public Engagement*, which I understand is a relatively new position. She's going to be talking this morning about; "**More for less, the quality imperative and the brave new world of higher education**." Debra. [

Applause]

Debra Humphreys: Thank you so much, Steve, and thank you, President Harrison, for being here and not only do I want to thank you for inviting me to be here, but I wanted to publicly thank you for all the service you've done for AAC&U. Some of you in the audience may not know that Dianne Harrison has been on the board of our association for some time now and is also on our executive committee. So, in addition to all of the leadership that she is exercising here in California, she is helping to bring the lessons of what all of you are doing and what you are collectively creating here in the Cal State system to our national association so that we can help the rest of the country learn from it. So, we really thank you, Dianne.

We know that leadership jobs in higher education these days are extremely challenging. So, every minute of her time that we steal from you, we know we're stealing from you; we really appreciate that. I also want to thank Michael Hoggan for inviting me and Provost Hellenbrand for supporting this event. It is really, really essential today, I think, to bring all of us together especially those of us who are sort of on the frontlines or those of you who are on the frontlines of teaching and learning to come together to talk about how things are changing, what needs to change, what needs to stay the same, and *what the world of higher education is going to be in this thing we're calling a brave new world*.



To begin, President Harrison mentioned the LEAP Initiative, and I know that a lot of you in the audience have been very involved in the LEAP Initiative. (See slide #2) I want to get a

sense from the audience; how many of you is LEAP something you've only vaguely heard about and/or you don't really know that much about? Don't be shy, raise your hand. [15 hands go up] OK, and how many of you have been working on one of the various projects related to LEAP? [12 hands go up]

Not many, so let me back up a little bit and, first, say a little bit about AAC&U and then give you a sense of the LEAP initiative. AAC&U is a pretty big tent association in Washington, and the first thing that I will say is that we are not a formal lobbying association, we are an institutional membership association. So your institution as an institution belongs to us. We have about 1,300 colleges and universities that belong to AAC&U and we're a little bit unusual in Washington in that they run the gamut of institutional type. So we have roughly half public, half private, we have two-year institutions, we have four-year institutions, we have big research universities, we have small liberal arts colleges. And we bring all of the people from all of those diverse settings together to work together in a quite focused way on the quality of teaching and learning and the quality of the undergraduate experience. That's sort of all that we are about.

The LEAP initiative is an initiative we launched in 2005. And as you can see from this slide, we really do see this initiative as a collaboration. It's different than a lot of other initiatives we've managed in two ways. First, when we launched in 2005 we, at that time, said, "*This is a really big challenge. We're going to be working on it for at least 10 years*," which is a pretty long horizon for DC association sorts of projects. But we also envisioned it as a collaboration with all of you—with our members, but also we wanted very much to bring in people from outside of higher education, policy makers, educators from the K-12 system, business leaders, nonprofit leaders, other people who have a stake in our success and in the success of our students.

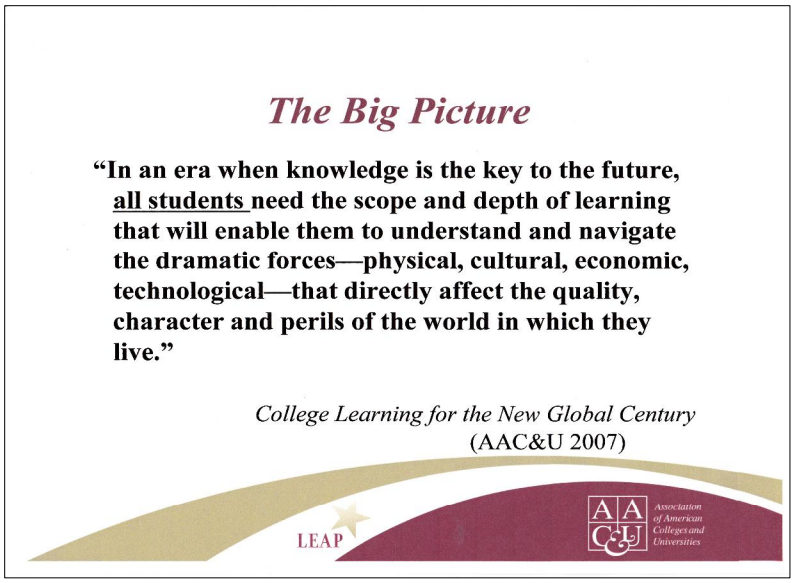
Now, why did we do that? Why did we want it to be such a collaborative sort of effort? In 2005, we looked around at the broader environment and thought, "***Well, we really need a searching exploration today of what quality really means and needs to mean in higher education in the 21st century***." How do we define quality as President Harrison has said, and we also felt as we looked at how the rest of the world was viewing us, even back in 2005, we had a sense that the public really did not understand very well how colleges and universities already had been moving to reinvent higher education in this brave new world. It's not like we were all standing still, but a lot of people on the outside, I think, thought we were standing still. So one of the things that AAC&U felt was, one, we needed to bring together a diverse group of people to say, "All right, what does quality really mean?" And we needed to shine a spotlight on how educators like you were reinventing higher education for the 21st century so that we could build public support for the best of our practices.

So, the LEAP Initiative has a whole bunch of components and I won't go into all of the many strands of work. But I will at this point to say that we are extremely grateful to the CSU system, CSU Northridge and a number of other institutions that have been very active in the LEAP initiative. You have really not just taken advantage of resources that we've created in LEAP, but helped shaped those resources. And we are really, really grateful for that. We have looked to your colleagues here at Northridge, Bettina and the whole team on *Give Students a Compass*, Ken O'Donnell at the system level,--we have learned so much from the work that's going on in California. The rest of the country really does look to California for where trends are going—that is actually true. And we are listening really hard to both the great work that you're doing but also the challenges you're facing. And so I just want to thank you because I also know that this is really hard work and, for a lot of you, it's extra work on top of already full plates.

So, I mentioned that we launched LEAP in 2005 and it's important to keep in mind the trajectory of time here. We had dialogues around the country and we did some research. We brought together a national leadership panel of experts--educators, business leaders, policy mak- ers, et cetera. And then in 2007, we

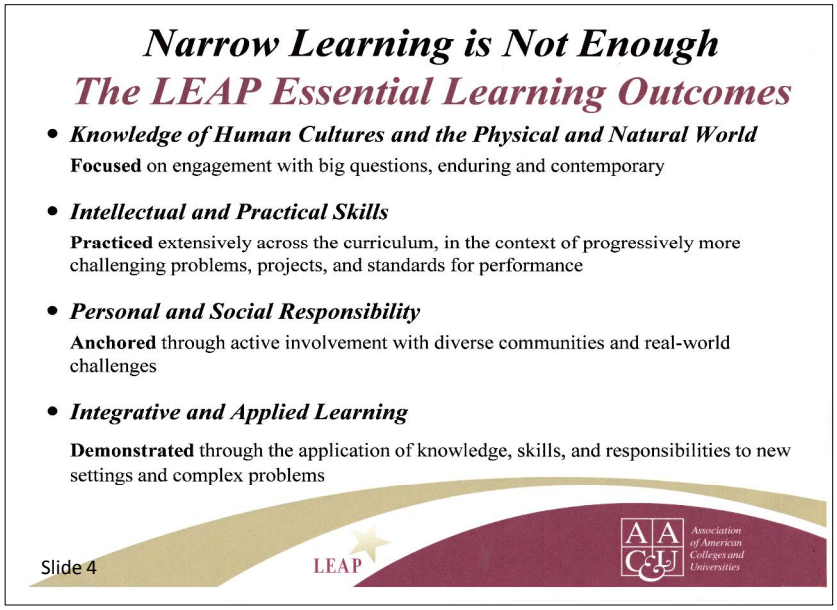
released a big report called *College Learning for the New Global Century* which was basically our take on this question of, "**What is the external environment for which we're preparing students?**", and given that, "**What does quality really mean?**" I want to stress right at the beginning that we have a pretty capacious vision of what higher education can do, what it needs to do--and it isn't just about work. It is partly about work but we have a big vision for what the importance of higher education is in our society.

And you can see this is just one quote from a much longer report. (See slide #3) We've tried to argue that this kind of education is important both for their long-term professional success, it's also important for creating responsible citizens who can help solve the problems of our society. And believe me, I'm quite aware of the irony of the fact that I flew in from Washington yesterday to talk to all of you in part about how we have to help students become really good collaborative problem solvers, which I have to say, it's something that isn't really happening very much in Washington DC right now. [Audience laughter] So the irony is not lost on me.



But, in this report, (See slide #4) we try to answer the question, at a pretty broad level, "*What does quality look like in the 21st century*?" And as we looked at lots of data about the economy, but also about the society that we want our students to function effectively in, we came up with basically one big message which is: **narrow learning is just not enough**. And on top of that, there are a set of what we have come to call *essential learning outcomes* on which there's pretty much consensus across a lot of groups. Employers think it, educators think it, different disciplines, if you bring them altogether, believe this. We brought together accrediting groups, and when you do that, you discover **that no matter what you major in, no matter what school you're in, there is broad consensus on what we expect you to know and be able to do when you graduate from college.** And what you find is there's more consensus that you would think and the lists look roughly like the essential learning outcomes list.

You have a set of handouts on your table. And you have the full list of essential learning outcomes. And I also know that the faculty senate in the Cal State system, has endorsed these as a kind of broad framework for your own system-wide work on general education. I'll only say two more things about them that I think I want to make sure that you notice. One is that there are some things on this list that are very much tried and true elements of a good liberal education. From the beginning of higher education in America, we have always prided ourselves in providing students with broad knowledge of the world in which they're going to be functioning--knowledge of



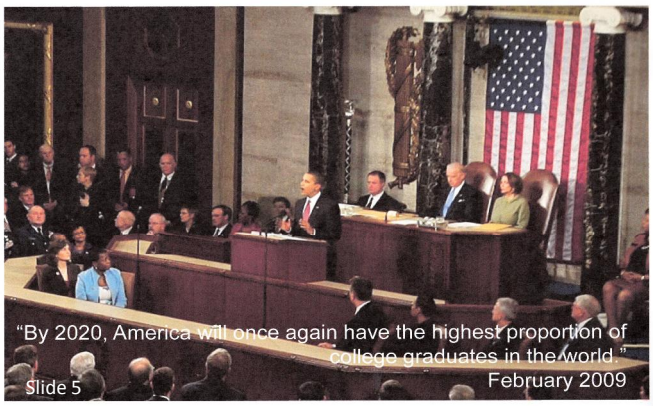
our histories, knowledge of science, and knowledge of technology-- all of that has been a part of our history for some time in higher education. We have always tried to provide them with top-notch intellectual skills. But one of the things that I think is very important in today's economy is that **intellectual skills and practical skills are not separate anymore**. **Intellectual skills are practical skills**. Those two things are coming together. That's a very important message that the economy delivers to us.

We have always tried to provide students with a capacity to be personally and socially responsible in whatever field that they enter and in their lives as citizens. I have to point out the integrative and applied learning which President Harrison talked quite a bit about is definitely a strong message that we have heard a lot about from the employers we've talked to. And we at AAC&U have come to call this: *The **21st century liberal art, the ability to take what one is learning in one setting, integrate it with what one is learning in another setting, and then apply it in a whole new setting***. And I would say that I think this is our biggest most important challenge. It is not an easy thing to teach what I just described but it's probably our biggest task right now. So this is our big vision. This is the definition that we developed working with our members to try to define what we think quality is in the 21st century. And we created this in 2007. So remember the timing on this.
We also have tried throughout the LEAP initiative, however, to not just talk to ourselves, but to pay really close attention to what's happening outside of higher education. And I really applaud the organizers of this meeting for taking that challenge on both yesterday and today. We're no longer able to just function in a little bubble. We really have to pay attention to what's happening out there. Of course, a lot has changed since 2007. The concern on the part of students and their parents about the return on the investment they are making in college, it was there in 2005, it's even more acute now. Obviously, the recession has had its impact.

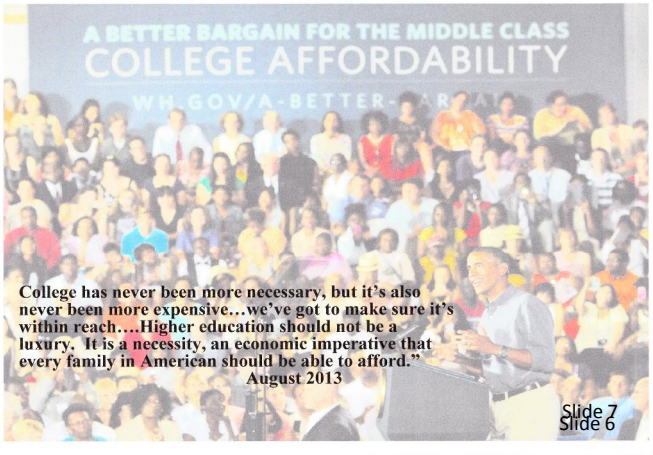
We also know that policy makers are paying a lot more attention to us. (See slide #5) Ken O'Donnell will recognize these slides since I stole one of them from you, Ken. I think I asked permission a long time ago, but I'm still using it. So, in 2009, we all know that President Obama shined a bigger spotlight on higher education than is typical in a state of the union address. And *his focus in 2009 was very much on increasing the numbers of college graduates, primarily to fuel economic growth and to help us dig our way out of a recessio*n. It was a very particular way of coming at this. And, obviously, you are all familiar with the fact that lots of philanthropies and lots of other people have also been very focused on completion rates. So that was 2009 though, and I will say that as I watch the policy environment around the country and in Washington, there have been interesting shifts. There's still a lot of focus on completion rates,

(See slide #6) But more recently; this slide is from his speech a couple of months ago--*the focus is now much more exclusively, on access in affordability*. It's still about completion rates in terms of the larger picture of where the economy needs to go. But there's a much more intense focus on individual students and their ability to pay for college. I would say that when you look at the public

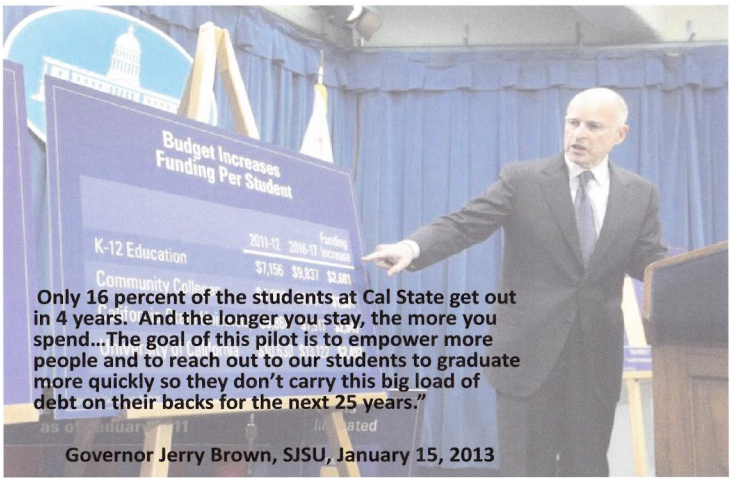
2009 Federal Policy Focus: Completion Rates



2013 Policy Focus: Access and Affordability



opinion data on this, *the student loan issue is the one that is the most urgent among the public*. It's not that they don't think college is valuable, it's not that they don't want what you have to give--which is why they're pounding on the door to come to Northridge and places like it, but they are very concerned about the loan issue and whether the economy is ultimately going to help them pay off loans. And so you'll see, there's this narrowing of focus.



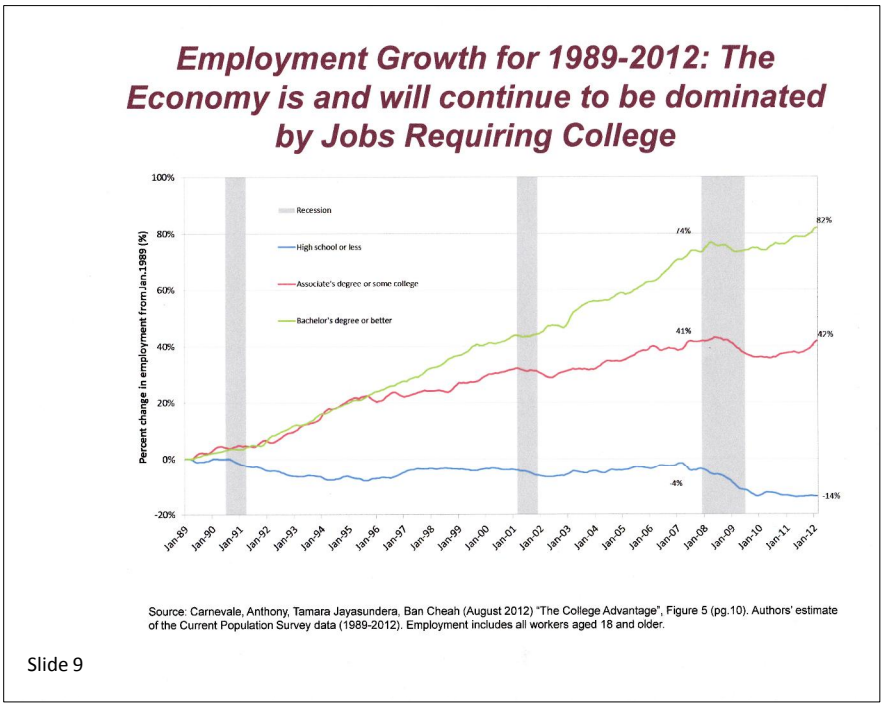
(See slide #7) And obviously, it's true here in California as well, your own governor is particularly focused on this question of *completion*, *cost*, and *debt rates*. Those are three things that have become very, very important. Now, what policy makers say influences what we do to an extent. It influences how people think to an extent,
But we also know that the media influences what people think. And I'm sure that you all have had a similar experience that I have had reading story after story where the framing of the issue is completely wrong.

Slide 8

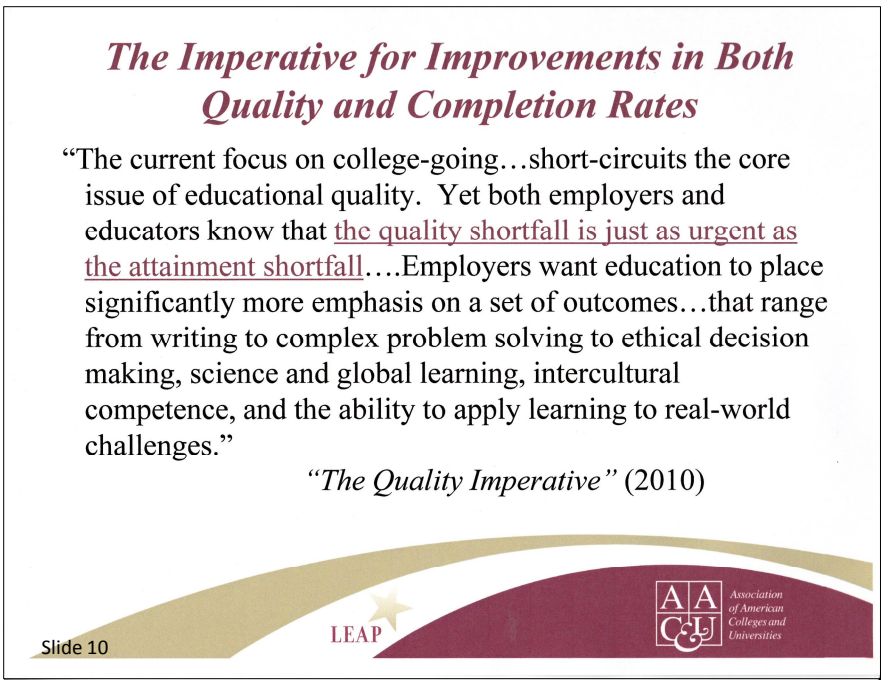
(See slide #8)
A couple of years ago, *New York Magazine* did a story, "the university has no clothes," and its tagline was "the notion that a college degree is essentially worthless is this year's most fashionable idea." We have also heard the stories about how we're graduating a lot of students, but there are adrift--they aren't actually really learning very much. Some have covered the economy in such a way that they describe it as a brutalizing economy. "*Frankly, giving the message to the students that it is not even worth it. Why bother if there's not going to be any jobs for you anyway*?" And then a more recent cover story in a Washington Post Sunday magazine and I would say that it's an interesting shift because it's a more reasoned look at what the economy is actually really rewarding even as it is a challenging job environment for everyone. So why do we have to pay attention to this? Some of this is just wrong. Some of it is just misleading. But it does influence how the public views us, and it raises the stakes, I think, for our ability to do our jobs and how we should respond.

(See slide #9) On the *New York Magazine* argument that college is just not worth it anymore: that one is in some ways easier because the economics on that are completely clear. That's just wrong. There's absolutely no arguing that a college degree is worth paying for, it's even worth borrowing some money to get. AAC&U has a whole bunch of slides on our website. (www.aacu.org/leap/presidentstrust/index.cfm) I would welcome your using them in your own work if you'd like. We have a whole slide deck we call the "*Economic case*

for liberal education." It's probably a hundred different slides, and I've just chosen one. You probably can't see all the details. All you need to see is there are three lines on this chart. The green one is going up, up, up, the red one is going a little bit up, and the blue one is going down, they represent changes in the percentage of jobs in the economy that require different levels of education. The green are jobs that require BAs, the red are jobs that require AAs, and the blue tracks jobs that require high school or less and they track from 1989 to 2012. And the big vertical gray bars are the recessions that we have gone through during that period. And so what you see is the trend is completely clear that increasingly jobs in the economy require a college education. That argument that it's not worth going to college economically can be disprove rather easily.



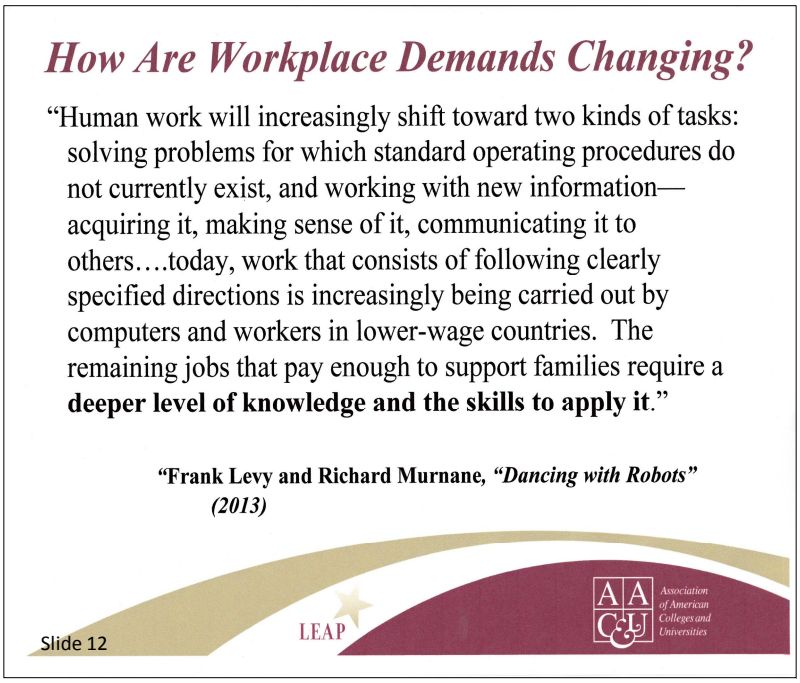
(See slide #10) I want to focus the rest of my comments not on the larger macro picture of the fact that we need more college graduates, rather I want to focus on the fact that not only do *we need more college graduates but we need them to be educated with a quality education and that quality means something different today than before,* as President Harrison noted. And I also want to point out that this is something that I think neither the policy making community nor the public really fully appreciates that **we actually have both a quality shortfall and an attainment shortfall, and both of them are pretty urgent.** AAC&U has been trying to gather information about how are we doing on these essential learning outcomes for some time, and we've been publishing reports.



And the first thing to say is that our assessment data is not as robust as we need it to be. That's the first thing to say. The truth is we don't know enough about how we're doing on these things. You have the second handout that gives you just a snapshot of just some data points that make pretty clear that we are not doing well enough, that too many of our graduates are graduating without the kind of *problem solving, decision making, communication skills* that they need.

(See slide #11) So from a policymaker's point of view, you might ask, "OK, well, that other slide with the arrow going up, up, up is pretty compelling, right? So let's just focus on access and completion, and because of the debt problem, because of the recession, because of the limited public resources which we're all very aware of, why should we not just focus on access and efficiency. And my argument would be that if we did that and ignored talking about quality, *we really would be providing something that isn't worth the money that students are borrowing for because the 21st century workplace really does demand more and different capacities, not just more bodies, but people who can do different kinds of things.*

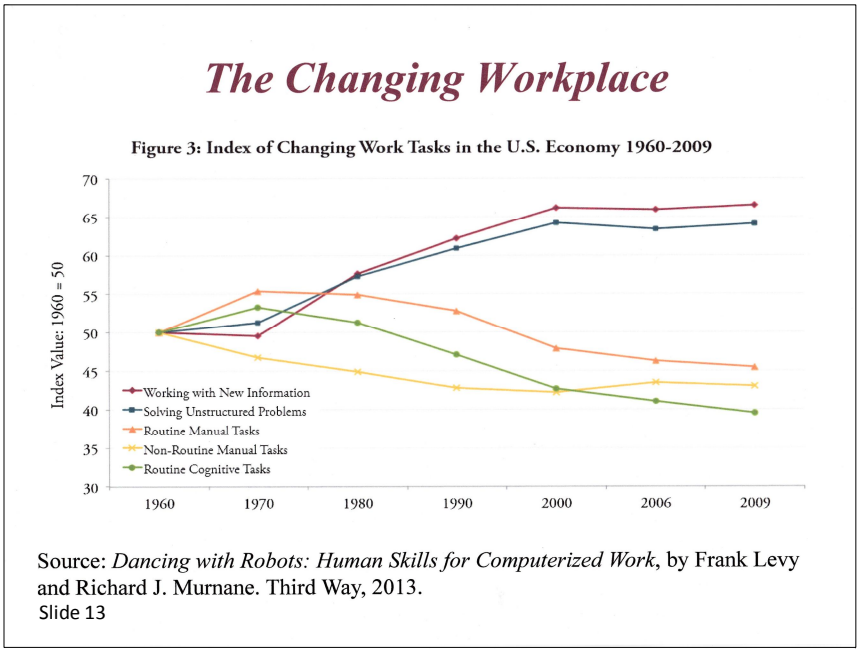
Our democracy also demands more. You know, we do need the 435 people back in Washington to have better collaborative problem solving skills. That is pretty painfully clear to all of us. [audience laughter] Unfortunately, we actually have a quality shortfall on precisely the capacities that are most important both for student success in the economy and for our democratic vitality. I think that we have to prioritize both things. I'm not saying we shouldn't prioritize getting more students into school, getting them prepared for college, getting them through in a timely fashion, all of those things really are important. But if we do that at the expense of attention to whether they're actually learning the things they need to learn, we will not be doing them any favors and we will not be really fueling our economic recovery.



So I would like to say a little bit more about some specifics on what lie behind that employer data that we've been generating over the years. (See slide #12) This is a very recent study done by two economists, one from MIT and one from Harvard. It was published over the summer in a very short document that you can find online called *Dancing with Robots*. And it tries to look not only at the big trends in requirements for educational levels and jobs, but what exactly the jobs that are left in the economy after the recession, are requiring in terms of *demands on workers*. What do we really need workers to be able to do? And you'll see that they see a big trend and a big shift towards two different kinds of tasks that are much more in demand now. And those are *solving what I would call unstructured problems*, problems for which there aren't standards operating procedures. Because the truth is, if there are standard operating procedures to solve a problem, we can probably get a machine to do it, right? We don't actually need a person to do it.

However, there are a lot of problems out there for which machines are not well-designed, right? Witness Washington right now, right? [audience laughter] You need actual human being working with one another, understanding knowledge, understanding each other. There's a lot of problems that really do require a different skill set. The other thing that they would say is *working with new information*. So this, I think, is very, very important for us as educators. We are in the information business, we are in the knowledge business, in the knowledge creation business, in the knowledge transmission business. But really, now, I think we're much less in that business and much more in the, OK, here's knowledge. You can go find knowledge and we need to help you figure out how to assess that knowledge, make sense of it, communicate it to other people, figure out what's the important knowledge from what's the knowledge that isn't important. New information is constantly coming at us and **we need to raise the bar on how we're manipulating and understanding information and knowledge**. And their overall argument is that at all levels of education people need deeper levels of knowledge and the skills to apply it.

(See slide #13) This is just one chart from this study that, again, gives a sense of the percentage change in the economy of jobs that require different skill sets. So here, the red bar is the percentage shift in the number of jobs in the economy that primarily require people who can work with new information. The blue are the jobs that require solving unstructured problems. The orange bar track those jobs that primarily require routine manual tasks. The yellow is non-routine manual tasks, and the green is routine cognitive task. And these are shifts in the percentage of these jobs in the economy from 1960 out to 2009. And this is where they are, therefore, prioritizing the ones on the top. And what you can see is that the ones on the bottom, not all of them, but some of them are the ones that are either being outsourced or really are being replaced by machines. I mean, they are the ones that used to be manufacturing jobs that paid a living wage and are now being done by machines.



Source: *Dancing with Robots: Human Skills for Computerized Work*, by Frank Levy and Richard J. Murnane. Third Way, 2013.
Slide 13

(See slide #14)
I just included this slide because we are going to post these slides so you're welcome to use them in your own presentations. These are their definitions of what the kinds of jobs are that they're talking about in these different categories.

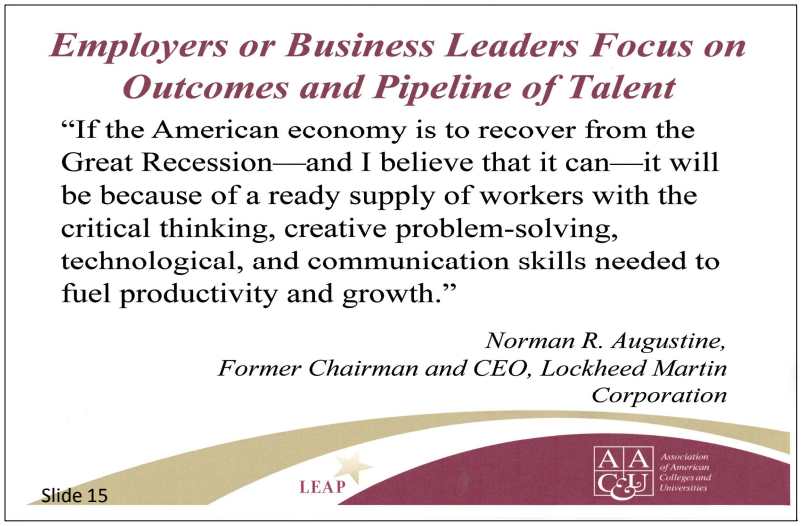
Definitions of Skill Requirements

- **Solving unstructured problems**: solving problems for which there are no rule-based solutions; e.g., diagnosing the illness of a patient whose symptoms are out of the ordinary; legal analysis, model building, data analysis, fixing a complicated plumbing problem in an old house. **Computers complement workers, primary tool**
- **Working with new information**: acquiring and making sense of new information for use in problem-solving or to influence decisions of others; e.g, a manager motivating the people whose work he/she supervises; a biology teacher explaining how cells divide, a motel manager deciding whether a new air conditioner represents a useful upgrade. **Not subject to computerization**.
- **Routine cognitive tasks**: mental tasks that are well described by logical rules; e.g., maintaining expense reports; evaluating insurance claims, loan applications; data entry. **Subject to computerization.**
- **Routine manual tasks**: physical tasks that can be well described using rules; e.g., testing samples of newly fabricated computer chips; packaging and order filling, repetitive assembly. **Subject to computerization.**
- **Non-routine manual tasks**: physical tasks that cannot be well described in rules because they require optical recognition and fine muscle control; e.g., safely driving a truck, cleaning a building, setting gems in engagement rings. **Not subject to computerization.**

Source for summary descriptions based on Levy and Murnane, 2013.

Slide 14

(See slide #15)
So what does this all add up to? I've talked a little bit about what our focus is as educators, the kind of essential learning out-

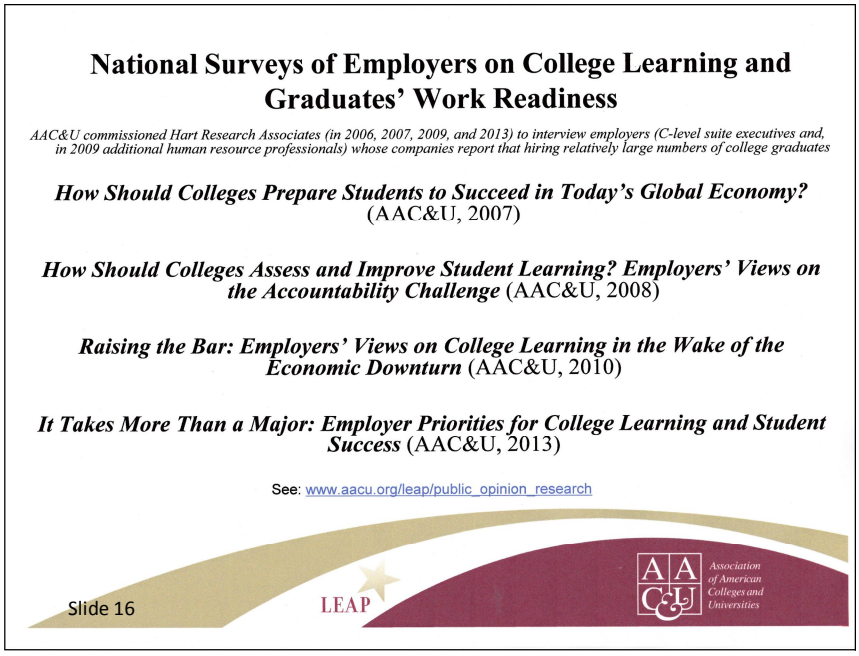


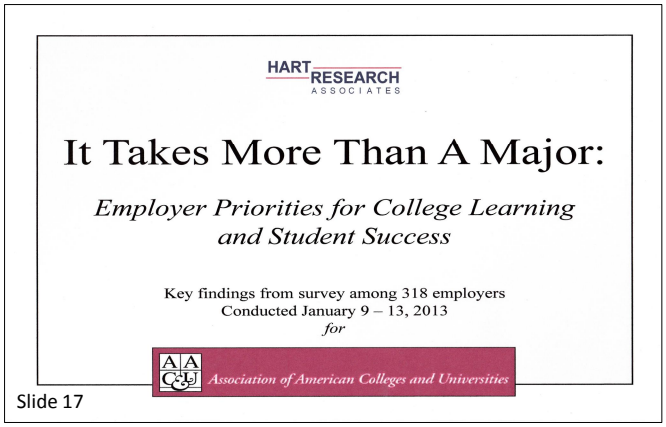
comes, everything from personal and social responsibility, to ethical reasoning to knowledge of our history and knowledge of the world. I've talked about where policymakers are focused, primarily access, completion, affordability. I've talked a little bit about where the media is focused.

We have spent quite a bit of time talking to employers and business leaders. This is someone who wrote an editorial in the Wall Street Journal about a year ago about coming out of the recession and what it would take. And he, too, is very focused on what we've come to call, "*Crosscutting 21st century capacities--problem solving, creativity, creative thinking, technology, communication skills*." And it's those things that he and many others believe are going to fuel our economic recovery.

(See slide #16)
So Dianne Harrison mentioned that we've been doing some surveys of employers. We've now done four of them since the beginning of the LEAP initiative. We released the most recent one in last April. The slides that I'm going to be sharing with you as well as additional slides from all of our surveys are up on our website. We encourage you to share them with others and use them in your own presentations.

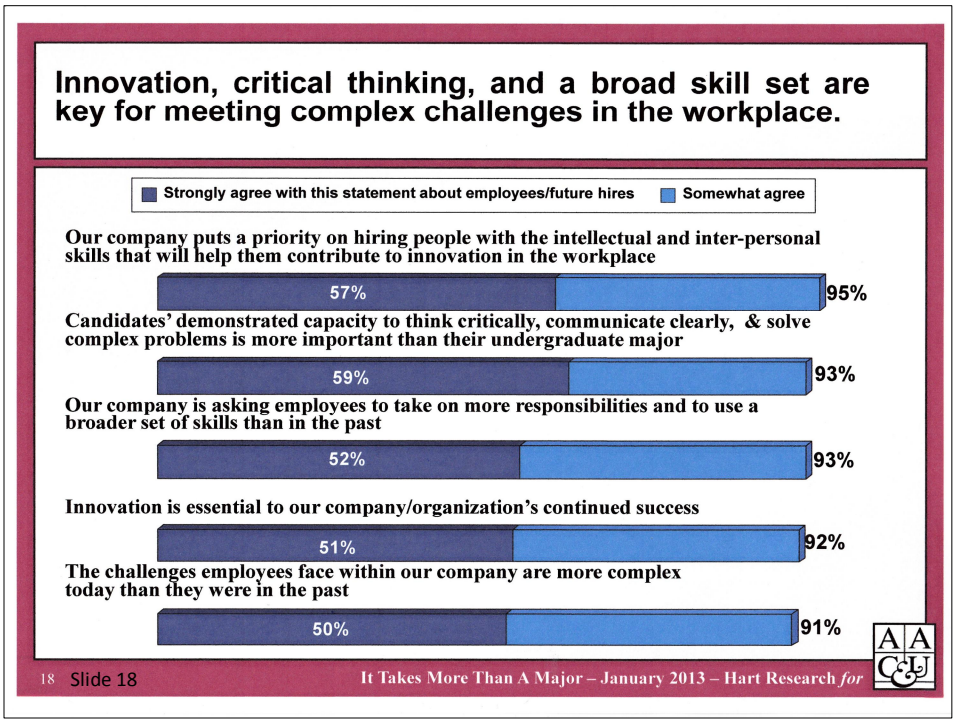
The most recent survey we did, we entitled, "*It Takes More Than a Major: Employer Priorities for College Learning and Student Success*." (See slide #17)



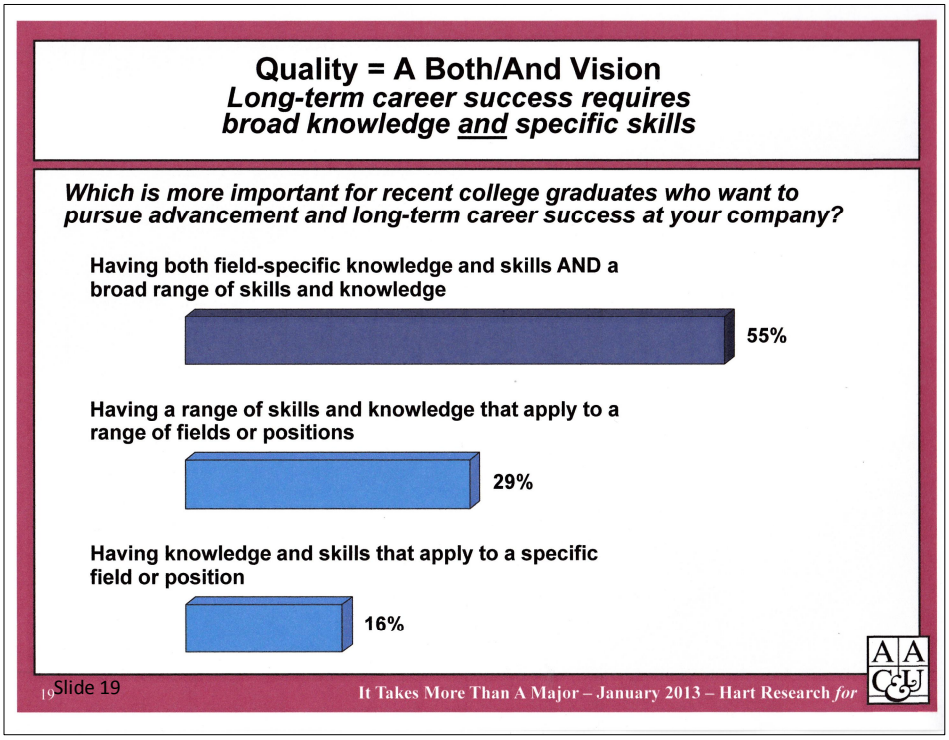


And as President Harrison mentioned, we surveyed business leaders, but also leaders of nonprofit organizations who hire a lot of college graduates. And we asked them a series of questions. I'm only going to share with you a couple of data points from this survey, but I encourage you to take a look at the whole thing.

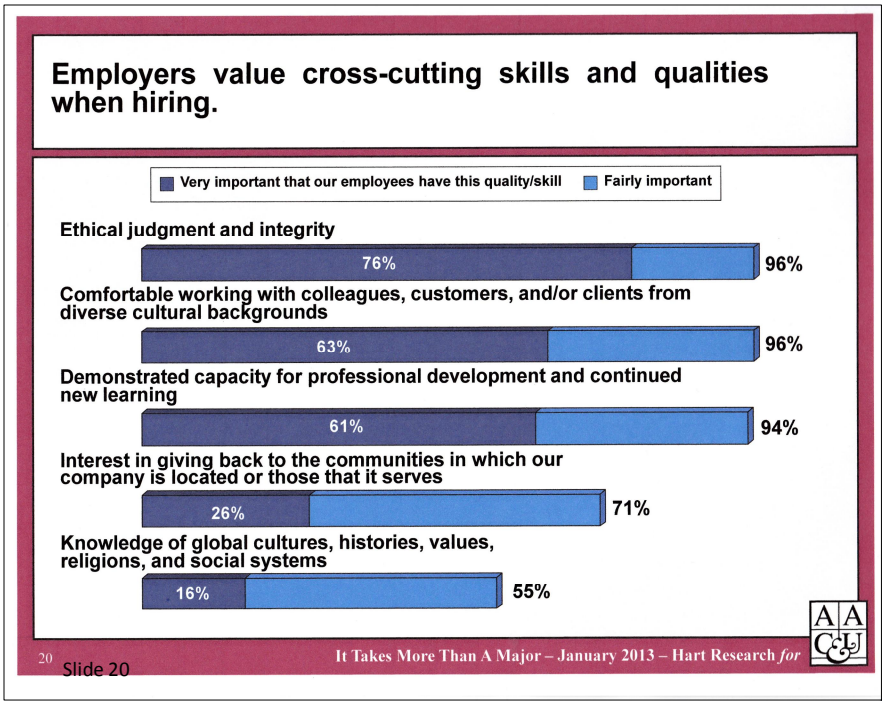
(See slide #18) I think, for us, one of the things that came out most strongly in this survey and in the focus groups that we've done over the years is the second bar item here. We asked them about the undergraduate major and how important it is relative to these crosscutting capacities. And we did this very strategically be-



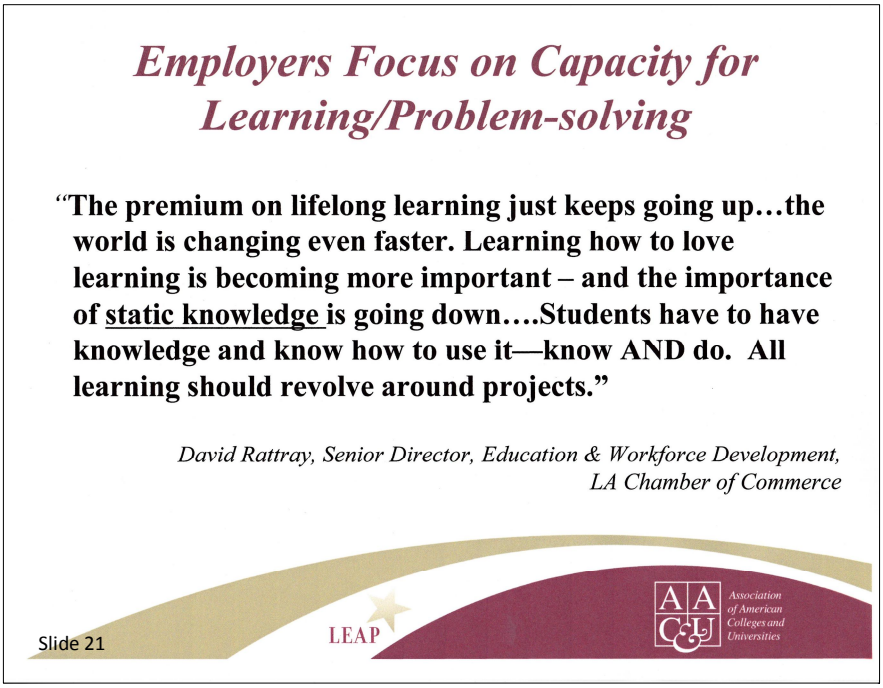
cause we were doing this survey at a time when we were watching governor after governor go narrow with data about the undergraduate major. I can look at how much money people who majored in this field make a couple of years out, right? This is a classic example of people going where the data is, to answer a question that the data really can't answer which is the value of the education that you're providing. And they're paying a lot of attention to this data because we have it and we can look at it. It's one thing we can look at. And so we asked this question quite intentionally. And I wasn't surprised that people agreed with it, but I was a little surprised at how high the number is. 93 percent of the employers that we talked to said that, "*Thinking critically, communicating clearly, and solving complex problems is more important than an undergraduate major*." It's not that the undergraduate major isn't important, but if you don't have those other things, then what it says on your transcript really doesn't matter to me as an employer.



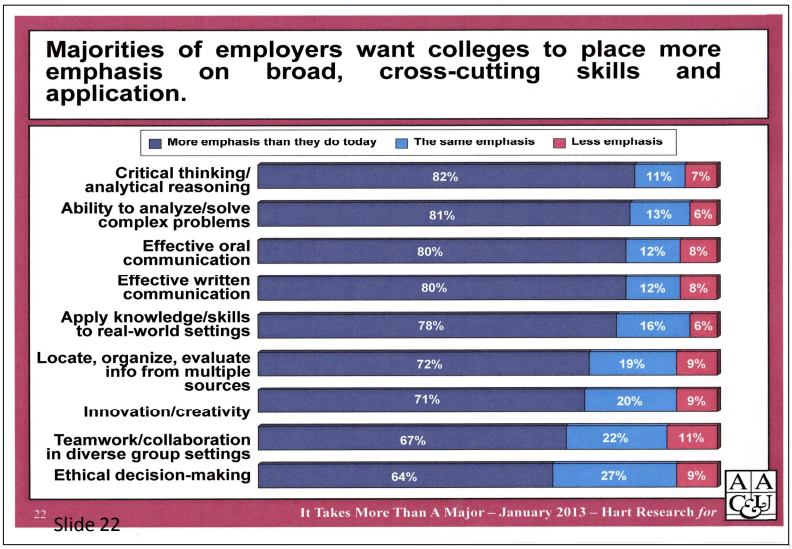
We also see some of the other things President Harrison mentioned --innovation, for instance. Employers are very concerned about getting people who can creatively move their agenda and their industry forward. The other big message is that, frankly, it's a both/and vision. (See slide #19) It's not either /or, it's not either liberal education or technical skills. It's actually both. It's, yes, you need broad knowledge, you need these crosscutting capacities, you also need skills in particular field areas. About 55 percent say that's the key to long-term success.



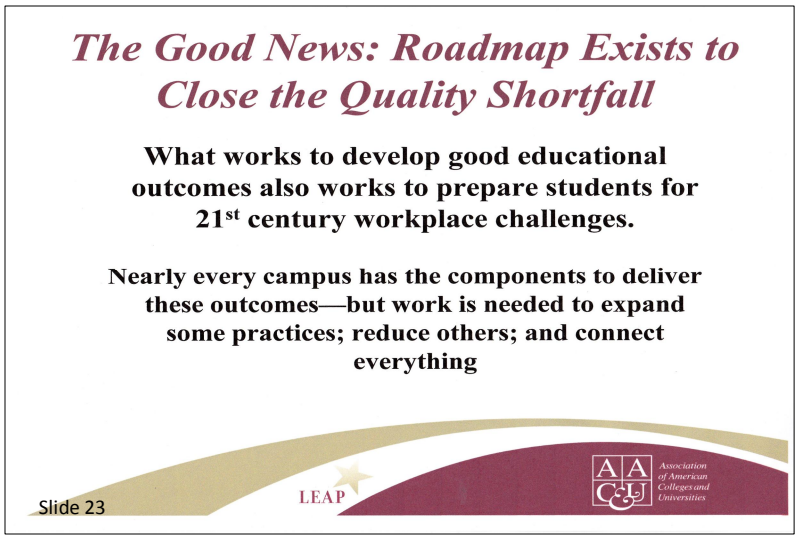
(See slide #20) There are a number of crosscutting skills and qualities that we asked about, and three really emerged very highly on the employer's list when we asked, "Well, when you're actually hiring someone, how important are these things?" And the things that came out quite clearly at the top, ethical judgment and integrity, collaborative problem solving in diverse settings, and this capacity for new learning. And I think that is about this working with new information thing that I talked about previously. This is why employers recognize that you can give them the most current up to date knowledge and technology and technological skills. And it's going to be out of date very, very quickly. And what we really have to do is equip students with the ability to keep learning over time.



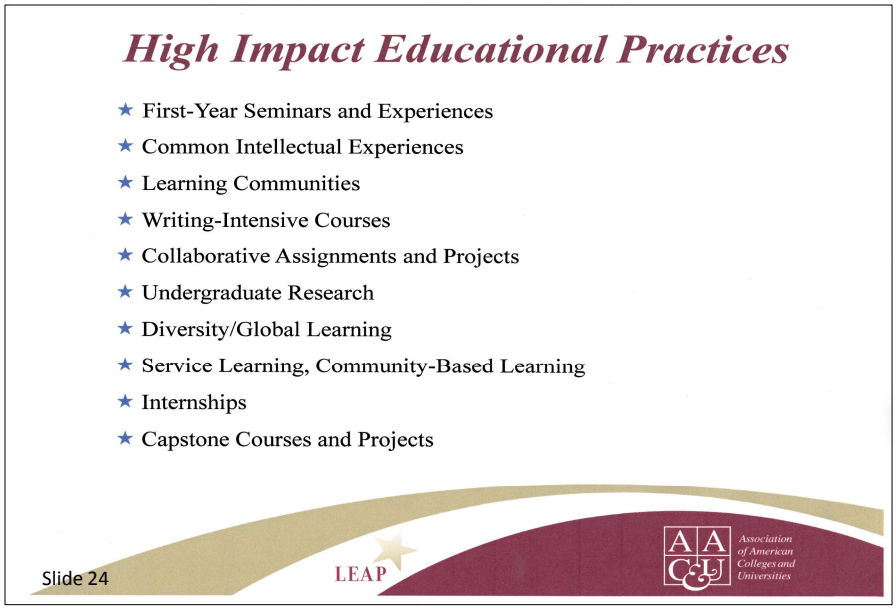
(See slide #21) This is actually a quote from your own region. Some of you know that AAC&U and LEAP has sponsored a whole series of events. We did a webinar about a year and a half ago, and Ken helped us pull together a group of employers in your LA region, and this was someone from the LA Chamber of Commerce and I love this quote of his because, again, I think it gets at this question of the fact that it isn't that knowledge is unimportant, but "static knowledge"-- the idea that you're giving them something in a box that's always going to be the same is no longer as important as it may once have been. And for this reason, he argues our educational system, one of the things that has to change is that we really have to get every student doing projects. That's really where the future lies.



(See slide #22) These are the essential learning outcomes; President Harrison mentioned the ones that came out at the top of this list, so I'll go pretty quickly through this. I think I put the chart in front of you as well on that if you want to look at it. So this is what employers say, this is what the economy seems to demand.



(See slide #23) So, where are we in our education? And I would say there's actually good news out there. It's not like we don't know how to do this. We actually do know how to do this. There are whole set of educational practices that really work to develop educational outcomes that are precisely the outcomes that students need. Nearly every campus, this one included, has the components to deliver on these outcomes. *But, I do think that we have a lot of work to do to expand some practices, to actually reduce others because we can't do everything, right*? *And we have a lot of work to do to connect everything, right*? So we have pockets of this work, but we really need for students to see very clear pathways. And those pathways have to be littered with the kinds of high-impact kinds of work that will get them solving problems all the way along and so that they cannot miss it.

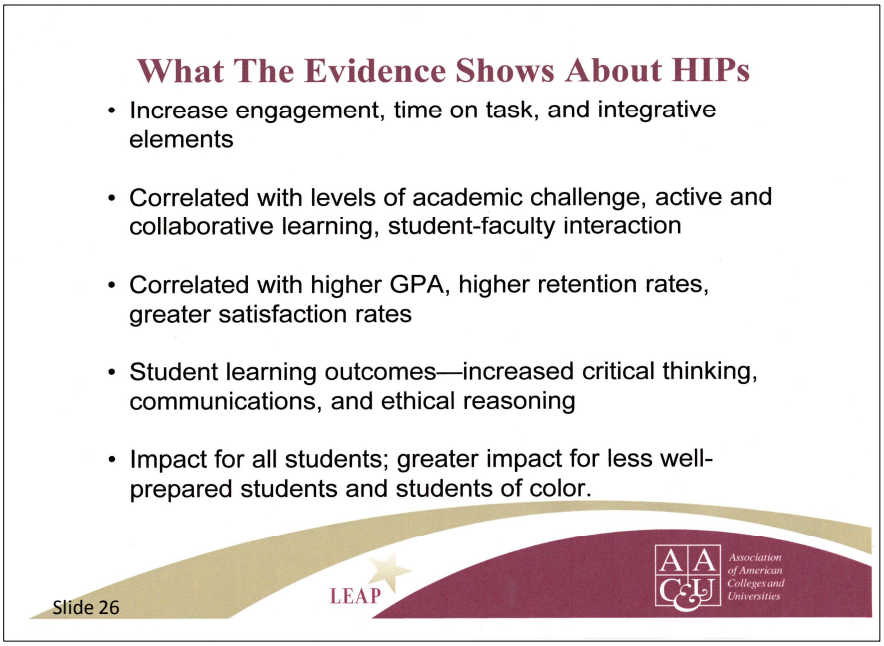


(See slide #24) Now, I know a lot of you in the Cal State system have been working for quite some time on some things that we have labeled, they've been around for a long time, but we brought together some research on these topics and we labeled them in one big package as a set of high impact practices that research shows have an effect on these kinds of outcomes. The other thing is that they also have an impact on retention and graduation rates. So they're very powerful because they respond to what policy makers care about as well, which is getting students through and getting them through in a more timely

fashion. There is nothing unusual on this list. You'll all see things that I'm sure you're offering to your students. The question I think is not what are they called or what's on this list. The question is, "*How do we make these kinds of things really high-quality? What makes them work when they work? And who's getting access to them*?"

(See slide #25) AAC&U has published a whole series of reports on this. The most recent of which was co-authored by your very own Ken O'Donnell, which really tried to get at that question of, "*All right, what does the research show not only about the impact of these things but what makes them high-quality? What are the ingredients? And what's involved in actually taking them to scale?*" Because we know that all of our campuses have some students doing research, some students doing internships, but we don't have everybody doing all of these things or some of these things. What are the challenges in doing that? And Ken addressed that, and some of the other authors, and we have a case study from one of your other Cal State Schools in that publication about an approach they took at Cal State East Bay.

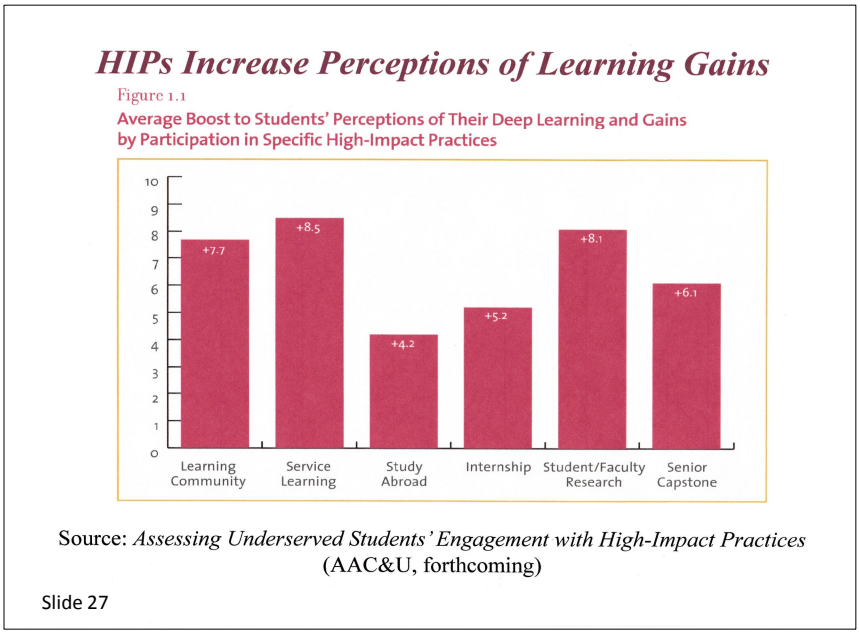
We have two other high-impact practices reports that are literally going to come out in the next few months. One is specifically looking at underserved students, traditionally underserved students, first generation students, as well as students of color. If they engage in these practices, how much do they engage? And if they do, how well are they doing? And this report, I must say, was heavily influenced by work right on this Northridge Campus by Bettina Huber. Thank you very much for helping us figure out how we might look at some of the data we have on this. This report is going to come out in about a month. And then we're also going to have another report on the question of, "How you do the cost benefit analysis of this? Are these things more expensive, less expensive? How do you take them to scale?" questions like that.



(See slide #26) So what does the evidence show about high-impact practices? It's pretty clear, I think. And this is I think very important for the discussion that you were having yesterday and the one that we're going to keep having today. If you look at not just what they're called but why they work, right, what you see is, mostly, *they're the kind of practices where students can't lurk in the back-*

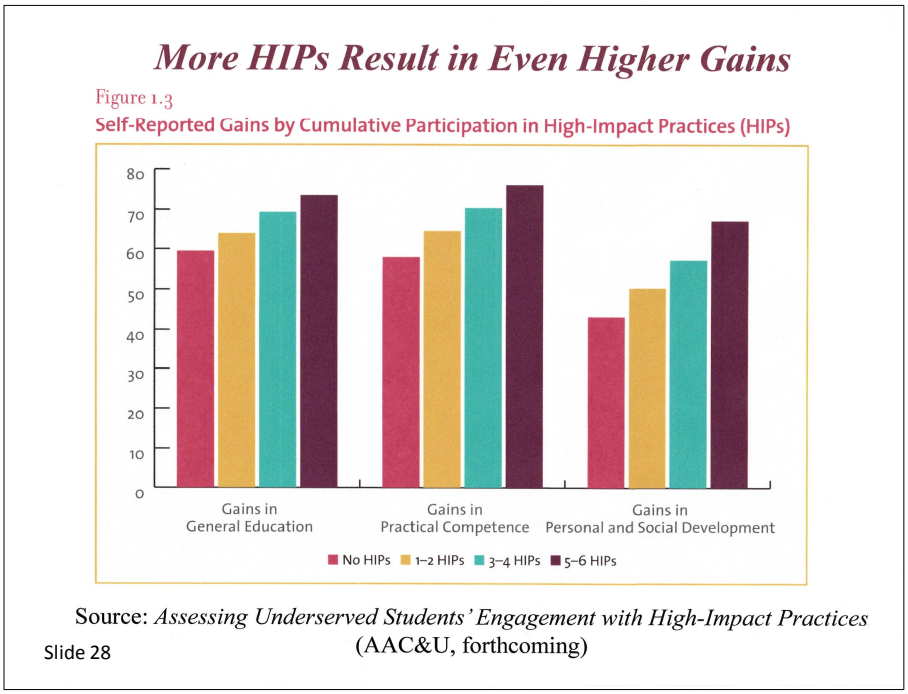
ground. They're practices where students have to engage, they have no choice. They have to engage with faculty, they have to engage with the subject matter, and they have to engage with peers. And that is unavoidable. They also are practices that require time on task. They just simply cannot get through it without putting some time in. They can't just kind of do it on the side. And most of them involve this *integrative and applied learning* thing that is clearly on the top of the agenda in the economy.

I want to share with you two slides that are brand new. (See slide #27) These are from the new publication that's not out yet. It will look very familiar to Bettina because it's modeled on some of the work that you all did here. In that new report that's coming out, we did look at NSSE data. And I will say there were some limitations, obviously, in NSSE data, National Survey of Student Engagement, because it's all student perceptions. But it's student perceptions of practices that actually have educational research behind them, so it's not just randomly what students think. And what we looked at was, "*What is the impact of participation, in particular practices, on student's own self-perceived gains?*" And the score they get on a deep learning score in the NSSE data. They look at different practices and if you do a certain number of them, then you are likely to be experiencing what they call in the NSSE literature, "**Deep Learning**." So you'll see here that there is a significant boost in student self-perception and in their deep learning scores on all of these practices that we looked at. We looked at six of them. But some are actually higher than others. So, service learning is the highest of all, and after that, student-faculty research. And you'll see some are a little bit lower, study broad is a little bit lower. And of course, one of the challenges here is internships. It's a great example of the question of quality. As we all know, there is the really high-quality internship that absolutely makes all the difference in a student's ability to go out and be successful, and then there's the internship where they just are not being supervised well, they're not given an opportunity to come back and reflect on what they learned, all of that. So, quality really does matter. And I'm guessing that 5.2 would actually be much higher if we worked with our employers to make sure that the internships were of high-quality.



Source: *Assessing Underserved Students' Engagement with High-Impact Practices* (AAC&U, forthcoming)

Slide 27

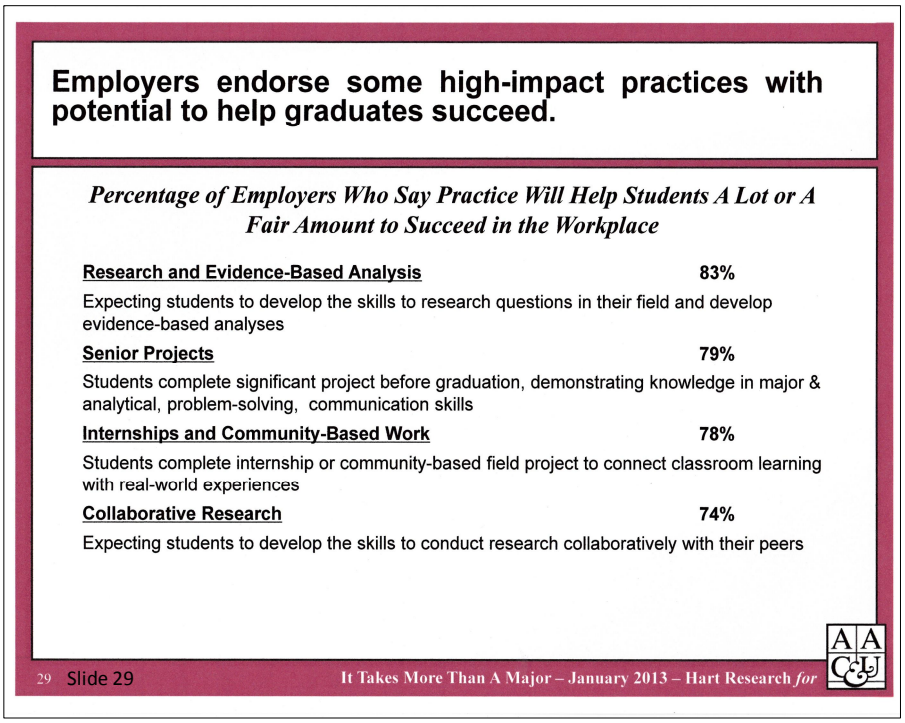


Source: *Assessing Underserved Students' Engagement with High-Impact Practices* (AAC&U, forthcoming)

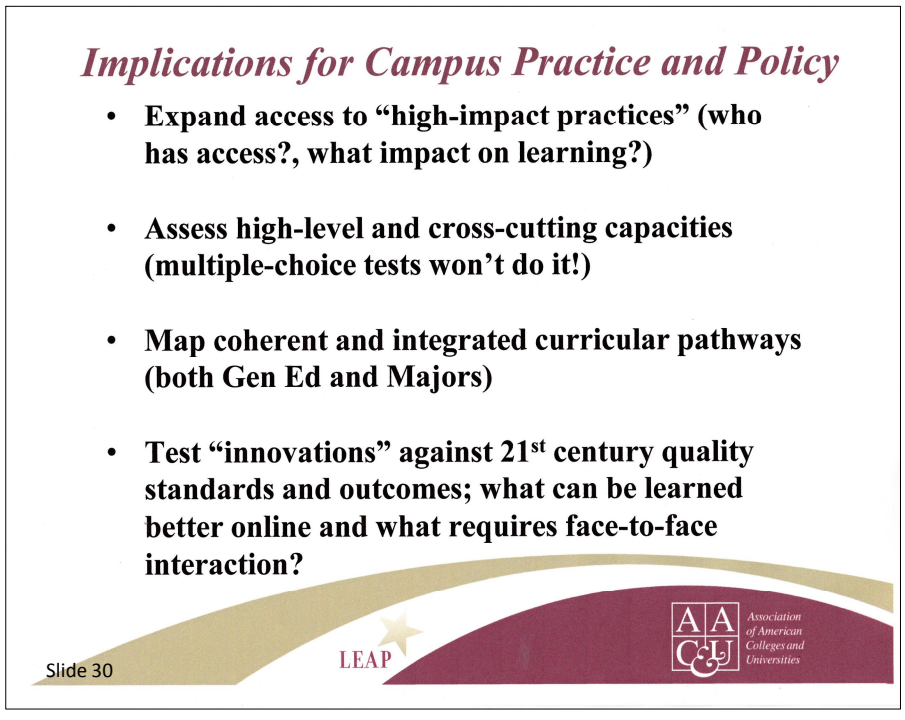
Slide 28

(See slide #28) The other thing that we've learned, and it's been rein-

forced, Bettina Huber learned this when looking at her own data, and it's true across the entire sample that we looked at in the study. I will say that for this study sample, we used the Cal State system numbers, the University of Wisconsin system numbers, and the Oregon system numbers. So it's a relatively big database, not national, but those three states. And what you'll see here is you get a boost by the number of high-impact practices. So, it's not just one or two. If you do five to six, you keep moving, you keep improving, the more you do. So this is the good news. The bad news is the average number of HIPs that was being reported as having been experienced by underserved students, was 1.24 across that database. So, you see, you have a huge impact the more you do, but the truth is that not enough of our students are doing these things.



As Dianne mentioned, we also asked about some of these in our employer survey. (See slide #29) I think we should do these because they work educationally, not because employers like them, but I think it's interesting to ask employers whether they think these things would be powerful. And I think the other reason that I like asking about this is that some of these practices sort of do double duty, and this is the sort of, "More for less," thing.



Students need, obviously, to get their good education but they also need experiences that they can use when they go out on the job market. The things they're going to put in that portfolio, they take out and say to an employer, "*No, really. I can solve a really complicated problem. I can work in a team on a really complicated project because I did a community-based research project and this is what it was about and here's the results of it in my portfolio*." So they do double duty. They actually boost our learning outcomes but they also give students the ingredients with which they can present themselves to the world. And I think that's part of the reason why some of them come out very much on top. Research, evidence-based analysis.

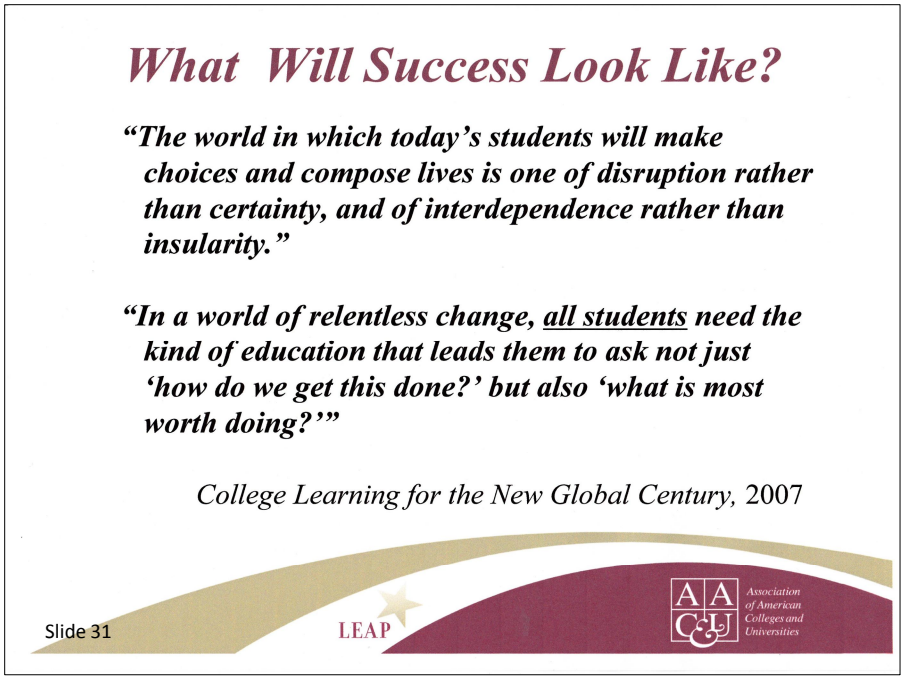
(See slide #30) This, I think, is an interesting finding because this is not new, right? This is what higher

education is all about--research. That's part of what we did to get where we are. It is a practice that we know how to do, and we just have to be sure our students are doing it with us.

So what does all this mean for our practice going forward? Wrapping up, I think we do have to expand our access to these things. We know we're doing them. Are we doing them for everyone? How can we work them organically into every program in ways that makes sense in those programs? And some programs, the idea of group project is exactly how engineers work, and that's been true for a long time. It's less true in my own field of English. But we can do it.

We have to figure out how to do those kinds of things. We have to look very carefully at the data of who's in these things. We have to figure out new ways to assess these capacities. And AAC&U has a grant proposal that we just submitted yesterday, that I'm hopeful about, that is really going to be all about how we can assess differently. The traditional multiple choice test, obviously, they test the static knowledge, right? I mean that's what multiple choice tests are good at. They're not good at these higher order skills. We have to figure out how to assess them better. I think we also do have to do a better job of mapping for our students coherent pathways, and I know your own project that you're doing with Pierce College on pathways through general education has enormous promise. We're looking really closely at that and we want to learn from it. And then I think the other thing we have to do is, whatever technological innovation comes along, we have to step back. And the test of it is, "Is it going to provide these outcomes to students?" It isn't really going to meet our own quality standards, not is it going to be cheaper, first and foremost, right? It may be cheaper, but if it's cheaper and it's not giving these outcomes, then it's not worth even the cheaper amount of money, I think.

The other thing that I would say is that the lesson of "Dancing with Robots" for the rest of the economy is true for us too, which is to say, "If something can be mechanized, maybe it should be mechanized," right? If there is something that we can do the machine, students can get some knowledge online that we don't--fine, do that. Because, you know what? There a lot of things that they actually need our face- to-face guidance on and we don't have enough time for that. So let's free up some time to do that. And we really have to, I think, be ruthless about this. I think that every little innovation that comes along is not going to necessarily be worth our expanding to scale. MOOCs is a good example of that. We need to ask really tough questions of all of these.



Finally, what is success going to look like for us? (See slide #31) We probably can do more with less. We are probably doing some things that we're doing just because we've been doing them forever and we probably could stop doing them. I also, though, think there's a limit to how much more with less we can do. And I think that's partly what I see as my job and AAC&U's job is to create a more informed public who can understand why it actually is worth investing tuition dollars and tax dollars in the quality education that you all are providing. And ultimately, it is really

important that we provide students with knowledge and the ability to put knowledge to use. But a really good liberal education also educate students who can sort of ask this question, not only, "How do I get this job done," but, "What is most worth doing and should I really do this?" You know, some very well-educated people came up with credit-default swaps and the ability to, you know, manipulate the economy in really clever mathematically sophisticated ways. Whether we really should have done that is another question. And that's part of our job too--to help students ask the tough questions, not only how to--should I do this? How do I get this done? But really, is this something that is ethical? Is this something that is responsible for me to do? So, thank you all very much. I'm happy to answer questions either now or a bit later.

[Applause]

Steven Stepanek: Before we take some questions, a bit of reminder, there's going to be somebody going around with mics. Please identify with your name and affiliation before you ask your questions.
Audience Person: You listed all the HIPs you found, what are the LIPs?

Debra Humphreys: Low Impact Practices. That's a good question. I think there's quite a bit of educational research that the traditional lecture model works for not many students. It worked for some of us, which is part of the reason why we're here. But it tends to not work very well, the traditional, you know, 300 people in the lecture hall. I, you know, read fast to you and I hope you get them, or I write formulas on the board. I think that's a pretty low-impact activity.

I do want to say, though, that that's not an exhaustive list. You know, we didn't really expect the work that we were doing on high-impact practices that sort of took on a life of its own. What we try to do, however, what we were seeing at AAC&U was all these sort of pockets, there were little movements out there. There was the writing across the curriculum movement and there was the learning communities movement, and there was the service learning movement. And we knew that they were great and they were doing good work. And we were saying, "Well, maybe all of this adds up to the contours of the new academy." So we just looked at--and we only listed those where we could actually find robust enough evidence on them. I mean I think that there are tons of really effective, very traditional, classroom practices that wouldn't be on that list, which is why I always, whenever I present on it, I would say, "It's not about the names of the things on the list, it's about what makes them work," which has to do with the engagement and the time on task, and all that. You can do that in a very traditional kind of classroom.

The one thing that I think does distinguish them from other things is the integration and application part. A lot of them really do get people out in communities doing work. And I think that is a very important part of why they are high-impact. So, I think the question is the right question because the low-impact stuff is probably the stuff we should do less of. You know, if we're going to have to cut something, let's cut that. Yes?

Audience Person: Debra, can you--maybe you can help me think through something on this whole issue. What we're trying to do is make our employer--or our students more productive workers. And it seems to me, the more productive they've become as workers, the more jobs you actually drive out of the marketplace; the more effective they've become as employers--as employees, the more mid-skilled and low-skilled jobs you drive out of the economy. The more mid-skilled and low-skilled jobs you drive out of the economy, the less money there is for high-impact practices [inaudible] tax-based and other things like that shrivel. So how does this all work in a positive manner? I mean I want to really wholly buy into the belief and the attitude that higher education serves a good purpose by creating more productive workforce. If we put it in the type of economy we have, some of the unanticipated consequences are rather severe. So how do we do this in a way so that we spin the cycle positively and not negatively?

Debra Humphreys: I think the way that I would describe it is I think that we have a responsibility in education to help students become effective practitioners in their lives, right? And in America, in 2013, work is a part of that. And there's some very interesting research that Gallup has done all around the world trying to assess how people view their well-being, so not their success measured by how much money they make or whether they have a high prestige job or not. But do they assess their own well-being and then they look at what kinds of communities and countries have high levels of well-being. And they've broken it into, I think, five different elements. Only one of which is career well-being, which again isn't defined by salary, it's defined by being in a job where one feels like one is efficacious, one is doing something they're good at, all of that. The other thing they find is that, if you score high on career well-being, it is the biggest indicator of well-being on all of the other factors, family, communities, social well-being, all of that. Now, that's probably a result of the kind of capitalist economy that we are living in. But it is a reality.

And so, I think that our sense is there's only some--I mean we really can't control the exigencies of the economy. We know that. We're in a recession. Our graduates are having a tough time in that recession getting jobs. That's not our fault. I am, however, very convinced by the long-term economic data which suggests that the answer is not for us to stop educating people because the economy right now isn't very good because, in fact, the jobs going forward are really going to require the kind of education we're providing to them. And I think that, my own view is that, if we do a good job on these kind of cross-cutting capacities, they will do well in the economy, but I'm also hopeful that they will lead their communities. And whatever entity they end up working in, whether it's a nonprofit or anything else, they will do it effectively and also responsibly. And there's only so much of that that we can control but I think it is something we have to care about. I'm not sure if I answered your question because I'm really not sure I heard all of it.

Audience Member: So I--the more I listened to this stuff about the high-impact practices, I was trying to think through how I could do more at that in my own teaching. And I kept coming back to the fact that they are very time-intensive. And so, it seems like there's a tradeoff. I don't know quite how to scale that--in the general education curriculum, at least. So, do you have any recommendations about that practice of that?

Debra Humphreys: Yes, it's a very good point. I think that they are going to really challenge--they may be more time-intensive. They definitely require more time of the students. And in some cases, they probably do require more time of the faculty. Although, I think one of the things that we're going to see in the brave new world of higher education is a whole lot of reshuffling of who does what with students. How much time spent with us, the traditional faculty, versus how much time they spend with a whole bunch of other people, their peers, out in the community, working with some partnerships that Dianne is creating. I mean I know a lot of places already make wonderful use of their student affairs personnel to help with this educational process. And I think there's going be a real shuffling of all of that. And hopefully what that will do is help us work out the "who does what" question so that we really can have rationality about how much time we spend on different things.

For me, that is actually the most promising part of the online open source kind of tools exist. They're not the MOOCs per se but the things that you all may be able to take advantage of that actually frees up some of your time because there are going to be increasingly better tools online through which your students can get some stuff that you no longer have to do, right? And that would free up some of your time to do other things, the transition of course is you have to create those things. So, there's whole bunch of extra time doing that. Ken, do you want to say anything about--you had some thoughts about that that your piece in some ways was trying to get at. OK, you know, can we really do this, how will it help or what is the time tradeoffs?

Ken O'Donnell: Sure. It's a little complicated but thank you. The point that you're raising about how time consuming it is and labor intensive it is for faculty to deliver this relative to the traditional lecture where you

just heard them all into a room and talk at it at zillion of them at once is a really good one and it's hard for us to square that imbalance in the cost benefit ratio the way we're funded now because we're funded only on enrollment. But as we shift funding to follow more of what we care about more of the things that were in Debra's speech it'll be easier for us to make the case that this high impact practices even if they cost a little bit more will in the long run save the state money because the learning is deeper and the students persist. So, efficiency is improved, you get more degrees per dollar effectively by making investments like this and little bit more on the front end and cost of instruction but the other point that Debra made that I think bears underscoring is we're not very good at measuring of those things. So, it's hard for us to make that argument yet, we mostly sort of intuitively believe it's out there.

Debra Humphreys: Right.

Ken O'Donnell: But in the meantime I think your point is really well taken, it's harder to teach this way.

Debra Humphreys: Right. And it's particularly--I mean the way we're counting things we're still sort of--we're strapped into this credit model that we know--we've known for years is really not--it's creaky, right? I mean it's the idea that one three credit course exactly the same as another three credit. I mean we've known, that's like the dirty secret, right? We know that that's not true. I mean we know that's not true. I mean there is a three credit course where some faculty members putting all this extra time in doing community service and all this extra stuff, students were doing incredible things, and then there is this the three credit course on the other side where everybody goes to the lecture and everybody can kind of like slide on through and everybody gets a "C" and we move on. So one is actually taking a lot more time than the other but in terms of our accounting it's the same, we're paying for it the same way. So, that's--I mean we are going to have down some tough questions of ourselves about what we spend our time on. It's not an easy answer--I don't have a good answer for it, I'm afraid.

Audience Person: Good morning Debra. Good to see you again. I read your paper in winter 2012, "What's wrong with the completion agenda and what we can do about it?" And I'll tell you the first few paragraphs were chilling because it does reflect what's going on in our state, we are, you know, being introduced to perform in some metrics and they are the National Governors Association metrics.

Debra Humphreys: Yup.

Audience Person: And--and I guess my question to you is in this time of, you know, we have declining members of full time faculty, we have declining resources, what do you think is the best thing that we can do in terms of demonstrating our value to the governor and the legislatures and our own Board of Trustees were quite interested and I'm hoping that you write about the MOOCs President Harrison but, you know, they are very interested in giving access to higher education via MOOCs--

Debra Humphreys: Right.

Audience Person: --to the students that we cannot accommodate because our budgets have been slashed so dramatically. And so, if there was one thing that had a bang for the bus.

Debra Humphreys: Yeah.

Audience Person: All right, you know, and I know this if it wasn't--if it would, you know, if it was question that could be easily answered we would have done it. But, you know, I'm looking to you as a national leader.

Debra Humphreys: Yeah.

Audience Person: You know, where would you point us in terms of--

Debra Humphreys: You know, I thought about this for a while. I'll answer it in two ways. One the way I have answered it for a while and then the other something new that I've been thinking about just the last week or so. I've been watching for a while the declining public confidence question and it only started diving very recently, I mean the truth is that the public had been very confident about us as a sector for a long, long time.

If you go far back and pollsters asked questions about, you know, how many people think Congress is being effective? And now they are down to 10. And you can ask that of us and the military and the clergy, and K-12 educators, and if you do all of that, we are at near the top and we're still actually pretty close to the top. The military and clergy are a little bit higher and we're starting to decline. But most recently we have started to take a dive. When you look dig deeper into at that you see something interesting. There's a question that was in a survey Public Agenda asked in a survey a couple years ago and they found that two thirds of the public said that higher education, "cares more about the bottom line then providing a good educational experience to students"--and that was up about seven points in two years, it was a big jump.

And obviously that's a painful thing to think because all of the people that I deal with, hundreds of people in our community and I think all of them--that's all they care about is, are we providing a good educational experience? So, that's what my experience is. But I realized that they don't know what a good educational experience is, right? This message of the good educational experience is the one where you're really working on projects, and you're doing the internship, and you're out in the field. And it is the kinds of things that we've been quietly creating in the background and not showing people. And you would be shocked at how often I have conversations with employers or policy makers who really don't know what happens within the walls of a campus. They still think we're teaching in the ways that they were taught a long, long time ago. And I do think that this is not an easy answer but we have to tell our story better and we have to get our students telling the story better of what it is that the education is accomplishing. When you talk to your alums, Dianne probably does this all the time they will talk in glowing terms about the power of the education they got here.

I mean I was a first-generation college student and all the first-generation college students you educate, every single one of them is going to say, "You know, I wouldn't be where I am without the education that I was provided." We have to just take every one of those stories and tell them over and over again and make that a much bigger thing so that then we can say, "All right this is what good education looks like. We're taking seriously the challenge of being more efficient." We cannot simply say that we're fine we just need more money, we can't do that, we really have to say, "Right, there are some things that we're doing that maybe we shouldn't be doing anymore and we're inefficient about that." But, this is where we we're trying to go. This is the picture of what we're trying to provide. You want it for your kid.

The economy requires us to give it to all kid. That's another one of these things that, you know, everybody says, "My kid is going to college." But then if you ask them, "are too many kids going to college?" "Oh, yeah, you know, we're sending too many kids to college, but not my kid." There's an other people's kids problem that we have to get over and we can only get over that with policy makers by using this kind of economic argument. This is how the economy is changing and your economy, your community depends on CSUN creating these kinds of workers and we can only do it with a certain amount of support. So, that--that would be my first answer.

The other on--I've been really trying to look hard at the debt thing. This is a big thing and I think it's one of

those leading indicators like a canary in the coal mine public opinion things that we already blew it. I mean those of us who try to influence how the nation thinks about stuff because we let the national dialogue about that get out in front of the facts. People think that people are borrowing more than they are. But the reality is 600,000 people defaulted on their student debt last year. 600,000 people. So, that's one of those ones where we can no longer just say, "Oh, you know, it's fine. Most people are not borrowing that much." We're going to have to get out in front of that particular one and it's--in some ways more important than the--the larger--what is the tuition, how much is the state giving us, et cetera.

And I don't have a good answer to that but I think that we have to really be talking with our students about how much debt that they are incurring, we really do. This is actually less for faculty and more for all of the other people who helped craft our Financial Aid Policies. There's a whole policy agenda in Washington about being able to discharge debt in bankruptcy. Not only the federally subsidized loans but all those private loans, you can't discharge them in bankruptcy. It's an insane policy. That's not really my job or your job. But I think we have to correct that as well before we're going to get back the level of confidence we need to convince people. The performance funding thing, as you know I have been critical of it. I'm very skeptical that it's going to work. Others disagree with me on this. Ken and I disagree on this. But I think actually we're going to see, because we're going to try it. I mean a lot of states also did try this. You know, the old system also has perversities in it and it doesn't make a whole lot of sense how we're funding higher education. Maybe it will give us the kind of flexibility that we need to do which you are just describing.

The problem is it, too, is based on credit hours and throughput. You know, it's all built on the same creaky kind of platform. The good thing about that is we're going to follow it. We're going to see whether it's really going to work or not, but the past experiment didn't work. So a few said let's try this, you know, 10 or 15 years ago and they quickly stopped doing it, because it just didn't--it didn't produce what they needed it to produce. So we'll see.

Steven Stepanek: Yeah, finally just two more questions, so people who have the mics supposed to be the last one.

Audience Person: I'm sorry. Briefly they we're kind of following me up on that. Would you comment briefly about AAC&U's response to the college scorecard?

Debra Humphreys: The College Score Card. You know, I sort of debated whether to even go there today. Yeah, it's interesting because I was looking over my slides and, you know, I have that slide with President Obama's quote when he launched the score card idea. And the quote, you know, I want to say, yeah, absolutely I agree. Everybody needs it. It should be--sorry, I need to go back to the slide "college never been more necessary, it's never been more expensive, we got to make sure it's within reach."

Higher education should not be a luxury. It's a necessity, an economic imperative that everyone in America should be able to look forward. I complete agree. And then he announces the whole bunch of policies that I don't see how in any way they're going to fix this. I mean the divide between what they put out there as the way to fix the problem is, as best I can understand it, to generate some data, some of which will be used to punish the very schools that serve the underserved students or punish students who happen to live in a city where the only available option is a school that doesn't do well on certain of these metrics, very few of which have much of anything to do with the things that I just talked about.

The real politic side of me tells me I think they're going to be pushed back on a lot of the metrics. AAC&U is

talking to our board and they have authorized taking a pretty tough line particularly on the publishing of data on salaries, because we really think that's insane as a measure of our value. I could talk for hours on that one, but I won't. So that one, we're just saying this is just dumb. I mean, you cannot get good data on this and it doesn't have to do with what we need to be held accountable for, so don't go there. I think whether it will succeed or not I don't know, Dianne, because that data is out there. So if it doesn't happen in Washington, it's going to happen state by state because the states have that data.

I think that the publishing of information about Pell Grants and that kind of stuff is OK and I think that's fine. Your institution will do really well and you serve a lot of students with Pell Grants and that's great. I think they are going to start publishing more data. I think that the idea that they're going to attach the financial aid to it is much more complicated than they think, not only because of the politics but literally because of the mechanics of it, and given what's happening in Washington, I just don't see that happening. I mean congress is just not going to get that together to pass anything that they would have to pass to make that part happen. So I think that, you know, there will be pressure on all of us to produce different kinds of data. You're already producing most of it by your participation in the VSA. It's not going to be that different I wouldn't think. So the push for more data is definitely going to be there, whether we can help them think in broader terms about the value of a college education I just don't know. I'm new to policy but policy is not my area of expertise. I haven't spent my life doing policy.

And the disconnect between what we talk about as educators and policymakers is vast. I literally have been in meetings where I give this speech, legislators are really nodding, oh, yeah, yeah, and then we walk across the hall to the other side where everyone goes on and on about how great the performance funding thing is going to be. And it's like there is just no connecting of the dots whatsoever. It's my fault too. I mean I haven't figured out how to get people to see that there is a connection between some of this. So I don't know. I mean the pressure on the data is just going to continue if it's not at the federal level, it will be at state level.

Steven Stepanek: Last question for this session.

Audience Person: OK, thank you. Thank you for bringing up all the ideas you brought up, especially the student loan and affordability. But I want to go back to something we've alluded to and that's the competency-based, but first with the credit-based.

Debra Humphreys: Yeah, yeah.

Audience Person: To me that's really a huge shift and yet when I go out in the community people talk to me about what do you really learn in the classroom? So I just wanted to reference the one university that was approved and how important you think that is and any other comments, so that we can think about that.

Debra Humphreys: I'm following this one really closely because I will say that intuitively it's really caught on. I probably get maybe two or three reporter calls a week now just on this question of competency-based education. And I do the air quotes because this is one of those things where people mean a lot of different things, right? And on a conceptual level I think we all agree. No, you shouldn't be getting credit for seat time, meaning you're sitting in a seat not doing anything.

On the other hand, I'm not sure that the opposite of that is you pass a test and you demonstrate competencies and therefore you get the degree, right? Because the other thing that we know from all the research I just talked about is that seat time doesn't matter, but time really does matter. For almost all of these out-

comes for the vast majority of students, they need more time not less time to actually get these outcomes. So it's been interesting to watch.

I do think the competency-based education issue is the beginning of the cracking of the idea that the credit hour is what we're--is the currency. That I get and they're right. It should be the competency not the credit alone. I think those who are champions are way over-estimating the sophistication of the assessment tools we have. So, the idea that we actually have adequate assessments to assess all of the outcomes in a way that where you can just do it without any faculty, I'm highly skeptical about. I mean the other research is that real engagement with faculty is one of the keys to especially underserved students actually getting these outcomes. So the idea that we're suddenly going to throw our most vulnerable students out into a cyberspace and they're going to get these outcomes. I don't see how that can happen.

It would be cheap. It's certainly would be cheap. But I just don't see it. I do think however, the whole discussion is probably worth having. So this is going to be a really interesting one to watch. What does competency really mean? And the experiments that are going on at the University of Wisconsin are interesting. They are being push by their governor to do it, but to their credit they said OK, let's try to do this right. Let figure this out.

And, you know, they're trying and we'll see where it goes. We are trying too. In a way our outcomes are competencies/. I mean we wouldn't call it that because when we created all of the things for LEAP, we assumed that they would be used in the context of an actual curriculum with actual faculty. I mean we assumed that was the environment. We didn't assume you would take it and then say, well we'll create the online tutorial and the test and the outcomes and then you're done, because we never kidded ourselves that these outcomes could really be developed without the educational environment that you all have created. So now, we're in this place where we didn't expect to be but I do think--I mean in a larger sense we should be talking about competency. We should be talking about what students can do and how our educational system influences what they can do. There's a big discussion all about how much prior learning do you get credit for? What does a degree mean if you walk in the door and can pass all the tests I give you a degree? Maybe, I don't know. I mean most campuses have said, you have to spend a little bit of time with us before we're going to say you're our grad, because we're proud the thing that we gave them which is much more than a collection of credits. So it's going to be fascinating to watch and I will say this one is moving fast. I don't get three calls a week on stuff very often and this one every reporter in the country thinks, "oh this can solve the problem with money. It's not going to."

Steven Stepanek: Let's thank everyone again.

Debra Humphreys: Thank you.

[Applause]

END

Panel—Day Two: "THE FUTURE OF EDUCATION: Functional vs. Liberal Arts"

Moderator: **Ken O'Donnell**: Academic Affairs Department at the Office of the Chancellor of the CSU

Panelist: **Jorge Gonzales**: Dean of the College, Occidental College

Beth Say: Dean, College of the Humanities, Cal State Northridge

Denise Campbell: Dean of Student Central, DeVry University
She oversees the areas of financial aid, student services and student affairs.

Christopher Woolett: Current Associate Student Body President, Cal State Northridge

Moderator O'Donnell: Good morning folks. I am Ken O'Donnell, the moderator of this panel. In the Chancellor's Office, I work on *student success and curriculum* and *transfer relationships with the community colleges*, which are all intertwined in various ways that we discover every day. I'm going to let our panel introduce themselves. I'm very honored to be joined up here by **Dr. Jorge Gonzalez**, the Dean of the College and the Vice President of Academic Affairs at Occidental College, and **Dr. Beth Say**, who's the Dean of the College of Humanities here at Cal State Northridge, and **Dr. Denise Campbell**, who is the Dean of Students at the DeVry University. **Christopher Woolett**, President of the Associated Students here at Cal State Northridge will be joining us shortly. He is on his way back from a meeting at the Chancellors' Office. And I'd like you each to open with a couple of minutes about the work you do and your own take on that mix between liberal arts learning and the more practical applied learning. And let's start with Jorge.

Jorge Gonzales: That's fine. Welcome. Good morning everyone. Thanks for inviting me. I am thrilled to be here. And I'm thrilled to be here because the questions that you are asking us for this panel are just fascinating questions that we are always, at Occidental, thinking about. And what is the value of the liberal arts? What is the future education? What should our students know to get ready for the world that they're going to face? And when I think about what do our students need to know--I'm an economist, so I think, you know, OK, what is the environment that economy--that our students are going to go into? When they graduate, what are the--what is the world that they're going to face? And what I think about is what are the forces shaping the world that they're going to face when they go to the workplace?

To me, there are four major forces that our students are seeing. First of all, I know all of us will see is **technological change**. We all know that technology is changing at incredible speed. Technology has been changing ever since man and woman knew how to use fire and then use that to use the wheel. But the rate of technological change that we're experiencing now is like nothing civilization has ever seen before. You know it. For--when I finally get to know how to use my telephone, I knew operating system concept, I know this when I don't even know how to use my telephone. And this is just one example out of so many that you can have.

So what does this mean for our students? What it means is that the probability that a student is going to graduate and is going to go to a particular industry and is going to stay in that industry for the rest of their career is close to zero. That could have happened with our grandparents or our parents, maybe with some of us. But for our students, it's not going to be there. So we cannot train them for the future industries be-

cause we don't know what they're going to be. I can give you examples like these exist everywhere.

One of our graduates from East LA, first in his family to go to college, and he came to Occidental, he graduated. Couple of years after leaving Occidental; he started a company to develop apps for telephones. We could have never trained him to do those apps because those phones did not exist when he was in college. We did not even have a computer science major at Occidental. We don't have one. He got the liberal arts. And as a result of that liberal arts, he developed the intuition to look into where the world is moving: so technological change is one of those forces.
Second force that is shaping the world that our students live in is **globalization**. Once again, the level of competition that we see before is like nothing we've ever seen before. I'm an economist, an international economist. When I was in graduate school, we used to talk about competition from abroad, we used to talk about the workers that were being--facing this competition in the US. At that time, I'm talking about the late '80s, we're talking about blue-collar workers in the steel industry, in the auto industry. Those were the ones that face competition from abroad. Think about the world today. If you're a radiologist working in LA, you're competing with a radiologist working in Mumbai that can do exactly the same thing that you do right here, exactly at the same time. If you're an accountant working in Chicago, you're competing with an accountant that works in Buenos Aires that can do exactly what you're doing. The level of competition that we face from the world, once again, what it guarantees is that the probability that a student is going to stay in the same industry for the rest of their career is close to zero.

What else is shaping the world that our students face? **Diversity**. The US is much more diverse than it was 20 years ago. And I don't have to say that--well, you live in LA. I mean, we know that's a reality. But regardless of what part of the United States you're from, and it really means regardless where you're from, that community is much more diverse than it was 20 years ago. And it will be much more diverse 20 years from now. You know it. Your grandparents and even your parents could have gone weeks or months without talking to somebody with a different culture, different ethnic background, different religion. That was the reality of this country. Think about today. What is the probability that our students are going to be working with people from exactly the same cultural background that they came from? Close to zero. And this is not only in the US. Whatever country in the world you're looking at, whether it's Mexico, whether it's Spain, whether it's Morocco, whether it's South Africa, the diversity that is happening within those countries is also being enhanced because people are moving around the world much more than ever before.

The final force that I like to talk about that is shaping the world that our students live in is **urbanization**. The world had just become a place that is more urban than rural. By that what I mean, over 50 percent of the population, for the first time in history, now live in major cities as compared to rural area. This urbanization brings with it all kinds of very complex problems that we didn't use to face before, problems that we cannot solve through the prism of a single discipline that requires people engage in solving those problems, perspectives from all over, not only from economics, not only from sociology, but also from the sciences, et cetera. Problems from pollution to education to whatever you want to talk about. These incredible things are happening because we have become an urban society. And obviously, that urbanization also creates amazing opportunities. The clustering of bright minds in urban centers provides the opportunities for them to get together and to come up with discoveries that we cannot even think about today.

So, if we want our students to get ready for this world, where they're going to face technological change, they're going to face globalization, they're going to face diversity, and they're going to face an urban world. What are the skills that they need to have? What kind of education is the one that we need to provide them to get ready? And at some--at this point, I'm going to be repeating a lot of what we said before, President Harrison did a great job of talking about this, Deborah Humphrey did a great job, and basically I want to be repeating what they say because I strongly believe in it. So what kind of education do you need? Should we

train the students to use technology that exists today? Should we train them to solve the problems that exist today? I don't think that's going to help them very much.

Our students need to go beyond what it is today, what do they need to have. They need to have very strong analytical skills. They need to have very strong problem solving skills because this is what is going to allow them to move from one industry to the next. They need to be able to analyze problems from very many different perspectives. If you're an economist, you should not take 50 classes in economics to get ready to get to the workplace. You need to take history. You need to take mathematics. You need to take sociology. You need to take sciences. Do we need to be able to communicate effectively, orally, and obviously in writing? You need to be able to continue to learn through your lifetime.

As somebody was saying a minute ago, it is not enough that they're going to learn here. I tell our students, "*If you think you come into college to learn everything you need to know about society, you're too naive.*" The best we can do, and really the best thing we can do for you, is to teach you how to continue to learn through your lifetime. Also, how you're going to get information. You need to learn where that information exists. You need to learn how to analyze information critically, not only take the information that you receive and just assume that it's the truth. How do you critically study whether this is valuable or it's not, or what part of that argument is valid and which part is not valid?

Our students need to be able to communicate with people with different backgrounds. Our students--I'm talking about that one, need to be able to communicate in different languages. I always tell students, if you're going--people around the world speak English. If you're going to be buying products, you can go and buy them in English. If you're going to go try to sell products, you better learn the native language. Because you bet that the people from Mexico, from China, from Chile, are going to be speaking the native language of the country where they're trying to sell. So the ability to communicate with people involves the ability to speak in their own languages.

So when I talk about these skills that I think are important for our students, what am I talking about? I'm talking precisely about the values of a liberal arts education. This is exactly what our students need to do. What I think about is, could the US continue to lead the world if our high school graduates move away from the liberal arts education that the US has been providing for over a hundred years to an education in which we're going to train them to do whatever Google needs them to do today. And we can--we can ask Google. OK Google, what do you need our students to do? And of course, I can prepare five, 10, 15 classes to prepare them to do that. That's going to allow Google to make profits today and it's going to allow them to sell the products today. Is that going to allow those students to be the entrepreneurs of the future?

To be the ones that going to lead then offer profits for the future, to be the one's that are going to be solving the big issues that the world is going to be facing over the next 40 years. I don't think so. Obviously I'm bias, but I don't think so. Now, however, there's space for all of us and there has to be space for all of us in higher education. We can't ignore reality either and I tell this to my colleagues and I'm in a liberal arts environment that is a really weird environment in this higher education. I mean, it's a very small part of higher education and that very small private liberal arts college. But sometimes we ignore the reality. We need to be able to translate the education we give our students into skills that they can go, and when they go and apply for jobs, they can tell their employers, I can do this.

Very few people can get a job by going to an employer and say, "You know what? I'll learn all these things that are going to allow me to change the world." Probably Google is not going to hire them. Probably IBM is not going to hire them. Many, many different--very few companies are going to hire them with that. So what do we need to do? We need to be much more proactive at translating the value of the liberal arts into their

skills that they need for the workplace. Obviously, we talked about high impact practice earlier today and I completely agree that those high impact practices are incredibly important in that translation. Giving the students the language to be able to talk about why is the classes that I took in our history are going to help me analyze significant problems in society today. And schools that do this well, obviously, they're going to continue to attract students. I'm talking about ignorant reality.

We cannot ignore what our parents and our students are saying. When you interview parents or students and you ask them, why do you want to go to college? The highest percentage of them by a wide margin say, "*I want to go to college because I want to get a job and I want to make more money*." We [inaudible] higher education take the high role and say, OK that is irrelevant, that doesn't matter, you know what you're talking about, what matters is the beauty of this object that you're going to study in class. What we need to do is tell the beauty of this object you're going to study in class, the skill set that you're going to develop as you study that particular piece of art are going to help you to get the job that you want, to be able to be productive, to be able to get promoted. And so--and just to end, one of my colleagues always tells me, whenever you give a speech please at one point say, "And to end." That gives your audience something back that they have lost.

[Laughter]

And I also he tells me, it doesn't matter. It doesn't have to be at the end, anywhere in your talk, but just give it at some point. But no, the last argument that I want to make. So at this point, I've been very pragmatic in some ways, but also we have an obligation to educate our students in much more--in much more profound ways.

We have an obligation to enrich their lives. And when I say enrich their lives, I'm not talking about making them make more money. They're given us four years, or five years, or six years whatever setting you happen to be. They've given us a lot of their time. We need to make them become better citizens of this world. All these issues that I just described before can also lead to polarization in societies, and unless we educate our students into the value of citizenship, into the value of caring for others, societies are not going to be able to solve their own problems. If a student takes a class in geology as part of their core requirements, they're not going to be a geologist. They're going to be an economist. And a result of that class, they become interested in the environment. We have changed a life and by that, we start to change society. What about students that take an art class? They might not be--they might become an engineer but take an art history class. We have enriched their life forever because perhaps as a result of taking that arts class, when they have a job in Madrid and they have a free afternoon in Madrid, they're going to go to del Prado and they're going to spend a whole afternoon looking at Velazquez or at Goya. And they're going to derive joy from that activity that they would never have in their life if it wasn't for the gift that we gave them when they were at college. Or perhaps one of them is going to take history and as a result of that, is going to appreciate the--let's say the evolution of Egypt. And when they have time in London, they're going to go to British Museum. And when they are there, they're going to be looking at all these incredible pieces that came from Egypt and they're going to get satisfaction at the same time. They're going to be critical thinkers. They're going to be saying, "Well, do the British have their rights to have all these pieces in London?" And that critical thinking is exactly what we wanted to have because when in the afternoon, that student is going to go to a meeting to decide on a new [inaudible] instrument that they're going to be working with, with the British. They're going to be asking the same question, is this the right thing to do? That's what a liberal arts education should be about and that's what is going to prepare our students to be successful in the future. So let me quit right there, besides [inaudible].

Moderator O'Donnell: Thank you very much. That was great. Denise Campbell is at DeVry University and Dean of Students.

Denise Campbell: Thank you. Thank you for having me here today. I'm going to talk--first of all agree with, it is our responsibility and a huge one and one that I'm glad we can continue to talk about. I'm going to talk a little bit about where we come from 'cause I know it's a little bit different.

At DeVry, we call ourselves the "Career University" and so it was interesting that this was the question post to me for this panel because we--actually don't look at our curriculum in terms of being liberal arts focused or functional because we try to embed one and the other for the career. So it's a little different approach but to give a few examples, some of the things that we've done on the functional side.

We have taken that curriculum and we don't want to strip it of its worth and we don't want to strip it of meaning for the student to intense to go through that functional program and get those skill sets. But we've taken a great--many of those classes and we're of course measuring this overtime so we will have hopefully healthy outcomes in the future. And we are inserting critical thinking for example, curriculum into each course. So we're not adding liberal arts courses to the functional curriculum but we're taking pieces from liberal arts curriculum and inserting them into classes. And that's something that we've seen help increase our persistence overtime and I would like to see two to five years out how that sits with us as the Career University.

So that's kind of the stance that we are taking currently and it would be nice to have this conversation in a few years so I can have some data to share with that, but I do think it's an important topic because if a student learns a specific skill set who is to say in two months, five years, et cetera, that's not going to be useful for that student. So I do think we're not serving them fully if we don't address this and try to bring in some of those other skill sets that I think will help them go and really thrive in whatever community that they serve in or they choose to go in. So I do think that both pieces of education are extremely important but I think, it's how we take, what gold nuggets we take from each and it will be an incremental piece I'm sure overtime that we figure out how to sort of merge the two together without them losing their strength and their purpose.

[applause]

Moderator O'Donnell: Great. Thank you very much.

Denise Campbell: You're welcome.

Moderator O'Donnell: Beth?

Beth Say: You know, I'm trained in religious studies and I kind of want to go amen.

[Laughter]

But I think when we got this title of the panel "Functional Education Versus the Liberal Arts", I think that's a kind of outdated way of thinking of these. It's a 20th century way of approaching education that we have either the functional education, we have a liberal arts education because I think what we've been talking about for the last two days and what my other panelists have said so eloquently is that we are no longer training people to go into specific jobs, you know, we know the data. Students are going to change their careers five times in their life time. They aren't training for a job and their education is not tied to a specific career, you know.

In the 20th century, a whole lot of new degree programs grew up that were tied to specific kinds of careers but that's not the way the world is going to function and it's not how our students are going to live. And if all we want to do is train students to go into a particular career and give them a specific task skill set, you know, they can go to a technical college or they can go to some kind of training school. We're talking about educating them. And that means educating the whole person and educating them in a way that will carry them into the future. I was reading an article in the Huffington Post last week and it was an essay by Michael Lindsay who is the President of Gordon College and he notes that, "*Our 21st century has already demonstrated that it will be an era of integration, not specialization. Those most likely to make an impact in this new generation will have a broad, holistic knowledge base and a drive to connect disparate interests through innovative problem solving.*" And that's what we are supposed to be educating students to do, and I think that's what the liberal arts brings to education and why in a university, we don't have training schools.

We talk about educating our students. And the liberal arts skill sets that they bring to our students are things like the ability--I like to tell people, what do you do in the humanities? We teach people to read, write, and think. Sort of basic skill sets that you need that will translate into any career possibility they might find themselves in the future. They give them the critical thinking skills, the communication skills, both oral and written communication skills, appreciation for diverse cultures, language skills. The appreciation for the arts, for literature, for the things that enrich our lives and make our lives more meaningful to us, and that's what we bring to education and that's why I think it is a difference between training people and educating people.

[applause]

ModeratorO'Donnell: Well put. Thank you very much. So Christopher is here as promised. So we will turn next to him.

Christopher Woolett: Sorry for being late, I was required to be in a meeting in Long Beach.

Well, my name is Christopher Woolett. I am a current graduate student here at California State University Northridge. I'm studying educational leadership and policy studies. I got my degree this past year in liberal studies from California State University Northridge. And I feel very privileged to be a part of this panel and I hope to provide a sense of what the students feel, not just myself or the students at Cal State Northridge, but the students I've encountered throughout the state.

I guess I want to start off with a quote that I heard that I really liked and it was, "*Thinking outside the box is one of the most important things we can do.*" **Before we could think outside the box, we needed to know what's inside the box, right**. So, I think that's really what everyone has said, *functional education and the role of the liberal arts really do need to be together*, I think.

Employers want to see technical skills and I think that we need to educate students and I want to be educated to get those technical skills to give me at least a starting point, what would I think might be a starting point for my career. But on the other hand, you know, I was in a room yesterday with a bunch of professionals and they said, "*How many of you got your degree in something that is not what you're doing today,"* and every single person raised their hands. So I think it is true that the liberal arts is a huge--it's extremely necessary in educating students and I think there's two different students, students who want to come to college and they will learn whatever you put in front of them, whatever they find interesting and then there's another part of students who want to be in college, get out and get a job. And they want that technical training when they come in. And when they in come, they may want one thing, but when you start becoming a part of the environment I think that sometimes opinions change and the reasons you stay is for another. So, once again I'm

very--I feel very privileged to be a part of this panel and hopefully, I can provide some valuable input from a student's perspective. Thank you.

[Applause]

Moderator O'Donnell: Thank you. Thank you to all of you.

[Applause]

I really appreciate all of your opening remarks. I wanted to let you know, we've got about 35 minutes left with this panel. And part of my marching orders are to provide you fodder for things that you're going to be working on with working groups after lunch. So, with that in mind, you might be thinking about things you'd like to ask any of the folks up here. I should also share with you a warning that I extended to our panelists and that's that as a moderator, I tend to be a little impatient and over caffeinated. [laughter] So, you won't hear them speak at that kind of length again. I'll tend to cut them off and turn to someone else. And if you stand up and start declaiming, I'll probably do the same to you and you're welcome to do it me.

I have some questions immediately that I'd like to ask as--by way of follow-up on some of the ideas that you folks have been raising. But before I hog hug up everything, are there questions in the audience that I should accommodate first? Yes ma'am.

Female Audience Person: Why is there no science in this arts and science panel? I think that's a really good question especially with the national focus on STEM. I think the thinking going into the panel was we wanted to keep it small and something had to go but there might have been a rationale beyond that. You're sitting next to the conference organizers, so I'll see whether I guess right or if there was a--if you--

Jorge Gonzalez: And I'm an economist, which you heard is the dismal science so--

Female Audience Person: You got a dismal science?!

[laughter]

Jorge Gonzalez: And I will say that in the College of Humanities, we have social scientists, we have hard scientists, they're all--we have somebody does cognitive science of religions, so there you go.

Moderator O'Donnell: Well, very good to know. I'm very glad to hear that. [laughter].

Here's the question that I have for you and it has to do with the point about the 20th century being the age of specialization and the 21st being the age of integration. So I'm going toss it to Beth first. It occurred to me as you were paraphrasing that writer. Our universities are set up for the age of specialization and when Denise talks about taking critical thinking skills and embedding them into the trades, the problem with that is where is the faculty development in that? How do you account for load? How do you divvy up the credit hours and the revenue? So Beth, solve our problems.

[laughter]

Beth Say: Yeah, right! I think it is a challenge that we face. We all know that the world is changing and the way we need to deliver curriculum and the way we need to meet our students' needs for the future needs

to change with it. And we don't have models and systems that allow for that. I think about when I was still in the classroom, even to get two faculty who could do team teaching, the way we fund teaching loads makes it virtually impossible unless you teach a double section of the class and you put two classes together and that kind of then defeats the idea of doing a team taught course. It becomes a very expensive enterprise.

And so I think one of the things that has to happen and actually it's--this actually has to happen at the Chancellor's office on Downey is if we're going to change the way we deliver curriculum, we have to change the way we account for the work load and how we reward the efforts of the faculty. Sometimes doing this kind of integrated approach to teaching takes more time and more energy than just doing the traditional go up and deliver it.

I was thinking as we were listening to folks talk about high impact practices, you know, internships and stuff, we have a lot of service learning courses in our college. They're incredibly successful. The students get tremendous reward from them and for many of these students, it does turn into some kind of opportunity as they think about their future and what they want to do. But the work load for faculty to take that on is very different than delivering a lecture to 35 students. You have to find sites. You have to work with the people at the sites. You have to work with the students. You have to evaluate their work differently. So if we're going to really have an educational system that addresses this changing world of work, the way we educate I think has to respond to it and I don't have the answers for how--

Moderator O'Donnell: Denise, how is the DeVry dealing with that?

Denise Campbell: Well, it does come from our home office so it is--it has begun at the top level and we are big on trainings. So there's a lot of product knowledge training, not only for faculty but we also employ the use of our student affairs professionals or academic advisers or even at times our financial aid consultants to go in and do more functional things maybe in the classroom.

So we're a national university so, you know, we have multiple campuses, but it begins at our home office location and they write out the curriculum and write out how it's going to happen. And then it disseminates from there to the teachers, teacher training and then to some of the administration side for our training as well. So it's not just on the professor. It's not solely the professors' sort of burden to bear. We do have this sort of triangle of support for that professor in those classes.

Moderator O'Donnell: Thank you. And it's interesting too that it is top down as Beth was saying. But the piece that I'm wondering about and it may not be something that DeVry really had to face. So I'm going to ask the question to Jorge. Presumably, if we had a specialized curriculum where critical thinking was always taught over here and innovation and empathy for others were the province of the humanities by their--[background laughter] by their own claim, right, and it could happen nowhere else. And now you're embedding that in other departments and disciplines, doesn't that mean the humanities are out of a job? How do you take these dispositions and skill sets out of their home departments without closing the home departments?

Jorge Gonzales: Yeah, that's a fascinating question. And talking about the future of humanities is something that [inaudible] we focus on all the time. I cannot count the number of times that people of humanities have come to me and tell me our departments are dying because students don't want to take our classes. I want to tell if there's a place in US higher education where students would take humanities is at a liberal arts college.

So we should bring more energy to the humanities to attract the students there, so the way that we've been

doing is bring in a lot of digital efforts within the humanities. There's some fascinated thing that faculty in the humanities can do with new media and that new media is attracting students. And if a student comes to a history class, although sometimes I said they are social scientists, let's say art history class and in that art history class, they use--they learn to use GPS to see where they're going to locate different parts of the development of particular art in the Middle East. And that skill set that they've developing is completely transferrable to anything else they do. So if you can bring some of the technology to humanities, you're enriching the humanities and you're going to be attracting students to humanities. And also, you want to be given that religious studies major, that English major, that Spanish major, the vocabulary that when they go out to interview for jobs, they're going to say not only do I know about the Golden Age of a Spanish literature, I also know how to plug that in a technological way that I can translate very easily to see what Google is doing around the world. And it is difficult, it's not easy. And I'm talking about interdisciplinary work. We always say that we want to do it and we're all in favor of it, but when we have to implement it, it's incredibly tough. And if there's a place where it can be done is at a small school like me--like ours and where we don't have to go to the governor, we don't have to go a legislature. We decide what we want to do [inaudible].

Moderator O'Donnell: Thank you very much. I've got a question for Christopher but before I ask, are there questions from the audience? Yes sir.

Mark Stover: I'm Mark Stover. I'm the Dean of the University Library here at Cal State Northridge. I resonate with the idea of the liberal arts and the humanities being an important foundation to go out into the workforce and make a change in this world. And I'm sure there are lots of anecdotal evidence for that being important and many of us in this room can tell stories about our own lives and the lives of people that we know, where a good foundation in the humanities makes a difference in a later career and creates an environment of creativity and critical thinking and so forth and let me also say that there's lots of anecdotal evidence to the contrary too. But what I'm wondering is people like Bill Gates who dropped out of Harvard 'cause of the humanities wasn't doing it for him, or whatever classes he was taking, or Steve Jobs who spent a year or so in marijuana-induced pace at Reed College: and many others who have made a huge difference in society without having that strong foundation in the humanities and liberal arts. My question is, is there any hard data to support the notion that it's important for the liberal arts to be a part of the curriculum for our students to go out into the workforce and make a difference in society and if there isn't any hard data, are there attempts that any of you know of to collect this data to produce compelling argument for policy makers and the powers that be.

Moderator O'Donnell: Good question. The panel can be thinking of smarter things to say while I talk. OK. Is there evidence that dispositions that are developed in the humanities actually help on the job and the answer is no because we don't. As you heard Deborah and President Harrison saying, we do not have good instruments to say what those dispositions are that are developed by the humanities and then to take those things, those skill sets, those intellectual tools that you didn't have before. And then say, look, we can tell for sure that you just applied it over here, it's not like taking a drug that changes the color of your blood for example and now we can tell where the drug went.

On the other hand, we are getting there by a couple of proxy tools that I think are pretty valuable. One is the employer's surveys that we saw from the AAC&U that tell us that to the extent that employers understand what you get with liberal arts and humanities education, they claim these are the things that they want. The second tool that is emerging from this very campus and I just got a copy of the second draft from Bettina Huber right here at Northridge, so you can be sure you'll see it soon on Power Points coming near you, is an effort to improve on some works that comes out of Georgetown University Center for Workforce and Education, where a guy there named Anthony Carnevale gets national headlines every, I would say a couple of

times a year. These are the majors that pay, right? The problem with his methodology among many is that to draw a straight line between the major and the job is tenuous for an awful lot of majors. And secondly, he's only looking a few years out. What the Northridge work does is take into account the trajectories of different categories of students and look further out so we are getting there. How was that?

Jorge Gonzales: You're absolutely right. There's very little evidence and the reason there's very little evidence in part is because we at higher education have been incredibly arrogant and we say we know what's good for you, the humanities are good for you, and we don't have to prove it because it just absolutely no one and that's the fact. And so that arrogance is coming to bite us and that society is coming back and say, "Well, can you measure in anyway." And so that's the first part of the answer.

The second part of the answer is it is very difficult to get that evidence. Because why are you trying to measure? I mean, is the salary that the students are making 20 years out the outcome that we're measuring. Is that what we're--if that's what we're doing, then let's close down all kinds of stuff and let's just open engineering schools. They're going to make more money. And--but when I'm educating a student, I want to have a student that's going to open a non-for-profit in South LA that is going to change hundreds of people's lives. I'm educating somebody that is going to go into the classroom and he's going to change somebody's life forever and the history of that family forever will be different because of that student from Occi. that went to the classroom and changed the student's life. It's--The fact that a person is making 50,000 dollars after a 20 years of being in the job, a negative for the education of Occidental, I don't think so. So that is the difficulty of measuring--how are we going to measure the power that education give the students to change the world.

Moderator O'Donnell: Beth.

Beth Say: And I want to add to that. Many of you probably know about this but in the last year or so, bipartisan group of legislators and there have been those things in the past and we may have bipartisan group of legislators again at some point. [laughter]

Moderator O'Donnell: Someday. [laughter]

Beth Say: But recently, they requested a report on the future of the liberal arts and sciences and the report is this is the executive summary of it. It's called, "The Heart of the Matter". And this was a--it was delivered by the National Commission on the Humanities and Social Sciences which was a large cohort of public and private sector leaders, educators, presidents of major corporations and universities. So it was a very diverse group of people. And the study asks a question of who was going to leave the country into the future and they answer they have arrived at and this is a quote, is "*citizens who are educated in the broadest possible sense so they can participate in their own governance and engage in the world.*" And they identified three major goals of education for the future, for the 21st century. One is to educate Americans in the knowledge, skills and understanding they will need to thrive in the 21st century. Second to foster a society that is innovative, competitive and strong. And third, to equip the nation for leadership in an interconnected world and what they argue this very diverse group of leaders was the liberal arts and sciences is what contributes this to the educational process. And you can--it's a very detailed report, you can read it in depth if you so choose but, you know.

Moderator O'Donnell: Great. Thank you very much. I'm going to ask Christopher the question that I was wondering a moment ago. And that is, do you buy this? I mean, to students who come in just looking for a job, is it very convincing when a bunch of scholars stand up and defend what they do for a living?

Christopher Woolett: Like I said before, I can't speak for every single student because every single student is an individual and has their--I think for the most part, students are coming in wanting an education that will just get them a job, especially today, that's what I truly feel. And--but once they become immersed in the culture and I feel like once they start taking classes, their interest evolve, they start growing, I mean, we are at a young point in our lives still. And when I came into college, I wanted to do one thing. I wanted to do film and I decided that film was not my thing and then I was stuck and so I went to liberal studies and I loved every minute of it. It allowed me to think beyond the viewpoints of my own, even if I didn't agree with them in the end and I think that is something that's valuable and you may not learn if you were just taking biology classes or something like that, right, to become a holistic person is to understand other people's viewpoints and accept those as their beliefs and to be able to talk to those people in a reasonable way and I think liberal arts does that. I buy it. I have a liberal arts degree but, you know, I think students coming in some do have a problem with, you know, general education classes when they want to get into their technical field, but I think when students start getting through it, they find interest in other areas which branch off into different career paths. One of my friends is--he want to do biology, marine biology, and then he took a journalism class and decided he wants to be a journalist for marine biology and he wouldn't have done that, I mean, if he was just studying marine biology and I think that that's a testament to the things that liberal arts really can bring to students and it does take a little selling I feel like and there's nothing wrong with that, but I do think that, you know, there are the unmeasurable things in this world that still count that are statistical and I think it's important for a person especially at our age who is growing so much, I mean I've grown--I feel like I've grown so much in the six years I've been here, so--

Moderator O'Donnell: Thank you. That's exactly what I was wondering. And it sounds like the answer to do you buy it may be not for everyone on their way in the door but they might also tend to buy it as they go along.

Christopher Woolett: Yeah.

Moderator O'Donnell: And that leads to me a question for Denise, so that--you kind of hinted at this that it's a marketing thing, right? That we don't always present GE as believe it or not, this is what you came to us for. How does DeVry handle that? 'Cause I know--in other words, you oversee student success coaches, academic advising, you're kind of on their front lines of trying to persuade people that some of these softer skills actually matter in the workplace. What are the messages you use?

Denis Campbell: You will take this class. Yeah.

[Laughter]

Moderator O'Donnell: Great, that works.

Denis Campbell: We have dedicated success coaches who work with finance consultants and they have a number of students that they serve so that's the model that we fall under. And so both finance and academics get to know the academic side pretty well because finance needs to talk to them about what they're eligible to take with financial aid, et cetera. So, when the student is sitting down for his or her degree planning process, we talk about those open buckets in the curriculum and we talk about the courses that we would like to see that students insert into the curriculum that maybe are our liberal arts heavy.

And one of the ways we know how to do that is previously in the students admissions process, they go through a process called our PI, it's a personal inventory survey. And so we get to know a lot about that student psychologically, where they've been in the past, what their family life is like, what their goals are, what

they would like to do career wise, if they have no idea what they would like to do career wise. So we do an entire sort of PI assessment with them. And then that information is shared and uploaded with the success coach. So that when the success coach is talking with that student and we see those open bucket items in the degree planning process, we can say, "*Oh, so it's look like you're interested in X, perhaps this class might be good for you*." So we're really trying to make it relevant to that student. Not just throw in a liberal arts piece but make it relevant for the outcome of that student and that student's success. So that's kind of how we approach it at DeVry.

Moderator O'Donnell: Very interesting. So in other words, highly personalized; key to that student's background. Beth, did you have a comment about that?

Beth Say: I was just going to say and I think this was brought up by the earlier speaker. The degree path or the GE pathway model where we're testing here, where we're creating pathways through GE, we have one in sustainability and one in human rights and so that students can find their way through the GE practice or the GE curriculum with an eye to where their heart is, with an eye perhaps to what they think their future career might be. And so that there's some relevance between the general education that we know--all know is good for them to take and what they believe at the moment might be where they want to go in the future.

Moderator O'Donnell: Nice. Yeah. Christopher.

Christopher Woolett: I think something to add too is to look at the diversity on different campuses. For example, in my family the only person who's ever gotten an education beyond high school was my father and that's internal and so we did--that's--he's the only person. He went to University of Phoenix when I was young and then he went to Colorado State University when I was in middle school and high school, first MBA. And I think it's important to note that parents or families who have never had a lot of education in the family are looking at higher education as this will just get--help you get a better life. And a better life to many people is that money or the job and so I'm going back to the point I made earlier I think and it was that we don't know--students coming in don't know what to expect a lot of times and I think that's important to know when looking at the different diversities of campuses and of regions and it's important to learn about different cultures and viewpoints because when you start working at areas like this, you have to deal with a lot more than you may have been exposed to as a child growing up. So, I think that's a huge part of process.

Moderator O'Donnell: Great. Thank you. The system office bloodless administrator in me quails at the prospect of such a personalized education for 400,000 Californians. I'd have to agree with everyone of you sitting up here that that's where we're pointing but, my god, that's a change from the way we've been doing it.

Other questions in the room? Yes, Deborah.

Debra Humphreys: I had an additional answer to the question about the hard data. In addition to the great answers that were up there. There is hard data out there of a sort. Tony Carnevale, who, you're right, I get frustrated every time he brings out that report out, but he's a very smart economist and he has--he's sitting on some other data that I wish that he would publish but he hasn't. But he did give us some of his slides which are embedded in that economic case that I talked about. And it doesn't measure--there're the fields of humanities and then there's the outcomes that we believe those fields develop and can make the right point that we don't always--we're not measuring that very well.

But he has been working with this big database in the Bureau of Labor Statistics called the ONET database which actually does take all the jobs in the economy and carves them up in terms of the skills that are needed in them, things like written communication or oral communication, critical thinking and blah blah blah. And what he did was he looked at the jobs for which if you--if the job requires you to have the highest levels of those skills, it will also pay the most in. And it's--the ones that do that are all the outcomes that we're talking about. It's written communication curriculum and blah blah blah blah. Now, that doesn't prove that the humanities is the only way to get there, right? But it does prove that to get to the jobs that really pay a lot, if that's what really matters to you, these kinds of things really are important. The other thing that I will say is we are going to do a salary report that we hope is going to do some of probably what Tina is trying to do as well, to just not be just so short-termed thinking. A lot of--the previous ones are just, well, how are they doing a year out? Well, we're going to try to look all the way out. And I'm swimming in the data right now and all I can say is that it is true the engineers make tons of money and they keep taking--they make it all the way to the end. We never--The humanist never catch up with them. But we do close the gap between those who major in humanities and social sciences and those who major in professional, pre-professional fields. That that gap does close over time. And the graduate school has part but not all to do with them. So, there is going to be some more hard data later.

Moderator O'Donnell: Great. Thank you very much. That was really helpful. Other questions or—yes sir.

Kevin Ward: Kevin Ward business and economics here at CSUN. I don't have hard data. I appreciate that response however, but I come from a background myself, two degrees in humanities, one in business. We've come to an interesting time in which business schools have been castigated or in some ways having imbued their graduates with some propensities that have led to the economic crisis. And I remember as a graduate student at Ohio State, one of my professors' telling me money doesn't allow you to buy happiness but allows you to pick your preferred brand of misery.

[Laughter]

Interestingly, he made it out of his five-year term for insider trading a year ago.

[Laughter]

Unless we feel too complacent. I've spent a fair number of years in my career attempting to really bring some of the values in the sense that is acquired from my liberal arts humanities background into imbuing my--the programs I've been associated with, with an emphasis on business ethics, corporate social responsibility, social justice, environmental sustainability and the like. And of course, I found all sorts of stories that run counter to that in the business professions and none of us are immune from that.

But on the flip side, I'm sorry about that lengthy lead in, I--we've been talking about **humanities liberal arts infusing the professional schools and programs** and so on with the things that they bring to the table. And I believe in that hardily but I'm wondering if that is only a piece of the puzzle and if it's really a one directional arrow. My wife is a flutist. She was attending a performance and a lecture by James Galway who --here's the advertisement, I'm a marketer, will be coming to the VPAC. Anyway, a while back in a different state and people ask him questions and at the end, he said, "Now I'm going to answer the one question nobody asked. And that is what should every musician take outside of music?" And he said, "Business."

[Laughter]

Where music people graduate and can't make a living at it because they don't learn those skills. We've

heard in this conference reference to the Gates Foundation. And some of the things that it's doing people like or dislike but attempting to make a difference in education and lifting people up whatever--wherever they are socio-economically around the world. And I'm wondering if maybe we need to step back from talking about liberal arts and humanities affecting positively what we, those of us in the business and professional schools do. And instead ask the broader question, can all of us share the particular skills and priorities and emphases and understandings that we have to better equip our students in all disciplines to meet the realities of the present world and the future world?

Moderator O'Donnell: Really good question. Thank you. So, in other words, stop thinking of humanities and liberal arts as the donor party or the benefactor party in this idea of how do we mix or integrate curriculum. I'd like to toss that question to Jorge.

Jorge Gonzalez: I would be happy to take it. And what you're saying is exactly what the liberal arts is about. The liberal arts is giving our students a variety of discipline knowledge to be able to approach today's problems with--or tomorrow's problems. So, it's perfectly reasonable within the liberal arts to demand that our students have quantitative reasoning skills. They should be able to function in the world. They should know enough science to function in the world. They should know--if you are in a school in which business field obviously, you can bring some business skills into the knowledge. And if not and I'm bias, but I think everybody should take economics, and I think you agree with me. And so, absolutely, and we need to infuse the liberal arts with all the other pre-professional or professional programs that you might have around to give a better run of education to our students. Once again as I started, that is exactly the spirit of the liberal arts that you're going to learn about many disciplines, so when you face a problems that you're going to have in the future, which we don't know what they're going to be, you're going to be able to approach them from many different perspectives. And just a footnote on your first point about the business majors going out and doing criminal acts, I don't think the business majors have the trademark on that one. There's many liberal arts majors have done that too.

[Laughter]

Moderator O'Donnell: Good. We've got time for one more question. Yes ma'am, please.

Joyce Feucht-Haviar: Just making sort of an observation about changes in liberal education over a span of time. There's a bit of a gap between myself and my younger sister. And when I went to school, I was sort of required to take things like economics and history. And the course work really was the conceptual screens of those disciplines. So, it was almost like historiography and by the time my sister went to school, she was picking among a lot of topical issues and after we were both done and we're milling about in the world, it became clear that she didn't know what century it was.

[Laughter]

I mean, she literally didn't know that the 20th century was the 1900s and why that was the case. And she had this really smattering of knowledge. She knew a lot about Civil War but not a lot about history. Didn't really understand colonialism but knew a lot about something else. And when I get feedback from employers about some of those conceptual skills, what they lament is that there isn't that knowledge based underneath it that you can't really analyze issues in the Middle East unless you can look at it from a historical perspective and economic perspective, a cultural perspective. And you're not going to be able imagine or innovate unless you can do that. So, I was wondering about what your thoughts are on the kind of liberal education or general education we offer now.

Moderator O'Donnell: You know, I wonder the same thing. And I'm going to ask Beth to answer this last question. And let me--at the risk of damaging what you just asked, I want to try to rephrase it just a little bit. We've had as an article of faith in the way we organize higher ed at the massive public level where you and I work, which is why I want to ask you this question. As an article of faith that if we had a miscellaneous list of courses divided into areas and students took enough of each, they could piece together the kind of conceptual, like if they knew enough about the Civil War and colonialism in Africa, between that somehow, they would pick up a sense of history. And I'm wondering how are you dealing with this in your college, what do you do to make an integrative sensible whole out of our disparate course offerings?

Beth Say: I think it's a challenge and, you know, we went on these campus. We went through GE reform a decade ago and managed not to kill each other doing it. And to take nine units out of the GE package which was a huge accomplishment. But as we were doing that, I remember the conversations we had about would it be better if we could redesign the whole thing. And again, it comes back to the structure and to the how we're funded and who gets the FTES. And the battles over that made it very difficult to do anything that would be much more--I don't want--maybe creative, but would really sort of challenge the way we structured these things and create a new model for it and I think in a small liberal arts college, it's much easier to make those kinds of changes than it is in a place like Northridge or any of the CSU campuses. I do think one of the things--and it may be that on this campus, our college of humanities is really unique because we not only have all the traditional humanities programs and departments, we have all except one of the university so-called diversity studies. They're all housed in the same college. And so we have a lot of interdisciplinary work going on in our college.

And so, you know, I made mention earlier that we have somebody in religious studies who teaches the cognitive science of religion. We have somebody in philosophy who does biology--the--what was it? Philosophy of biology. Is it--am I getting the name right, I don't know? Anyway, so we have folks who are doing this kind of interdisciplinary work and they teach the class for biology and we do business ethics and we do business communication and so we have these cross-fertilization where we try to say, "What happens when the folks in English teach right in to the business folks and they developed a course collaboratively called Business Communication in Cultural Context?" And so, it's a different kind of business communication course. So, we can do some of that stuff but, you know, to redesign the entire GE package, we would have to be willing to put everything on the table and that's a scary thing when you're--the future of your department and the faculty you've hired and everything is dependent on it.

Moderator O'Donnell: Very good point. Yeah, and I'm--like you, I'm a fan of incremental change in situations like that. There's just--There's little to be gained by firing a gun and starting an Oklahoma land rush for credit hours.

[Laughter]

It just doesn't--it's not pretty.
Please join me in thanking our panelists [background applause] for giving [inaudible].

[Applause]

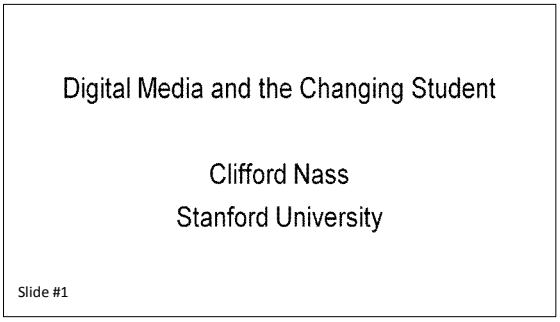
END

Keynote speaker

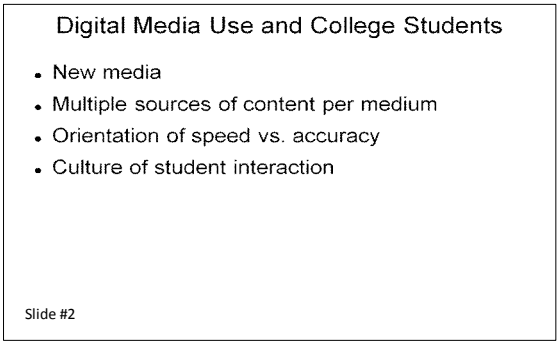
Dr. Clifford Nass: Stanford University: Dept. of Communication,
http://www.stanford.edu/~nass/
http://comm.stanford.edu/faculty-nass/

"Issues of Multi-tasking in the Learning Environment"

Dr. Clifford Nass: Thank you. Delighted to be here. So I've been really enjoying the presentations this morning, which have taken a fascinating look at changes at, for the most part I would say, which are at the structural level. The way the economy is changing, the way schools are changing, the way education is changing. (See slide #1)



What I want to talk about here is the way student brains are changing. So we're going to go a little more micro. We're going to dig down a bit and ask the question, "*In what ways do students think differently than they did in the past*?" which is a different question than what are their perceived economic needs or perceived educational needs.



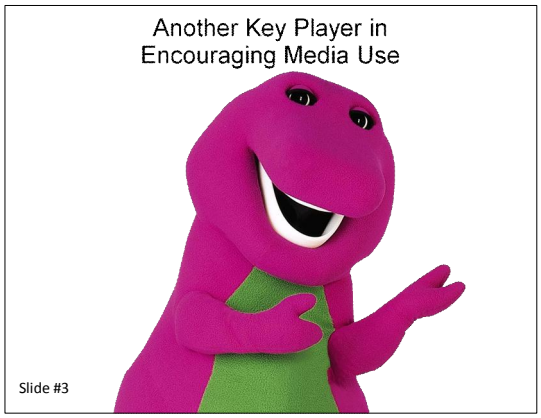
So why would student brains change? (See slide #2) And the answer has been talked about this morning some. One of the key drivers is digital media. So first of all we have new media. All the time there are new technologies appearing. There are new phones. There are new tablets. There are new computers of various sizes and then there are new media of all kinds. So Google glass, watches, intelligent watches, new voice based systems, all of which are changing the way media works and the way people's brains work with those media.

A second significant change is that we now have multiple sources of content for each medium. So it used to be that when you had a medium, you had some technology, it gave you one stream of content, and if you wanted another stream of content you needed a different medium. But now, of course, computers can show videos and audio and music and let you Skype on them and let you text with them and let you talk on them at the same time and it's not just computers that can do that. Cell phones can do that. Other technologies can do that.

A third key change is a cultural change, which is an orientation toward speed versus accuracy. One of the things we hear many professors talk about now is students will ask us something, send us an email or whatever, and expect a very rapid response, and if we don't give a rapid response they send an email again and again and sometimes when they ask a hard question I'll write back to them and say, "well I had to think about the answer." And they will say, "no I just want a quick answer," and I say, "professors aren't in the quick business, we're in the accurate business." It's a cultural change, that the expectation of getting it right versus getting it fast has changed.

Beyond these cognitive changes, which I'll focus on today, I do want to also note the social and cultural changes because one of the things we talk about with residential campuses is the idea that students benefit from being proximate to, living with, hanging out with other students, which I fully agree with, but there's a

cultural change in what it means to be *with* other people. Increasingly the idea of face to face has been downgraded and the acceptance that text or email, increasingly text rather than email because again it's quicker, has taken hold and the idea that face to face, being around all these wonderful kids, is not as necessary today. And I want to point out one of the surprising encouragers of that, someone who for the students of today were probably more influenced than almost any other person, by this person who set the train towards the way people now interact, and that's this guy: **Barney the Dinosaur**.



(See slide #3) Now we usually think of Barney the Dinosaur as a force for good, as a force for healthy socialization among kids. He was extremely popular. He's now retired but for the kids and the kids coming up he was one of the greatest influences in their perception of what social and emotional life was like.

So what I want to do is analyze the *Barney* theme song to see what messages it gave to our students.

Now the Barney theme song for a long period you could not escape. It's started da, da, da, da, da, da and we were all driven crazy by children everywhere singing it, playing it. It was incredibly ubiquitous and it had the unfortunate tendency to stick in your head and you couldn't get rid of it, so please forgive me for going through it again. Now I want to do a critical analysis of the lyrics of that song to see what's really going on. Forgive me I'm known not to have a very good voice.

Okay so it starts, "I love you...". Now stop a minute. Here's someone who's never met you, who has never seen you, will never see you, knows virtually nothing about you but feels comfortable saying, "I love you." Now of course we might say, "but leaders throughout history have said that to their populous, many religions have their leaders saying that," so perhaps it's okay.

Okay, next line. "I love you, you love me,..." stop. Now what Barney's saying is not only does he know his deepest feelings about you, he knows your deepest feelings about him. [audience laughter] Even though again you've never met him, seen him, he's never met you or seen you. So loving someone is a pretty trivial thing to do. [audience laughter]

"I love you, you love me, we're a happy family,..." now stop. Many people worry about the decline of the American family but whatever definitions you thought of "family" it likely didn't include a purple dinosaur. [audience laughter] Also note that we can have familial ties and relations without any contact and without any communication. Again, suggesting that family might be a more trivial concept. Okay?

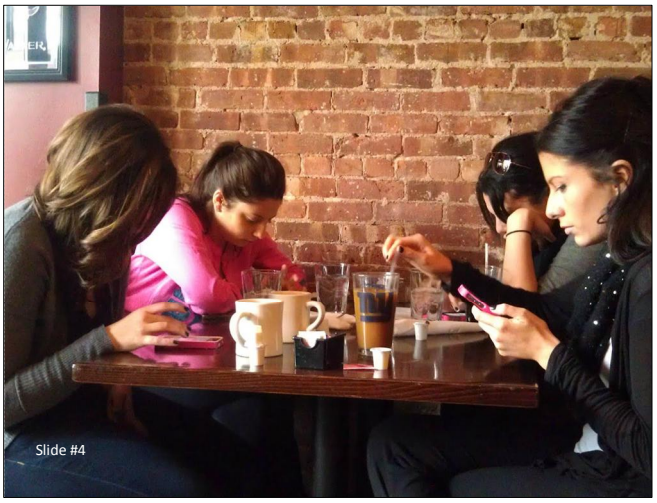
"I love you, you love me, we're a happy family, with a great big hug and a kiss from me to you". Now you might have thought that the reason people like hugging and kissing is its physicality. We hug and kiss because you can touch the other person, but Barney can't. So kids learn that hugging and kissing are now less important, and of course we've seen through our college campuses a decline in dating behavior, perhaps because Barney gave the guidelines. You don't actually have to date to be involved.

So "I love you, you love me, we're a happy family, with a great big hug and a kiss from me to you, won't you say you love me too?" Now let's think about that. Barney's telling us that we should say things that the other person won't hear necessarily. Sounds like blogging. [audience laughter] Sounds like writing comments on blogs. Sounds like posting on Facebook. It doesn't matter who sees it. We're not writing it to

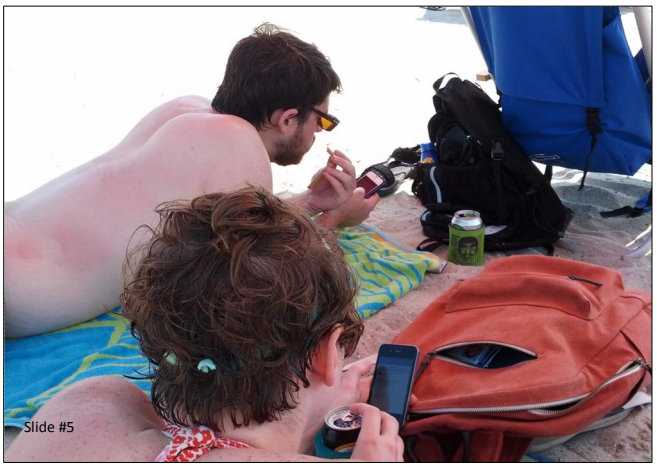
anyone in particular, we're just announcing. [audience laughter]

"Won't you say you love me too?" Okay, the second verse is even more terrifying. [audience laughter] It starts, "I love you, you love me." Then comes only a line Mark Zuckerberg could write in good conscience, "we are friends as friends should be". Now whatever model of friendship you would advocate it likely would not include no communication, no contact, no engagement. So Barney paves the way for a Facebook -like friendship model in which we really don't interact but we merely connect.

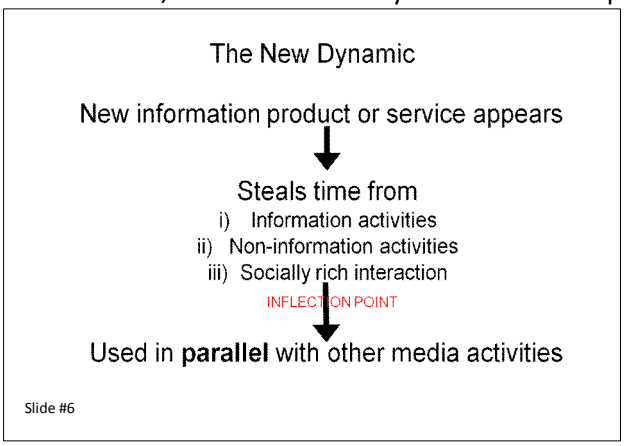
Okay? So I don't want to scare you any further. We'll stop there.
But it leads us to realize that there are really important social dynamics that are playing out, and as we think about campuses with students on them and the virtues of that, we have to think about what we imagine. So we imagine, for example, eating. In virtually every cultural eating is one of the most prescribed set of rituals, and families in virtually all cultures eat together all the time and the notion is that through the meal we instantiate the norms and values, that they're manifested further by deep conversation, so by paying attention to the food and a Levi Straussian view of structural anthropology where the acts of taboo and non-taboo foods, appropriate and inappropriate foods, we instantiate the notion of morals. Similarly through the social engagement as we sit together, we're sharing food, we're reminded of the similarities between us, we build up these incredible strong norms. We build up these incredibly strong ties, which of course can only be helped by this, (See slide #4) by having technology intervene in that event. So increasingly the conversations we see among kids are not conversations but rather a disjointed thing.



Now it also applies to our physical lives, the raw physicality of life. So take for example the beach. Think of the beach. The wind, the smell of the ocean, the feel of the sand on your feet … obviously enriched by phones. (See slide #5)



Okay? So the disconnect between the physical world and the real, and the world we, kids are especially inhabiting, means that the notion of a physical place may become less important. You know when I say may become less important, it is not that it truly becomes less important but it is perceived as less important.



On top of all these trends, technological trends, cultural trends, there's another hugely important dynamic, that answers the question, "*is this just a fad, or is this something that's going to continue to happen*?" And that's the dynamic of partial media displacement. (See slide #6) The theory of partial media displacement was proposed in the 50's, it turns out it's been working well, it's been a great predictor since the

middle or late stages of the Industrial Revolution and continuing to the present, and the theory of partial media displacement goes like this.

Whenever a new information product or service appears, the first thing it does is very obvious. It steals time from other information activities. There's a time budget, an information time budget and new technologies steal from the old. So, movies stole time from books, radio stole time from movies, television stole time from radio, computer games stole time from television, the Internet stole time from computer games, etc., a very logical, natural progression.

But the critical dynamic that makes partial media displacement so powerful is that media doesn't just displace time from information activities. Media also displaces time from non-information activities, which means that every time a, a new media product or service appears, it steals time not just from your information budget but from your non-information time budget, and it also steals time from your socially rich interactions. It takes time away from face to face communication and puts it into media.

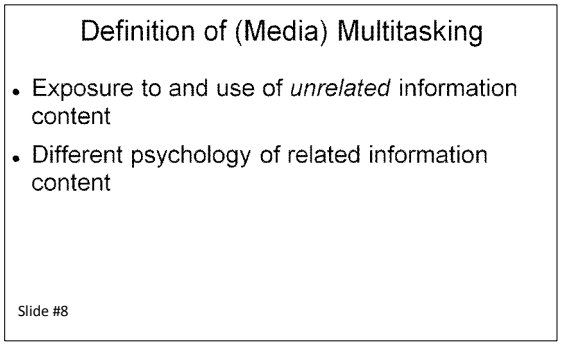
Now let's imagine then a day planner, we have a day planner, and we have some time for information activities, some times for non-information activities and every time a new technology product or service appears it steals more and more time for non-medium, socially rich interactions until there's no more time to steal. That becomes a point of inflection. What happens when there's no more time to steal?

At that moment, which happened for teens around the 1990's, it happened for adults sometime in the 2000's, there was no more time to steal from these other things. At that moment we hit a crossroads and we could have gone in one of two directions. One was we could've said, "okay, no more partial media displacement. When a new medium appears I'm either going to use it and throw out some other media activity or I'm going to not use it and keep with the media activities I have." That could have happened but it didn't.

Instead what happened was we'd started using media in parallel. We started double-booking media and then triple-booking media and then quadruple-booking media, so the drive towards multi-tasking is really the horizontalization of media use. Horizontal rescheduling in your day planner where the amount of time you have has become so small, you didn't want to give up using new media so you started using it in parallel. That is the dynamic that has created multi-tasking. A dynamic that's created that in the classroom. A dynamic that's created it when people are using the technology. A dynamic that's created that when people are at dinner and using media.

Okay, so that's a critical trend. **So the new trend, the new dynamic force that's affecting our kids more than any other is media multi-tasking.** (See slide #7) The use of multiple media at one time.

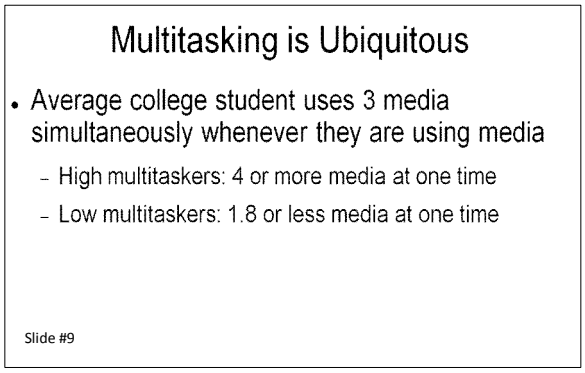
But to be precise it's not just use of multiple media, (See slide #8) it's the use of unrelated information content.



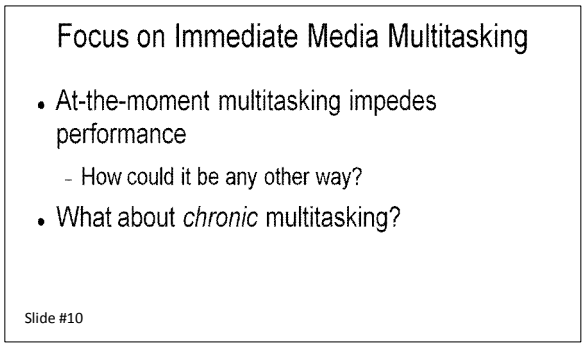
So it's writing a paper while you're texting with friends, while you're reading Facebook, while you're watching a YouTube video of a cat playing a piano, that. It's not what we used to think of as

"oh, multi-media will help us because you could listen to a speech by Abraham Lincoln while you read the notes of Abraham Lincoln, while you saw the picture of Abraham Lincoln"'; no. That integrated type of thing is what we thought would happen but did not. Instead what happened was we now read about Abraham Lincoln while we're also playing a game while we're also consuming something else.

It turns out that for your brain there's a totally different psychology for related media information. That turns out to be very good for your brain. If you integrate related things and there was a talk earlier today on the panels about the value of integration, integration is not just good for society, it's not just good to be an effective worker, it's good for your brain. If you integrate things in your brain you develop more neural connections and it's very, very good.



But I'm talking about the dominate mode which is not that. The dominate mode is unrelated streams coming at you constantly. How common is this? (See slide #9) **The average college student uses three media simultaneously whenever they are using media, on average**. They are never just reading a book, never just even watching television, never just doing a problem set, they have three media. And the top 25 percent, which we call the high multi-taskers, use 4 or more media whenever they are using media. And even the bottom 25 percent still use 1.8 or less. Very, very, very few kids use one media all the time, but even two media is extremely uncommon.

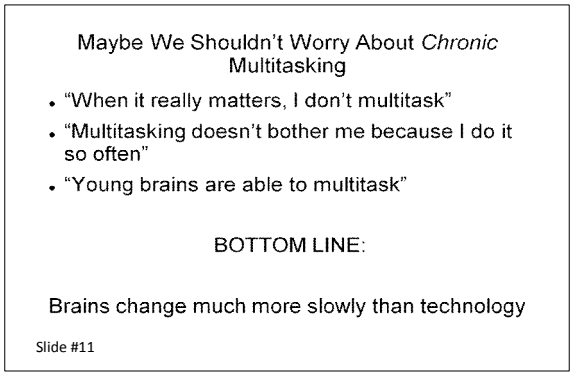


Okay. Now what happens? (See slide #10) Well if you look at the performance of at-the-moment multitasking, when kids try to do multiple things at once, the answer is it impedes performance. There's an enormous number of studies on this and there's actually no contrary studies. If you try to do two things at once, you do both slower than if you did them one at a time. Period, end of story, for information tasks. For physical tasks it's a much more complicated story but for information tasks it is unambiguously clear. How could it be any other way? So for example if you're watching CNN and there's a little feed at the bottom, you know, running along or ESPN for those sports fans, that makes you both not remember the content you heard on the big screen and it makes you not remember the content you learned on the little screen. So you're forgetting both. So it undermines both. Even though you feel like you're getting, "oh, I'm getting two things at once"; you're actually getting a half thing net.

Okay, so, but of course it has to be that way. The working memory, basically humans have about three chunks of working memory. We have more in short term memory, we can move things in and out of working memory rapidly, which of course we do, but there just isn't the ability to do more than one information task at one time.

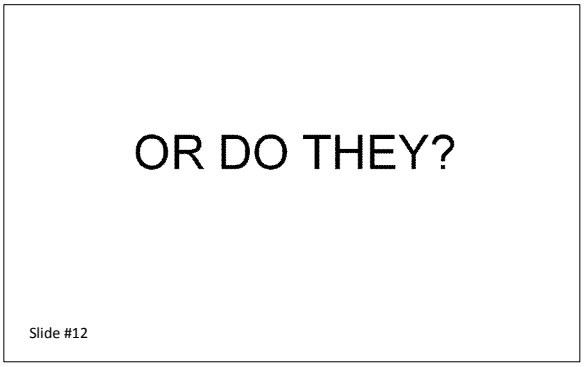
That's so established and so simple we'll often say, "I will not allow students to have laptops in my classroom" or "I will not allow students to have a phone in my classroom or text in my office." The number of media grows; the list of things you have to ban gets bigger and bigger all the time. But you just say, "hey, I really want you to focus. It's bad for you whether you know it or not." That's totally fine but I'm more interested and more concerned about the deeper and bigger effect of chronic multi-tasking.

So if we ban laptops in the classroom, the other 23 hours a day the kids are multi-tasking. What are the effects of that on their brain? What are the effects of that on their social and emotional lives? That's the question because that's what we can't control. We can control our classroom but not the other 23 hours and that's the hours that we as college faculty, college administrators, etc., have to live with. We have to live with the brains of these students. So what is happening to their brains? Okay?

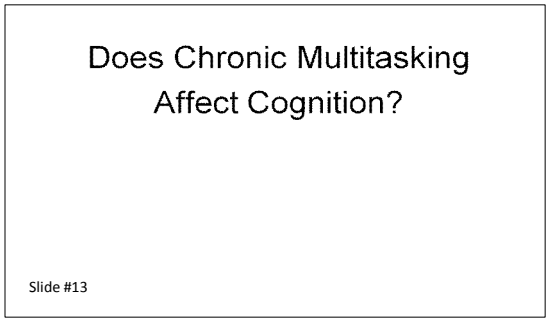


Now when I ask my students-I lived in a freshman dorm for seven years, I just retired a month ago, not from teaching just from being in a dorm -- and when I would ask my kids in the dorm about this they'd say things like this. (See slide #11) "When it really matters I don't multi-task." "Yeah sure I multi-task when I do stuff but when I have a really hard, you know, physics assignment and it's just super complicated I don't multi-task." Or, they'll say, "multi-tasking doesn't bother me because I do it so often I've gotten good." It's like eating or smoking: If you do it a lot if doesn't bother you more if you do more of it. But that's false. And then my favorite is "Young brains, Professor Nass are able to multi-task; you, dot, dot, dot… okay? So let's see if that's true. Is it in fact the case that young brains are resilient just as young bodies are so much more resilient but older brains cannot?

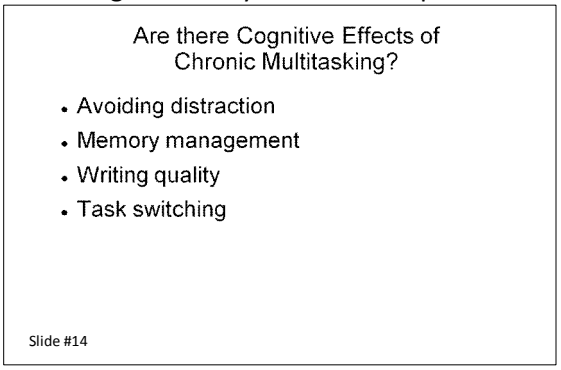
Well there's a principle underlying this, which is the bottom line principle: brains change much more slowly than technology. This has been a truism in the field of both the psychological and social sciences and in the view of technology. And in fact when I decided to switch from being a computer scientist to a social scientist, I thought, "man, it's just so hard to track new technological innovations all the time, but brains are brains are brains. They've evolved for 100,000 years, they don't change, it's much easier to study them. I'm going to take the easy route and study humans and their brains."



So this was the bottom line, this influenced by own thinking about what I did, it's influenced the social and technological sciences, but let's see is that really true? (See slide #12) Is it true that brains change much more slowly than technology does?



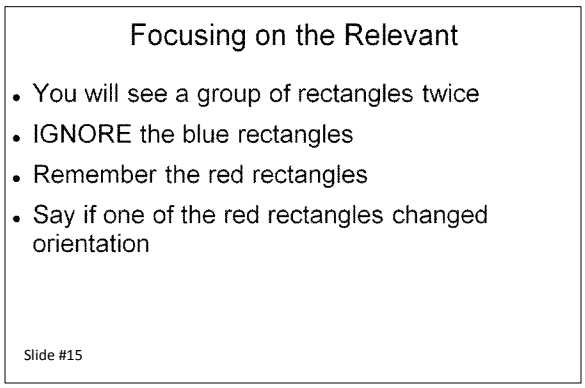
So what I'm going to do now is give you some tests that we've done with the students. I'll ask you to take them as well. You'll only take a small version of them but they'll give you a flavor of the things that technology has changed the way students can perform at. (See slide #13)



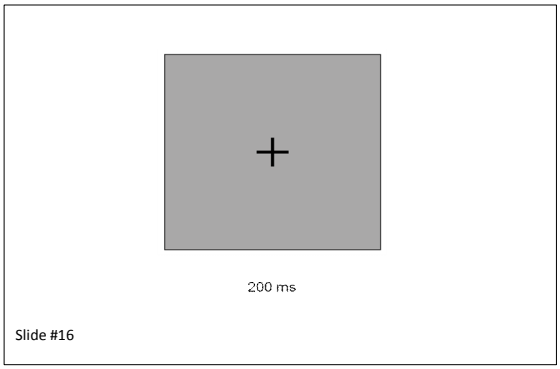
Okay. I'm going to look first at the ability to avoid distraction. (See slide #14)

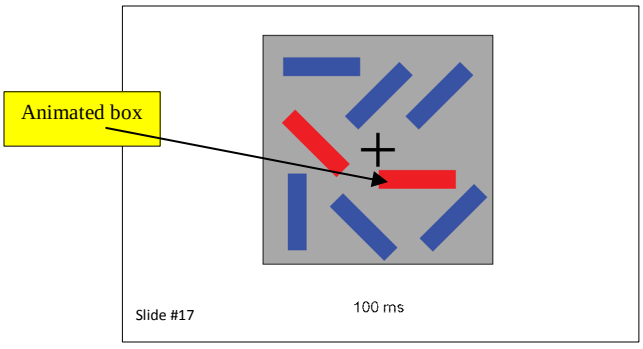
Clearly whatever else deep thinking requires, it requires the ability not to be distracted. It requires the ability to pay attention, and

paying attention was for a long time one of the most valued, cultural values, we'll talk a little later about how that's changed. Second is managing your memory. As I mentioned you only have three bits, three chunks, of working memory so we have to be able to move things in and out of memory very quickly. Third I'll talk about something that everybody's been worried about for a long time, writing quality. Do our students write well? Can they write appropriately? And then last I'll talk about the one case where you might think multi-taskers should really be brilliant and that's switching from one task to another.



Okay? So let's start digging into the tests. Here's the first test. (See slide #15) This test seems like it should be able to be done by a kid seven years old or older, okay, but we'll see. W hat you're going to do is I'm going to show you a group of rectangles twice. I want you to ignore the blue rectangle. So in this case I'm telling you what to ignore and I want you to focus on the red rectangles. And to make it easier for you there may be a bunch of blue but there're only going to be two red rectangles, only two that you have to pay attention to. To make it even easier between the first picture and the second picture, the rectangles aren't going to move. All that's going to happen is one of the rectangles is going to rotate. And all I want to know is did one of the two red rectangles rotate. I don't care about the blue rectangles. All I want to know did a red-sounds like seven, seven year old, eight year old? No sweat okay? So let me show you what it looks like. (See slide #16) So there's a 200 millisecond to clear your eyes.

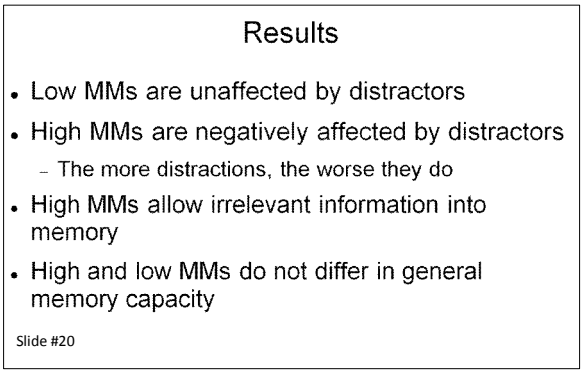




Okay now I'm going to show you a 100 millisecond picture then I'm going to show you a 900 millisecond blank screen basically and then I'll show you the second picture. And what I want you to do, as fast as you can, tell me whether one of the red rectangles rotated. Okay? (See slide #17) [The screen flashes and for a millisecond the red triangle on the right shifts.) Did a red rectangle rotate? Yes? Very good. It did. Here's the, that horizontal rectangle rotated, excellent. So you guys did great. Well done. If you didn't do well that's okay. [Note slides 18 and 19 were omitted]

We like you anyway, but let's see what happened. (See slide #20) Let's see how the college students did. The kids who multi-task, who don't multi-task, who rarely multi-task, the low multi-taskers, were unaffected by the number of blue rectangles; zero, two, four, six blue rectangles, no difference in performance at all.

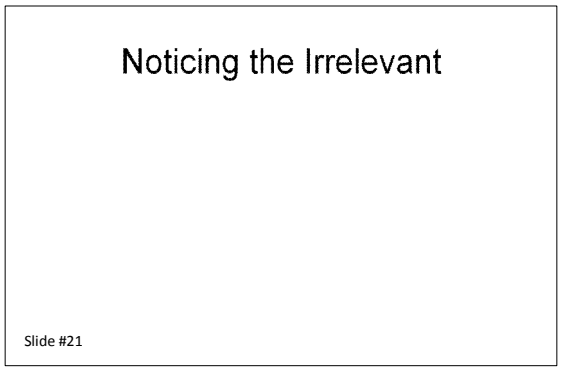
What about the high multi-taskers, the top 25 percent? They were crippled by the blue rectangles. The more blue rectangles the worse they did. When there were six blue rectangles they were swimming in a swarm of stuff that they weren't supposed to



look at but it was distracting. How could they resist? So their performance declined dramatically compared the low multi-taskers. The more blue, the worst they did.

So high multi-taskers let irrelevant information to memory: they like it in there. Okay? It's not a general memory capacity difference. High level multi-taskers have the same general memory capacity; it just turns out the high multi-taskers allocated in a dumb way. Okay?

Here's the second test. (See slide #21)



In this one I'm going to ask you to watch a movie. See slide #22) If you've seen this before please don't say anything. I'm going to ask you to watch a movie and I want you to tell me how-this is a basketball movie. Its six people. Three in white uniforms, three in black uniforms and I want you to tell me how many times the players in white uniforms pass the ball to each other. Okay? So this is simply a movie. It's about a minute and 20 seconds. How many times did the players wearing white pass the ball? I won't say anything. Just count the players in white.

See video:

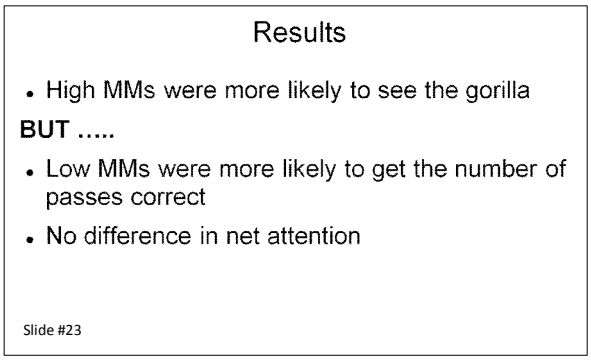
"The Monkey Business Illusion"
Daniel J. Simmons
2010

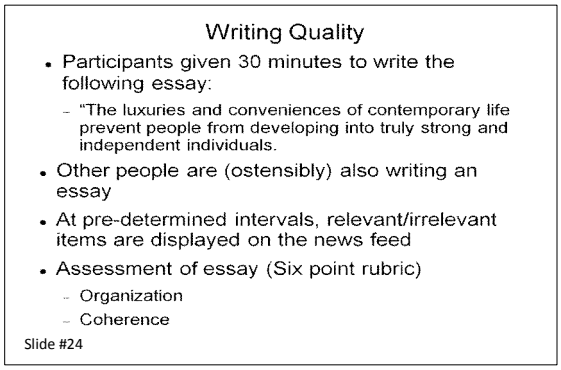
www.youtube.com/watch?v=IGQmdoK_ZfY

[Silence as the clip was viewed]
Okay excellent. How many of you got 16 passes? [Clapping]

Excellent. I won't ask who didn't get 16 passes. How many of you saw the gorilla? What gorilla says the half that didn't see the gorilla? Let me just show you that because I feel bad. Let me see if I can zip this ahead. [Re-view the video] Okay so here they are starting to pass the ball, here they are passing the ball [laughing] this guy walked, did this, right, the people who saw it, it did happen right? Okay, walks off, okay, kept going, okay. Alright great. Okay. How many of you saw the gorilla? How many of you saw that the curtain changed color? Very good, and how many of you noticed one of the players in black left? Good, okay. [laughter]

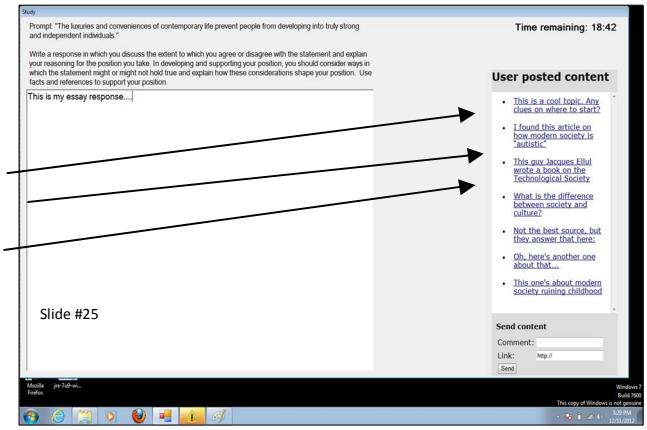
(See slide #23) So, high multi-taskers were more likely to see the gorilla. Good for them. They were looking where they weren't supposed to and saw the gorilla, but they counted the number of passes wrong. So when we tell them what to do they don't do it. They do something else, which is to say the least a challenge for learning outcomes. Right? No difference in net attention, it's the high multi-taskers are more likely to see the color change, more likely to see the player in black go away but less likely to count the number of passes correct which is really what we wanted them to do. Okay? (See slide #24)





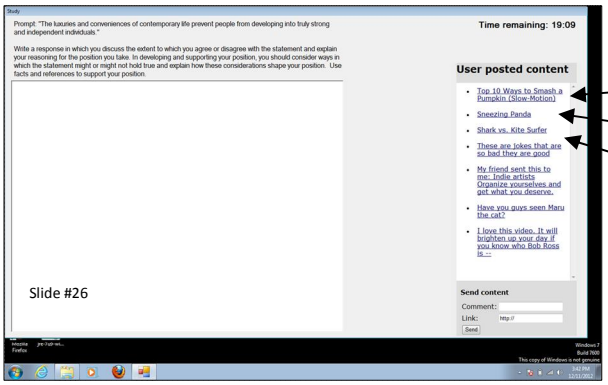
So now let's see how this plays out in writing because we all

care deeply about students writing essays. We gave students 30 minutes to write the following essay that's from the GRE. "The luxuries and conveniences of contemporary life prevent people from developing into truly strong and independent individuals." They were given 30 minutes to write this essay. They were alone in a room with a computer. We told them that other people were writing the same essay and we told them that they could cooperate with each other, that the other people we said you can't because your was broken, it wasn't, but we said the other people will be able to send you comments, which you can look at or not as you wish when you write the essay. What we did was at various intervals we were a little comment pop up, much like a text, getting a text message, extremely common among students who have text windows up constantly and Facebook open constantly. And we then graded the essays on a six point rubric, three points for organization, three points for coherence. So here's what it looked like. (See slide #25) They were given something that looked like this. It was the thing we said. This is where they type in the response and now let's look at what the comments were. [Pointing to the slide on the screen.] "This is a cool topic. Any clues where to start?" "I found this article on how modern society is 'autistic'", "This guy Jacques Ellul wrote a book on Technological Society."



Slide #25

Relevant comments aiding them in the essay, however, in real life what did the comments look like? [Pointing to the slide on the screen.] (See slide #26)

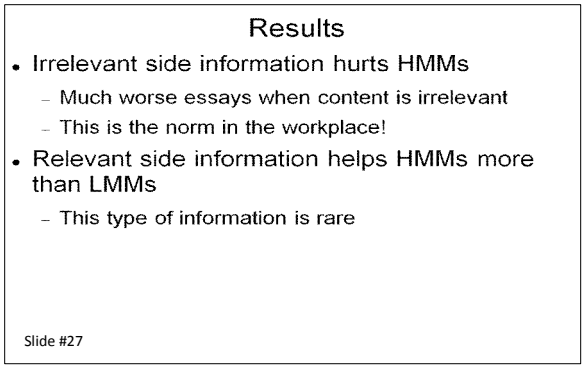


Slide #26

"Top ten ways to smash a pumpkin."
"Sneezing panda…"
"Shark verses a Kite Surfer"
…these are jokes…right?

Most of the comments, most of the texts kids are getting are not about complex societal issues; they are about smashing pumpkins, kittens, etc.

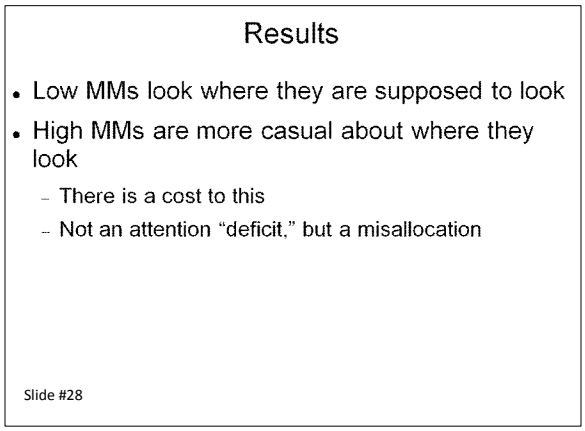
So does this make a difference to how they write essays? (See slide #27) The answer is that irrelevant side information, which is the dominate form of information that kids get, messed them up. When they got it, when the high multi-taskers got irrelevant content, it was crippling to them. They did much worse. And note, this is the norm in the workplace; this is the norm in our schools especially for college students because they aren't really collaborating, sending stuff back and forth, they're sending junk back and forth, which is okay because they're kids, but it clearly impacts them and it hurts the high multi-taskers more.



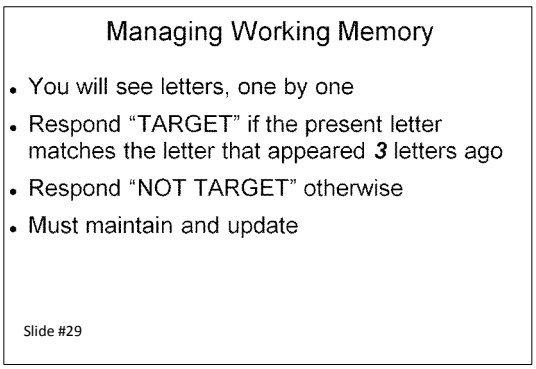
Slide #27

Ironically they were helped some. High multi-taskers were actually helped when they got the relevant comments. Why? Because they were distracted into-they didn't want to focus on the essay but they were distracted into useful information. So it's a rather odd finding but it makes sense. They have no filter for

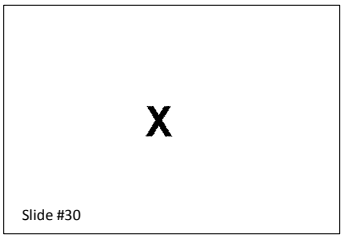
distraction. So, if by some miracle we can give them good distractions then they do better, but that of course is much tougher than doing bad distractions.



(See slide #28) So fundamentally what happens, low multi-taskers look where they're supposed to look, high multi-taskers are more casual where they look. They look all over. So for those of you wondering about is this related to attention deficit disorder, the answer is yes in one sense, not in another. The sense in which it is not is that is it not-when people say there's an attention deficit it doesn't mean that your net amount of attention is less, it means you're putting attention not where you're supposed to. So kids with attention deficit look just as much as kids with attention deficit, they just don't look where we want them to look or where it's socially appropriate to look or where it's useful to look, but they look.

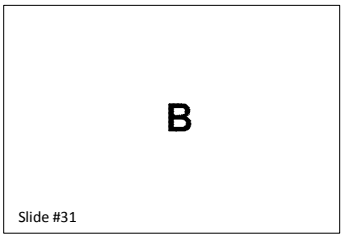


So next one. (See slide #29) So that's attention. So they're just as distractible as can be. Now the next question is can they manage working memory? We only have three bits of working memory so you would think that a high multi-tasker would be critical to be able to shuttle information in and out very rapidly. So I'm going to ask, give you that test. You're going to see letters one at a time. I want you to say target if the letter matches the letter that appeared exactly three letters ago. So what do I mean by that? If I said A, B, C, A, that would be correct because that was exactly three letters ago there was another A. If I said A, B, A you would say no and if I said A, B, C, D, A you would say no because it wasn't exactly three. Make sense? Okay, alright, let's start.

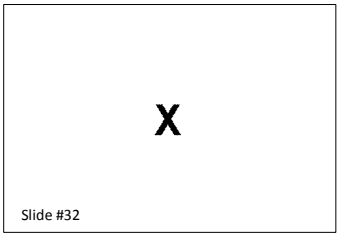


[Pointing to the slide on the screen as the following slide are exhibited in order.]

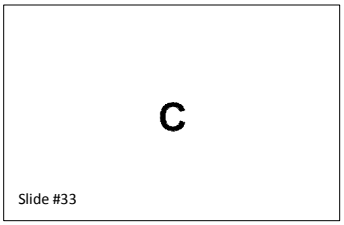
So, no because it's the first letter.



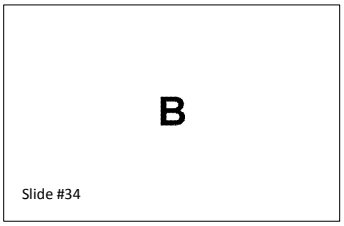
That was pretty easy. [moving objects of the screen]



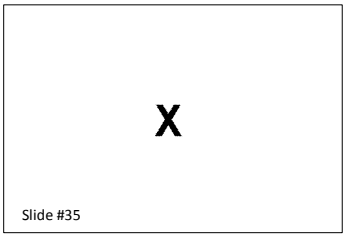
No, very good.



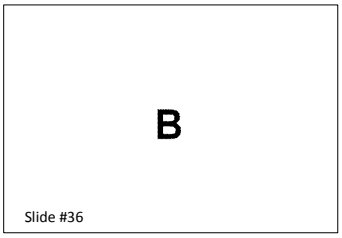
No,



Good, yes,



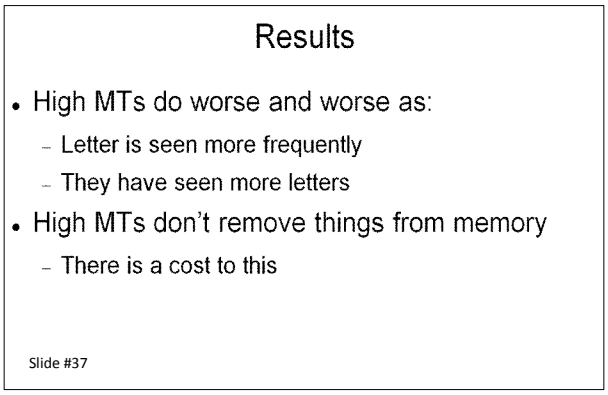
Yes, good.



I don't remember myself. No, okay.

[The above sequence repeats in a quick brief succession.]

Alright so imagine getting this stream of letters, it's hard, it's challenging but what happens? The low multi-taskers do fine. They don't do, no one does brilliantly on this, but they do fine. The length of the time doesn't matter to them, they do just fine.



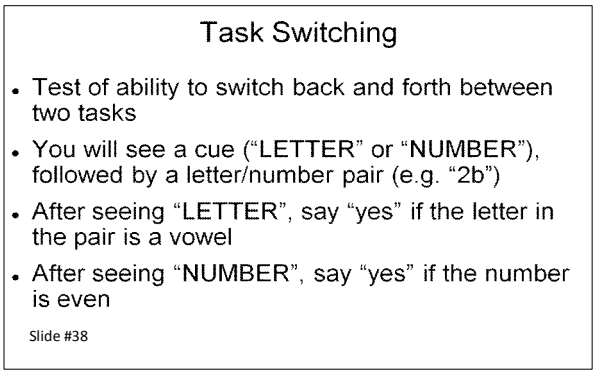
(See slide # 37) However, the high multi-taskers do worse and worse the more frequently they see a letter and as they've seen more letters. And the particular way they do worse is they keep on thinking they saw the letter three letters ago.

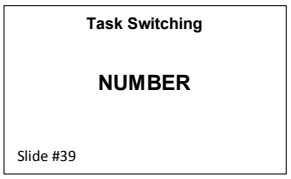
You can imagine it is, people having filing cabinets in the brain but the high multi-taskers sort of, their cabinet, their filing cabinets are over flowing and they're putting in the wrong one and then they say I better put it in all of them because I don't know which one and da, da, da. They just fill their brains with stuff.

So not only are they distracted, they hang on to their distractions making them even less able to perform. So, high multi-taskers just don't remove things from memory.

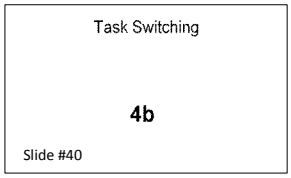
Alright, I'm going to give you one last test. (See slide #38) This is the one where you would have guessed if there was anything high multi-taskers would be good at, would be *switching from one task to another*.

So we're going to do that. The way we're going to do this is a little more subtle than the others. What you're going to do is you're going to see the word "letter" or "number" followed by a letter number pair like 2B or G9. If you see the word **"letter,"** then I want you to say "**yes**" *if what you see is a vowel* and "**no**" *if it's a consonant*. If you see the word **"number,"** I want you to say "**yes**" *if it's even* and "**n**o" *if it's odd.* Does that make sense? So basically you have to either look at one or the other. This is-n't really a distraction task because with two objects distraction's an issue, but what I'm going to do is I'm going to do something like "number," "number," "number," "number," "number," "letter" and you're going to have to go "ah, I have to switch." It's called the switch task. [Pointing to the slide on the screen.]

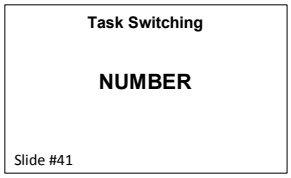


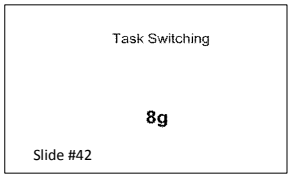


So let's see what it looks like. Ready?

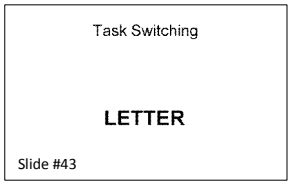


[audience response]
"Yes"

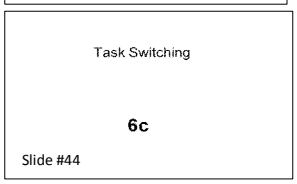




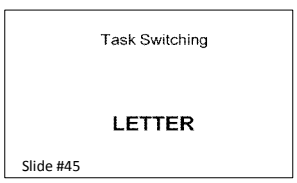
[audience response] "Yes"



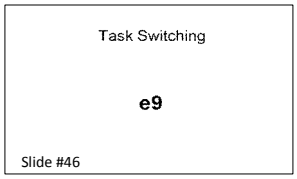
[silence]



[audience delayed response]…"No"
Yeah, see you had a pause because you had to say wait, I've got to do letter now.

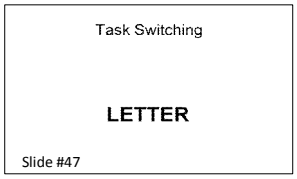


Okay?

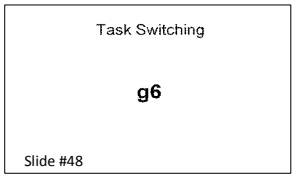


[audience response] "Yes"

Yes because it's a letter and it's a vowel. Good.

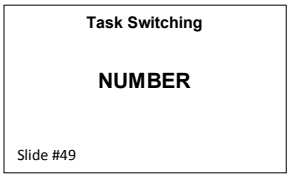


[silence]

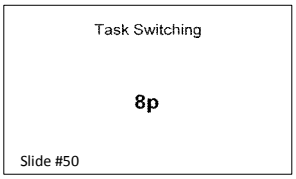


[audience response] "Yes"

Good



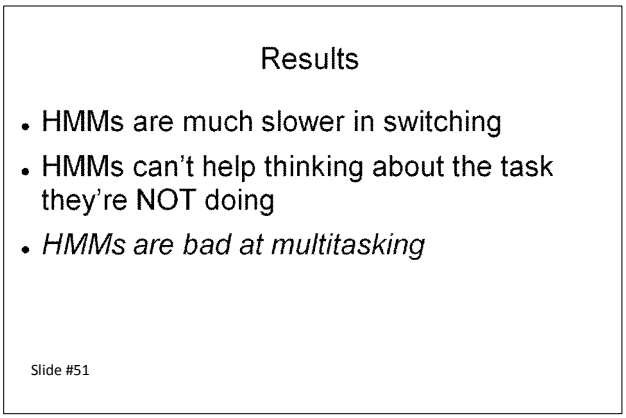
[silence]

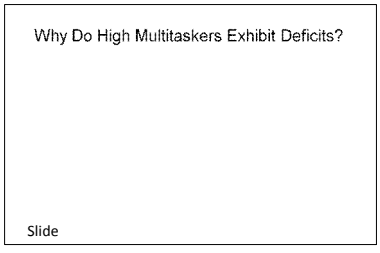


[audience response] "Yes"

Yes it was switched again.

It turns out that, amazingly, high multi-taskers are worse at switching from one task to another. (See slide #51) The one thing you would have thought they would be good at, they're bad at. They can't even switch as fast because they can't help thinking about the task they're not doing. Their brains just fill with stuff and they can't separate the wheat from the chaff. They like the chaff, the wheat, whatever connects the wheat and the chaff, the stalk, they like everything and they want it all in their brains but there's a cost for that. So the great irony is that high multi -taskers are bad at multi-tasking. The things they do all the time they're bad at.



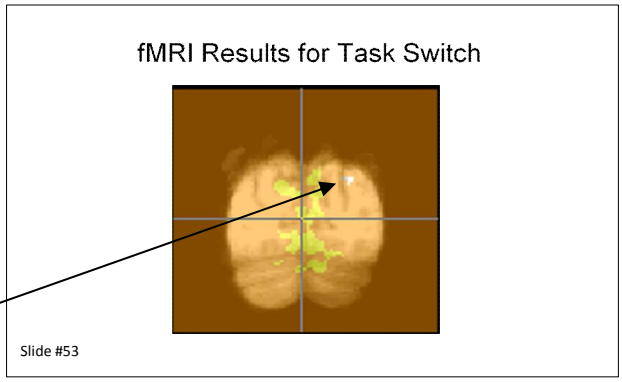


Now I've been promising you the brains. So this is the way when I was young psychologists looked at the brain, we watched what people did and we de-duced things about the brain. Nowadays you've got to look at the brain. It's a real strange change for me. (See slide 52)

So what's going on in their brains is summarized here.

(This is functional magnetic resonance imaging. It's a brain scan where we look at what parts of the brain are activated during various things. See slide #53) This is a view coming from the top. Unfortunately this is

the left and this is the right. Sorry it's backwards, from you, left and right. This is coming straight down on the brain. This is the front of the brain. This is the back of the brain. Okay?

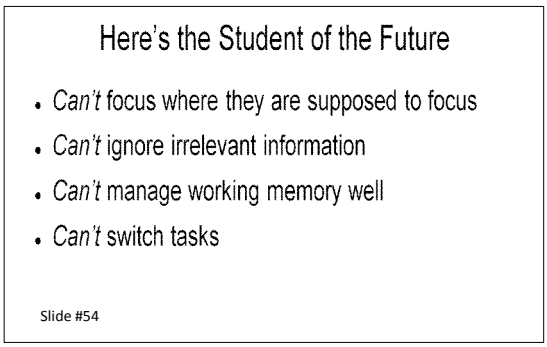


So this is a summary of the averaging of all the brains we looked at. Half of those brains were high multi-taskers, half of those brains were low multi-taskers. If you had done this study around 2003 when you looked at the task switching thing I showed you, you would have seen a little white dot right here in the left pre-frontal cortex. It's called the stopping mechanism. It's what your brain uses to stop a task and start another. It's the key to multi-tasking. These were the brains of everyone when these studies were done in the early 2000's. It is now the brains, still, of low multi-taskers. So quite logically low multi-taskers brains look like previous brains. High multi-tasker brains look like this, the yellow, that's the extra brain activity. So this white is the extra brain activity used by the low multi-taskers. This is the extra brain activity used by the high multi-taskers. Notice this is about 20 times more brain activity.

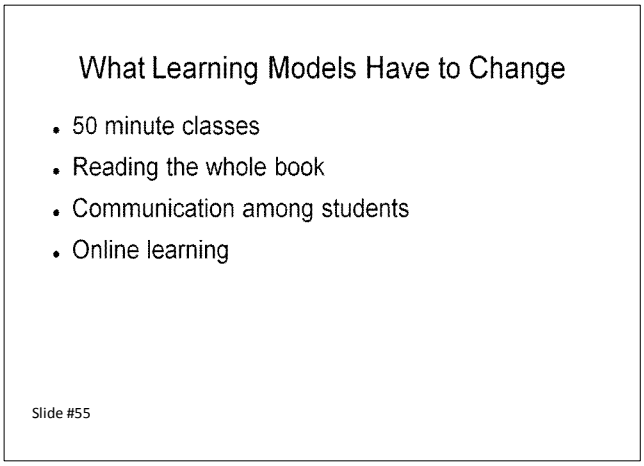
Now, my goodness, with that much brain activity they should rock and roll, they should be incredibly fast, they're mobilizing their brain to solve this problem. Wrong.

They're mobilizing their brain to look around. This turned out to all be part of the visual cortex. So now you have to picture the scene. You're in a dark metal tube, you are strapped down, your head is in a vice, there is a single screen right above from you that is just …[low audio], do you guys see it? There is nothing else to see because it's all black and you're locked down. Every time there was a switch, the multi-tasker said "great, an opportunity to frantically look around." And even though there was literally nothing to, I mean nothing, like black, they looked around frantically whenever they were given the opportunity to. That's the brain of high multi-taskers.

And high multi-taskers right now are 25 percent of the population but do any of us think that number's shrinking? Or what is more likely is that the low multi-taskers are going to become high multi-taskers over the years.



Okay, so here's the student of the present and especially the future. (See slide #54) They can't focus where they're supposed to focus. They can't ignore irrelevant information. They can't manage a working memory well and they can't switch from one task to another. Teach them.



(See slide #55) Well it's going to be challenging and it means we're going to have to think a heck of a lot differently about a lot of things that we've been trying to think the same way about.

For example, *50 minute classes* are unmitigated torture

because there aren't enough opportunities for distraction. They can't focus for 50 minutes.

Reading the whole book. No, I mean it is remarkable, I mean you're all laughing which is both good and sad. When we were, when, I'll speak for myself, when I was in college and likely when many of you were in college, we would assign books and increasingly we assign pieces of books, and even more frighteningly and annoyingly students think that is the same thing.

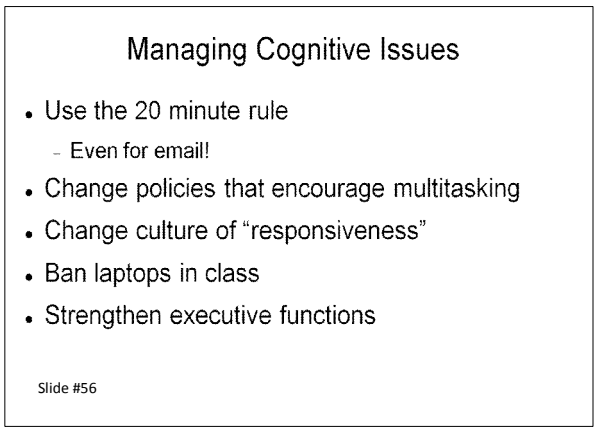
So I had a student come up to me the other day and go, "Professor Nass, I loved your book." I said, "thank you. Which part did you like the best?" He said, "well I only read chapter one." And I said "well, what did you mean you liked my book?" He said "well, chapter one." I said, "you know it's funny when you write a book, you sort of write many chapters and you figure people will read them," etc. and it didn't seem to make a dent. So increasingly we're not assigning the whole book, we're assigning pieces. Why? Because kids don't think, can't think, in the ways that sustained focus demands.

Communication among students. If students are not really looking at each other in the face that tells us that it's much harder to argue for dorm life. In fact one of my favorite, or depressing stories in the dorm. I was in the dorm. Again, I lived in a freshman dorm for a while and I'm looking down the dorm and I see one of the kids and I say, "oh, what are you up to?" She says, "I'm texting Fred." I said, "oh, I just passed Fred like a second ago." She said, "I know." So I said, "why are you texting him if he's like two doors down?" So she pauses and says, "it's more efficient." So I said, "look I live with freshmen. Efficiency is virtue number 873 for freshmen. Freshmen never think about efficiency. It cannot be efficiency that's driving this behavior." Then she said, "well, you know it really doesn't matter whether you see the person first face to face." I said, "well, I have to tell you this story. Last year I had the worst thing that can possibly happen to anyone. I went to my 35th high school reunion and I met a woman who gave me the love letters I had written her 35 years ago. It was so...fortunately I was a scientist so I could read them; otherwise it would have been impossible. And I read these love letters and I told her, I told the student now, I said, "they were filled with, because of course we didn't have internet, we didn't have Skype, we didn't have phones, there was one phone in the whole dorm, right, and everybody could hear what you say so you couldn't call and we had long distance charges, again, a concept you don't know." And I said, "you know we couldn't see each other, we couldn't hear each other so the notes are filled with how difficult it is not to see her face, not to hear her voice, how hard it was to know what she was thinking and feeling and this was clearly an important thing." And she said to me, "that's so quaint." I said, "you know, it is I suppose but on the other hand I said there's a large area of psychology called like face identification, face recognition, emotion detection, etc. all of which assume that seeing another person might be important."

But then I thought about Barney and thought maybe not. So it's really a challenge and one of my favorite examples is online learning. So approximately three times a week I get an email from someone who says, "should I ban laptops from my classroom? Should I ban computers from my classroom?" And I say, "well you know here are the tradeoffs and stuff." I said, "you know, but the real question is should we ban computers from online learning?" Now think about that, right? We can barely get kids to pay attention to us when we're standing up here dancing, singing, doing all this stuff and what do they do, they want to use the computer. So now we say here's a solution to prevent them from using the computer. Let's put all our classes on computer. I bet when they're, you know, when they're studying and taking an online class they're not Facebooking, they're not just, you know they're not doing YouTube, they're not doing all this other stuff, just like when they write our papers and do our assignments. They're ruthlessly focused on the material at hand.

Okay? The fact you're laughing means there's something really problematic about online learning that peo-

ple aren't facing, which is simply that when you put kids in front of a computer the first thing they want to do is not learn. They want to text, they want to communicate, they want to have fun. That's all okay, it's perfectly okay but it means that if our models are kids are going to be much more focused in online learning because, I don't get it. We have to think about totally new ways of designing things if we recognize the fact that kids, you give kids a computer with an internet, they're not looking at one thing at once. And yet that's our model for online learning so we're really going to have to think about that.
How can we help kids then to manage this information? How can we teach them? Well it's very, very hard, it's very hard to get kids to change but here's some things that even if your kids don't do you can do at least and help yourself.

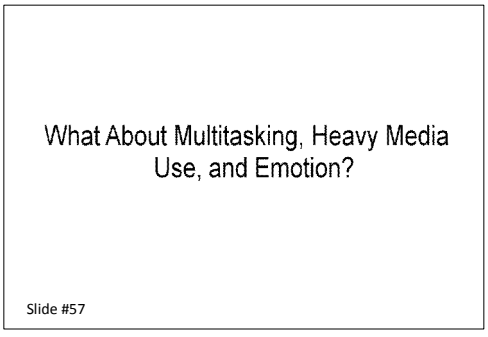


(See slide #56) The first is to use the *20 minute r*ule, which means when you're doing any information activity try to do it for 20 minutes at a time. Try to focus, even for email.
So it's very funny, I go around to companies all the time and they say 20 minutes of email, that's the most ridiculous thing. Email is stupid, annoying, worthless, takes up all my time, it's just ridiculous. Who would spend 20 minutes on email? So I say, "fair enough. " Please clock how many minutes you do email tomorrow. They'll come back and go oh, 200. I said, "well I thought you said it's not worth 20?: They said, "but yeah when you do it one minute at a time it doesn't feel so bad". I said, "yes but it hurts your brain and it makes you less productive and the fact that you're switching all the time means it takes more minutes to do email." So in fact the little drips and drabs actually slow you down and make you put more time into email. So when people say email ain't worth 20 minutes, you ask them how many minutes it is worth and if the answer is 200, there's something broken.

Second one is *change policies and encourage multi-task*ing. This is at least for, increasingly for businesses, the environments our kids are going into, people are demanding that people have, in the workplace, text windows open all the time even when they're trying to get work done, etc., and it's just highly distractive.

Change of culture of responsiveness. One of the reasons kids multi-task is the idea is they should do something right away and I say to the kids in my dorm, I say, "look, you know, sure you can do it right away but if you actually did it when you were really thinking hard you could give a better answer." And their answer is "nah, it's quick, it's good." So we need to change that culture of responsiveness to support kids.

Fourth is to, in fact, *ban laptops in class*. It really does make sense or at least tell the kids the consequences. You know, ban them, say, "look it has short term effects and it has long term effects and if they don't believe it one thing we're doing is building a website so all the kids who say oh, multi-tasking, I can multi-task, nothing affects me, can actually go on a website and see and you won't be surprised to learn whenever you get a kid to do that, they discover that they're actually very bad at it."



And finally *strengthen executive function*. There's all sorts of ways we're looking at. It's still a challenging question. How can we get kids-executive function is the things I just tested you on; the thinking, switching etc.?

Okay, let me just very briefly mention the impact of multi-tasking on emotion. (See slide #57) I'll go through this very quickly because I

want to leave time for questions.

(See slide #56) Basically, to make a long story short, *multi-tasking has negative effects on kids' emotional development*, and the reason is that if I'm, the way kids learn about emotion, when you're young, is by looking at other people.

Link between Multitasking and Emotion

- Emotional skills require attention and practice
  - Emotions are learned through attending to others
    - It's hard to learn when you're not focused or looking elsewhere
  - "Emotion atrophy": the more you have to respond rapidly to people's emotions, the better you become at:
    - Emotion detection
    - Emotion response
    - Emotion regulation

Slide #58

Results

- Multitasking is problematic for students
  - Less feelings of normalcy
  - Less sleep
  - More friends who are bad influences
  - Less positive feelings from offline friends
- Online media use is problematic for students
  - Same effects

Slide #59

(See slide # 57) You watch them, you watch their faces and their bodies, you listen to the tone of their voice and you watch how they handle the situation. One thing we've been noticing across college campuses is kids having much more emotional difficulties, especially emotion regulation, when something bad happens they're crippled, they're paralyzed. They don't have resilience. We've talked a lot about resilience. One of the ways you learn resilience as a kid is to watch slightly older kids manage their emotions, but to do that you have to be watching. If I'm talking with you and doing this, I'm not really watching your face, I'm not really getting what are called the paralinguistic cues, of emotion and your voice characteristics, etc., so it becomes an enormous problem. And in fact the research shows that kids who multi-task frequently show much less emotional understanding, much less emotional ability, less healthy social relationships.

(See slide #60) On the other hand, face-to-face interaction, this is why it is good to have kids in a place, it turns out to be fabulous for kids. This is based on research on 8 to 12 year olds. We're about to do similar on actual college students but of course they become college students and 8 to 12 is a critical age of emotional development. Kids who are heavy face-to-face interaction kids, even if they use online media as well, as long as they get that face to face stuff they show greater feelings of normalcy, greater social success, more sleep, less friends who are bad influences, more positive feelings from friends and it prevents the negative effects of online.

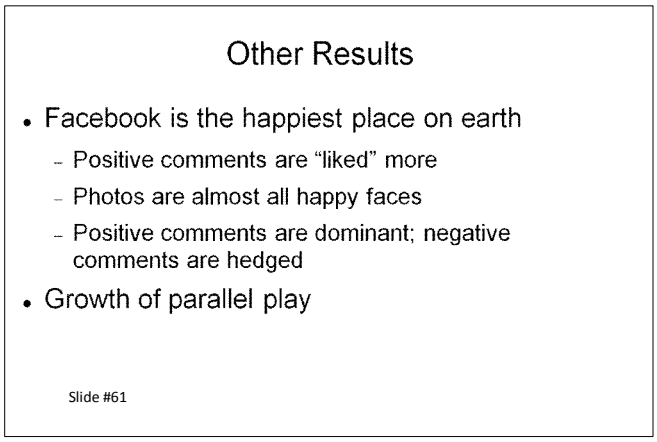
Results

- Face-to-face interaction is great for students
  - Greater feelings of normalcy
  - Greater social success
  - More sleep
  - Less friends who are bad influences
  - More positive feelings from offline friends
  - Prevents the negative effects of online

Slide #60

In a study we just got finished two days ago we looked at the ability to detect emotions, this is among college students. Low multi-taskers no matter how much face to face time they had in the past week, showed consistently good abilities to detect face, to detect emotion in faces. High multi-taskers with low face-to-face interaction were much worse at detecting emotion. So again, whenever I'm talking with you and we all know kids like this right, in fact if you walk around out here, as just as I was walking here I saw kids eating lunch together and some of them were together and some of them were together in the trivial sense of physically proximate, but they were all sitting there texting away and talking and, you know, interacting,

but the problem, of course, is if they don't really face the faces, they lose it.



(See slide #61) Another problem is that *Facebook has become the happiest place on earth*, displacing Disneyland because if you think about it, all the faces on Facebook are happy. People post happy faces, and most of the comments are happy and positive comments get more likes, right, because it's hard, someone writes I had a terrible day and you click "Like." [audience laughter]

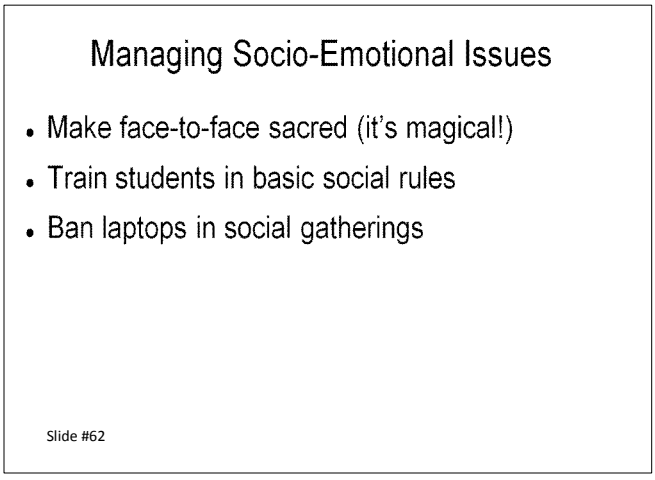
But there's a subtle consequence of that because in the news feeds, the feeds of your comments, the ones that are liked more get seen more, so what happens? The positive comments are seen much more than the negative comments. So what do you do? You say, "hmm, I guess I should do positive comments," and it escalates. But the problem with that is that negative, sad, difficult emotions are much more difficult to learn how to deal with than positive emotions. Happy is easy. Sad is hard.

So there's a wonderful line from Anna Karenina, the first sentence of Anna Karenina, is "All happy families are alike. Every unhappy family is unhappy in a different way." And it's actually a brilliant insight by Tolstoy that the same is true of brains. Positive emotions don't take up much brain capacity. Negative emotions use much more brain, get much better remembered, much more attention, much more processing and they're much more complex.

However if kids don't track these negative emotions, we're dooming them to negative emotions. It's a great irony. If you're not confronted with and see and manage negative emotions, you will have them more, which is why we're seeing, we think one of the reasons we're seeing higher rates of depression among college age kids, much higher rates of lack of resilience among college age kids, it's because they don't practice bad stuff.

And of course I tell the kids in my dorm, "of course I would have avoided negative things as a kid. I would have been happy to have an easier childhood but I learned from that." Those learnings have to come and if they don't come when you're younger we have to deal with them in college, but of course it's much harder to deal with them then so we're dealing with the outgrowth.

Also the *growth of what I call parallel play*. Kids sitting next to each other in my dorms, the lounge in my dorm, kids will be sitting around and each will be sitting with their laptop watching a video, doing this and that, they're not really interacting but they think they are. So I once said, "hey kids, the lounge is for not working on your computer, the lounge is for schmoozing, talking, you know, etc. really being engaged with each other etc." And they're like "no, we're talking." And I said look this is not talking: "Hey how's it going? What's next?" That isn't talking. That's not really engaging so that's something we have to do.
(See slide #62)



To manage that, to help kids, *we have to make face-to-face time sacred,* we have to encourage in every way we can, kids to do it increasingly, and we're talking, some people were talking earlier about the skills you need in the workplace. When I go around to businesses one of the biggest skills *they're noticing are deficient are basic social rules*. Kids today have much more difficulty in, for example, resolving conflict in a team, because when there's conflict they race to text or email, and we all know how effective email is for resolving confusion, for clarifying conflict and ambiguity, it's a fabulous medium for that, right?

But the problem is they don't know how to manage their own emotions. They don't know how to cleverly read and rapidly read other people's emotions so what happens? They retreat. As a result you have more friction. So actually ironically I'm being asked to go to businesses and teach Social Rules 101. Things that well-brought up kids used to know and even not well-brought up kids used to know. But now increasingly businesses have to do that so one of our obligations if we're really trying to train students for the 21st Century is to teach kids social rules.

And then finally banning laptops in social gatherings. I know it sounds funny. You're going like social gathering, laptops? Look at your kids. That's what they're doing. So, let me stop there and I have a little bit of time for questions and be delighted to take questions. Thank you.

[Applause]

Audience Person: We've been hearing a great deal lately about cursive writing is disappearing. What are your thoughts on that as far as how it's going to [inaudible] multi-taskers?

Clifford Nass: Well, it's a great question. So cursive writing is disappearing and in one sense the act of moving your hand that way is not a particularly spectacular skill. The difference is, the one thing it did do was it did slow you down. Now of course I'm waiting, slowing down, geez, and of course like when I wrote my first book did a lot of pencil and papering and by my second book I was like, man, typing is awesome, you know, and so, so slowing down is not an a priori good thing. However, for kids who don't know how to slow down and focus it is a way to force them to do so. And every year I have a few kids who come to me and say, you know when I talk about the laptop policy they'll say, "boy I'm really glad because it forces me to just slow down." So in that sense yes, slowing down, but of course we don't have to impose cursive. There are other ways to get people to slow down, it is just one. Other questions?

Jerry Schutte: You talked about multi-tasking being positive if the information is relevant and multi-tasking being negative if the information is irrelevant. In the context of the client population that we serve here at Cal State University, 80 some odd percent of our students work and the majority of them work full time and the phenomena that I'm seeing is that more and more students are trying to catch study time while they're working. So my question to you is do you have any information; have you done any studies, is there any data on how combining those two seemingly irrelevant pieces together?

Clifford Nass: That's a great question. We don't have direct data and we should because it's important, I agree with you. The working population, students in school working, kids who are going to school and working is growing not shrinking and likely will continue to grow.
The, based on other research the expectation is that kids who try to grab time while doing one thing or the other hurt both. It's a tough one. It's very hard. There's only a certain number of hours in the day and the only thing you can tell kids again is you'll get both done faster if when you're at work you work and if you, you know, again economically I understand but it's like if you took one hour out of work and did your school work, that would be better than doing ten minutes of school work every, you know, trying to sneak it in.

Again it's hard to do and of course sneaking in is part of it obviously if you're doing a job and you're, it's hard. I don't have a good answer. I do know the answer that it is not healthy for their brains and I do have an answer that it's not effective; however, that's the easy part. The hard part is what the heck to do about it and that one unfortunately I don't but it's a huge issue and a growing issue.

Audience Person: So I noticed like about seven years ago when all these devices were first coming in it was a huge problem in class. People were constantly distracted but I never really seem to have to tell students anymore to put away their devices and so I was wondering if you think that there is some kind of hope that they're kind of getting better at controlling their addictions.

Clifford Nass: That's interesting. Most people I hear from, now it could be a biased sample because they write to me because of this, have not found the problem getting less severe. I mean it's great if it is, if kids really are understanding that.

Audience Person: I have a sort of second note thing too. That is that I'm terribly addicted and it seems like they are able to control themselves more than I am.

Clifford Nass: Well you know we, we, to be honest I think that's great. We haven't, again, the reports I get and we haven't, we're trying now to get longitudinal data on this, you know, especially in other activities like schools. One thing we didn't study specifically but obviously want to as behavior while in classroom, behavior while in you know various educational settings. I have not heard this but if it's true it's awesome and maybe kids are realizing the negative effects of this. Certainly what I observed in the dorm was not that, including kids doing online learning would often have other stuff up. They'd start out not. They'd take a class and they'd watch the first videos full screen and you know really virtuously and media is so seductive. It's just so seductive and addiction is not surprising that it's very hard for them.

And again when you put them in front of a computer it's even easier to do that, you know. What, one of the things about books is that it is a little harder, not impossible Lord knows, to do too many things at once, right, because books don't allow you to do other things. Now, when they start getting the Kindle, you know, the Kindle Fire, doing multi-tasking, I will shed a tear because that's one of the nice things, it doesn't multi-task right now, so that makes me happy. So books historically have made it hard to do. They take up two hands. Just sort of silly things that really make a difference. If it's true that kids are better managing that's great. The trajectories I've seen suggest that not in the classroom but in other settings, kids are not better, they're worse. The amount of kids using media while face to face has grown enormously. You see that. So if classrooms have become a sacred ground, I'm all for it. I'm a professor. I love classrooms as sacred grounds. Yes.

Audience Person: Just have a question, actually sort of a story and then a question. I've noticed myself and friends will sometimes be in social setting, there'll be four something, four 50 year something year olds sitting around a table with their Smart Phones out and at one point we kind of go, oh, we're becoming our kids, you know. But one of the things I noticed recently is I had a friend who left her phone in a car, we went to dinner and it was about halfway through dinner when they realized my phone isn't here, I can't Google the answer to that question about the thing we were just discussing. And I noticed my friend left their phone in the car but I didn't tell them they left their phone in the car and I watched how long it took the anxiety to kind of kick in. And so my question is when people do unplug themselves and students in the classroom, at what point and what is the sense of anxiety around the, the devices not being available and does that cause some kind of distraction?

Clifford Nass: It does in the short run. So there was a nice study by David Strayer at Utah where he took kids out in the woods for three days without technology in the woods and then did tests of creativity, which were way up, tests of other things and the kids described at first being infinitely more, anxiety levels were through the roof. By the end of the three days anxiety was down.

There is a price when you have to keep, if I told you, imagine you didn't know anything about, if I said I'm going to keep on zapping you throughout the day with ever increasing frequency and it's going to force you to look at, to pay attention to whatever it is. Most of the time it's totally stupid but every now and then it might be useful, and I said to you knowing what you know about psychology and human behavior, would that be really healthy? You wouldn't need a degree to say, "boy that sounds like pretty damn bad for you."
So the answer is yes, we've created higher levels of anxiety.

Now we do see much higher levels of anxiety in college students than we used to. And I wouldn't describe it to just one thing by any stretch of the imagination, but I do think the anxiety of, because in fact while he was talking you know I got a little buzz, because I shut of my phone but it buzzed and of course I wouldn't have grabbed it except for effect, but part of me went like, get the damn phone. You know, and I didn't and that was fine and appropriate but, but that's what we're living like. That's not a really, really good way to live and when people say well people who were in the jungle were used to you know scary stimuli, you know, they had to react to, but the difference was it was related to what you were doing. If you were walking in the jungle whatever things they were, they were jungle things. Right? And when you were in a cave, they were cave things. That's good for the brain. In fact there's a lovely study showing that truly intensive video games, the ones where you really have to focus and kids truly focus, those kids actually show a positive outcome. They actually show more focus.

But why? Because everything that's happening is related to what you're doing. The problem with the thing buzzing in my breast pocket right now, odds are darned good it's not related to what, and I'm not going to check, but odds are darned it's not related to what I'm doing, right, but, but more and more kids, you know, will come talking with me and you know and I-you know it's very funny because I'll say to kids like, you know, when I'll be in you know in my office and we'll be talking and they're pull out their phone when it, and I'll say, "you know it's really funny you do that because we didn't have phones when I was a kid but I couldn't imagine pulling something out while I was talking with a professor. I'm not insulted. Cultures changes but it's really fascinating your hierarchy of importance, that face-toface doesn't beat the phone.
Oh, I'll tell you one more story because, so I'm in the dorm and I'm walking by and one of the kids knocks on another kid's door and says, "oh man something terrible happened to me." I didn't listen to the conversation, but as I was walking by they didn't fully close the door and I saw the girl whose room it was turn back to her computer and said, "oh, so tell me what happened." So afterwards I was really worried about the kid. I said, "I didn't listen to the conversation but I'm concerned that, did you feel like she was just blowing you off? " She said "no, no, no, she was clearly talking with me about it." I said, "you know, Julie,in my day if someone came to my dorm room and said I'm really upset about something, the first thing you would do is shut your media. Like we didn't have a lot of them but you'd turn off your music, you'd close your book, you'd look at them." I said, "in fact I couldn't imagine a more-I said the greatest way to insult them, I couldn't even think of a better insult than when they came and I went like, so what happened? I couldn't have even thought of doing that. I said "if I'd thought of it, it would have been brilliant if I really wanted to insult the person. I never would have, in a million years, entered my mind because face-to-face communication always seemed like the winner, right?"

And what's fascinating-here's another example. Since I started this research I've been logging the number of

times I've heard adults say to kids, "look at me when I talk to you," which was the bane of every child's existence. You couldn't go 12 minutes it seemed like without some random adult going, look at me when I talk to you. I mean I hated it. Well you know what; I have not heard it in three months. I have been listening and looking for it and I have not heard it. o why is it important to look at me when I talk to you? I've thought about that. Like okay it was annoying as hell, but why was it so important? What was so important about that? And there was actually a number of message. One was emotion is important; another one was that paying attention is a virtue, that paying attention is a good thing, period, end of story. Even if I say it with the most animated face, paying attention is good. And then when we got kids to other skills like reading, kids had the idea that paying attention is good; now I've got to pay attention to read and I'm used to that.

So we've lost the language of paying attention. We've lost the cultural push of paying attention and then we go into the classroom and say why don't kids want to pay attention? Well, the answer is nobody asked them.

And part of the reason also is, and I'm one of these parents. You're at home, you get some email, you got a look at it, but it always felt like you got it. So I talk with my kid because my kid's blathering away, right, as kids do, fine, and I was doing email and I thought, "oh my God, I'm them." [Laughing] I mean I am them. I'm not virtuous, believe me, I'm a sucker for all this stuff. But that's part of the issue. We don't teach. We haven't built a culture that says attention is a virtue, period, end of story. It is a wonderful virtue and that's it.

Alyssa Carter (student): Hi my name's Alyssa and I'm a student here at CSUN and I find what you guys are talking about very interesting because I am a student and I have a lot of friends who are on their cells phones and stuff like that, and something I just kind of wanted to comment on was the fact that I think that what comes from looking behind your phone or being behind your laptop is also like subconscious insecurity and you find you're more comfortable when you're hiding behind something, and when you don't have to show someone your immediate reaction, and so that's why it's easier to divert back to being behind a device versus being in front of someone personally. So you have that security blanket in front of you and that's kind of like a distraction in itself, just to feel more comfortable as a human being. And yes it's socially you know inept but it's a big reason why I think people do that.

Clifford Nass: Well I think it's a wonderful insight but, but, but there's a cost for that. So here's another example we've seen in many college kids. So in my day kids would go to parties to drink, to get alcohol. Now what we're seeing is what's called "pre-gamming." People drink before they got to the party. So you say to kidsm why do you drink before you go to the party if there's alcohol at the party? Doesn't make sense to me. And the reason we're finding is social anxiety. It's nerve-wracking, it's scary, to be in these social settings. So what alcohol does, much like your screen does, is reduce the, the, the, the presence, the presence of other people. Okay, but the downside is that, the downside of that is going to parties was not always fun and for different kids at different ages and you know for me high school was very difficult, it was awkward socially and all, but I was forced to learn some basic skills, which then paid off later, but if you don't, if you use alcohol before the party you don't really learn how to handle parties, which means then that later it's going to be even tougher to handle parties because other people will know how, now maybe no one will and it'll be easy again, but I'd hate to be there when some people do and some don't.
As you get older you have to manage these. Again it's this whole point about teaching kids basic social skills for the workplace. It's because they haven't practiced it. They don't know how to go to a party not having drank first, which of course isn't appropriate in business settings so then you're in trouble. But we don't have the tools, but then it's too late, not too late to learn but it's hard. How do you learn? It's hard to go to your boss and say, "look, I really don't know how to manage with other people." It's a tough sentence. And bosses don't know how to teach it either because like, so, so it becomes very, very challenging but I think

your insight is absolutely spot on. It's, it is easier and I tell the kids in my dorm, "look I would have taken the easy route too." It's not that it was somehow this wonderful, you know, kid who'd struggled against misfortune, etc. If I could have tons of media and not thrown off other things I would have happily done it. But the fact that I didn't have it meant that I had gained certain skills that have served me well and will serve them well. That's really the issue but I think your insight is excellent.

Diane Guerin: Hi I'm Diane Guerin and I'm the Chair of the CSU Academic Senate and we are getting a lot of pressure from legislators, number one for online courses, large ones, but my question is, and I can see your thoughts on that clearly, but we also have legislators who want us to reduce the cost of higher education by moving to open education and resources like electronic textbooks and I just wondered if you could comment on your thoughts about that.

Clifford Nass: So the research from that shows that if it is a single, if it's a book that happens to be electronic, like you know a Kindle that just has that. There's no evidence that it, it's hard to read slower, kids learn less, etc. If it's on a general platform then you run into all these problems. So there's nothing intrinsically wrong with electronic books, of course authors make less which is an issue, but, but from an issue of cheapening, making education less expensive, that one seems fine. It becomes more problematic when you're reading on a device that also has many other things. Not because they couldn't not look, I mean, as a technical matter they can make it full screen and read till their heart's content, no problem, however it's very tough to do, tough to do that. So the answer's yes, the electronic textbooks there are costs because of the writers, becomes less incentive for writers to, to do things, but no the research suggests if you are truly reading, not reading while doing four other things, if you're truly reading there's no negative effect.

Harry Hellenbrand: So let me try a little story and ask a question.

Clifford Nass: Sure.

Harry Hellenbrand: I'm in Greenwich Village, it's late at night, it's 2 am in the morning, I'm crossing 6th Avenue, and I'm watching the light, I'm watching the traffic, I'm watching out for bicycles and sizing up the guys who are walking down the street towards me to see if anyone's going to pull a gun or a knife on me. So I'm tracking several things at the same time and I ultimately make the decision that I'm going to cross the street. So the reason I'm asking that is I were to take Jerry Stinner and put him out in New York City at that moment in time, Jerry is our Biology Dean, he would know what to do first. So when you're looking at multitasking is it that it is positively ruinous to the brain or looking at a new phenomenon to which we haven't really adjusted our own responses? So I don't know quite yet how to hierarchichize the evidence sort of sitting out there and responding to it properly. Does that make any sense to you as a question?

Clifford Nass: Sure. So the answer is when you're in a frantic, physical environment, it turns out the way the world's built the things that are there belong, make sense, are process-able and integrate-able. Now, if while you were trying to navigate the street you tried to read the Times Square, you know, machine and you were also watching a movie on another building, etc., then it becomes more complicated because they're unrelated. Again, the physical world works where things are juxtaposed or related because that's the way the physical world works. It's the media world where you can juxtapose those things that are utterly unrelated. So the answer is no. You have no problem, your brain has no problem saying here's an environment, and there are things in the environment you have to monitor constantly. There are many things happening in the environment but they're all related to the environment. If I then all of a sudden drop something random in, that would be much harder on your brain, some weird thing happens, right, so but as long as things are relatable and integrate-able, integer-able, then there's no problem at all. In fact it's good for your brain

to have to relate things that are related that seem disparate. That's actually healthy. That's what creativity-people say oh well sure you know multi-taskers are more creative because they suck in stuff. I said no not really because to be creative students have to think deeply, which they don't, and the other one is you need somewhat related stuff. Right? Creativity comes in and you go oh, these two things that seem unrelated but oh my gosh they're related. But things that are truly unrelated don't make you more creative, they just make you more confused.

Stepanek: And that will do it. We've run out of time.

Clifford Nass: Thank you so much.

[Applause]

END

Participant Observers Report Out from Day Two Discussion Break Out Groups

Theme: **"The Future of Education: Functional vs. Liberal Arts"**

Moderator:

Matthew Cahn: Professor, Department of Political Science, Cal State Northridge

Panel Members:

Joyce Feucht-Haviar: Dean, Tseng College of Extended Learning, Cal State Northridge

Melanie Williams: Chair and Professor, Department of Business Law, Cal State Northridge

Adam Swenson: Professor, Philosophy Department, Cal State Northridge

Matthew Cahn: So our breakout group, like the other groups, we're looking at this question of how we balance functional skills with the liberal arts. And I'm not going to be able to summarize everything because it was a pretty free flowing conversation with lots of things coming up. But this is how it made sense to me.

The conversation started with a discussion of the challenges that we face. And so let me talk about a couple of those challenges. One, of course, following Dr. Nass' comments earlier today is the obvious challenge of technology and how technology is changing the way that we think in changing the way our students think. One of the subsidiary comments that came up was that the technology problem wasn't itself a problem merely of the technology but also of the political and monetary implications of mitigating some of those conventional technology issues.

A second challenge that was commented on was that the mixed messages that we get as faculty, as department chairs, and so forth. So, one of those is the soft pressure to pursue MOOCs. Nobody is saying we must develop MOOCs but we frequently are being presented with different models of MOOCS and there's clearly a suggestion that it might be a direction that we might go. We actually are hearing a pretty hard mandate coming from the legislature about MOOCs. That's something out there as well, so that kind of floats behind the conversation. The mixed messages, we are being mandated to develop online courses but there are minimal resources to support things like captioning. So ADA compliance, of course, we all embrace, that's mandatory. We are moving online in some areas but there is still a conflict of whether or not we have the resources to do what we know that we need to do and that which we want to do.

And finally, there's a sense amongst--certainly among the folks I talked to, and myself included, that we're waiting for the other shoe to drop. We don't have a clear sense of what the future is going to bring and that future may be tomorrow, next week, next month. We don't know what it is and so we wonder what the continuing mandates are going to be. These mixed messages just leave us with questions.

There are some specific conflicts which go beyond sort of those traditional challenges and those are, as the group identified, the following. The expressed conflict between applied skills and liberal arts, obviously,

that's what the whole day is addressing. Conflicts between bureaucratic constraints and intellectual obligations, so we are, in many ways, public intellectuals operating in a vast state bureaucracy. There are conflicts about when and how we schedule classes, online versus face-to-face, large versus small, lecture versus discussion, and so forth. And then, of course, there's these questions to whether these conflicts are healthy conflicts that engender meaningful conversation or whether they are all out wars. And depending on the context, they may be one or the other or both simultaneously. So at the faculty level, we have these issues and we try to work them out and sometimes, it's more--the conversation is more assertive than the other times. And so we struggle with that.

Ultimately, the conversation moved in the direction of solutions considering these challenges and these conflicts and these issues and problems which we all know about, what might we do to mitigate. And so, of course, one of those things is that we already know that there are high-impact learning practices, teaching practices, that can help to reduce some of these conflicts, things like engaging students in student research, collaboration, writing the sort of typical types of high-impact practices, which in many context, we know about but we don't use. So certainly, the extent to which we can embrace those more, the less some of those challenges will be in the way.

Better assessment, we discuss the role of assessment on campus, the changing role of assessment, the perhaps slow but still improving context with which we find assessment. And we concluded that with better assessment comes better measures. As we revise our assessment processes, we can develop better measures and those better measures will lead us to better interventions, and those better interventions ideally will allow us to improve learning outcomes and so forth.

Additional things that the group decided, not decided, but identified as being appropriate and necessary. Support for interdisciplinary classes. We know that an institution that is divided by college and within colleges, divided by department, it's very hard to embrace an interdisciplinary approach. But we know that interdisciplinary classes and interdisciplinary approaches can be very useful. So, finding ways to support that is something that will be helpful.

Encouraging a collaborative ethic among faculty: Faculty, as we know in an institution like Cal State, are overworked in many ways and we often feel like we don't have the energy to work in a collaborative manner because that takes a lot of time and it may take away from things that we know we already need to do. So finding a way to incentivize collaboration, to encourage collaboration, and to change the culture back toward collaboration will be something that we thought would be helpful.

Flexible space, we know that there's not enough space on campus to do what we do every day. That said, to the extent we can use space flexibly and to the extent that we acquire new space, that we build up space in flexible manner, we will have greater success. So when we talk about flexible space, specifically space that can support collaboration and small group learning in addition to being used in larger context as well. So this room, for example, perhaps not being the model of flexible space, has some of those old style mechanisms for enlarging the space or reducing it and so on. So in different context, we could do different kinds of things. And certainly, to the extent that we have some classes which inevitably are going to be quite large, Title 5 comes to mind in my college. We need to remember and relearn how to facilitate peer learning, peer discussion, active learning projects, and so forth in the context of a large class. So just as an example, as in most of your experiences, when I was in graduate school, we had large lectures and we had discussion breakouts. This campus, as we know, was designed specifically to preclude large lectures but we've overcome that and now we have large lectures. But in most cases, we don't have the related small group discussion that goes with it. It's as if we forgot that that was an important component and we want

to encourage relearning that. That's all I've got.

Adam Swenson: All right, well, I don't have anything nearly as comprehensive as what Matt reported. Our group addressed the long list of complex questions that were given to us to discuss; our discussion jumped back and forth between them. So let me just try to summarize one theme of our discussion in a way that hopefully is accurate or at least reasonably reflects what we talked about.

So first off, in these discussions there's a tendency to elide the humanities with a liberal arts education. So sometimes when we say 'liberal arts education', we mean something like a good GE program, where people are taking classes in a lot of different areas and getting a broad view of the sciences, the social sciences, and everything else. But then other times, especially when we talked about the value of having a liberal arts education, the implied focus turns towards the humanities. And I'm totally happy for the humanities or philosophy to be at the center of everything. [laughter] I mean, yeah, I am, but--I was trying to think of something clever but, you know. [laughter] But that's not exactly right because the promotion of what we care about in the liberal arts or as, a liberal arts teaching institution has to involve a lot of collaboration amongst departments. That entails a range of the bureaucratic and administrative challenges. But it also entails finding ways to integrate the specific skills of individual faculty members and disciplines within the contours of classes and curricula that have multiple aims.

So here's one example that came up. I teach ethics and I would hope that other people in other classes, in other colleges, and all areas of the curriculum, discuss ethical issues when they arise in their particular subject matter. But there's a reason why they hired me. I've had a lot of training in teaching and thinking about ethical issues; poorly done ethics education can be extremely counterproductive. So that doesn't mean that when we spread out the material that AAC&U speaker identified as essential to well-educated person, we're obviating people who are specialists in, say, ethics or helping people learn to take other perspectives. But it does mean that we need to have some sort of support linkages between groups, between different kinds of classes. And so, maybe some sorts of administrative and curricular reforms or changes which allow groups of GE classes from different areas to be brought together. I don't know enough about the Paths project, but maybe something like that which allows faculty to bring both their specific skills and specific content knowledge together around particular topics can be a valuable way of promoting a liberal arts education.

So those were some of the things I think that were broadly endorsed by my group. I'm kind of looking somebody in my group to nod, no one's nodding so I guess--oh, no, a big nod, OK, thank you, Sheila. So that's the rough contours of some of what we talked about. I hope that was relatively accurate since now I'm on the record.

Melanie Williams: My group was Leigh Bradberry, Diana Wynter, and Drake Langford. And we started with the idea of talking about--of the many things we've discussed here today, what are the implications for teaching. And we had many of the same discussions that sounds like Matt's group had so I don't want to repeat a lot of that, but honestly, we could have been parallel groups.

We did talk about functionality and comparing it with the liberal arts in talking about how coming up with these skills that were viewed as so important by employers: Critical thinking, problem solving, communication skills, group skills, and all the rest of it. Those--that doesn't have to be an either/or. They can happen in the same classes. There's--what it seemed to draw us to do is to come up with cross collaboration with creating more high-impact practices in the classroom. But ironically, all of that takes incentive--it takes incentives and it takes support from the university. There's a great management article called "The Folly of

Hoping for A While Rewarding B." We hope for creativity, cross collaboration, high-impact practices, but those aren't the things we reward. We reward people who teach three units in their department in a large lecture hall and don't do anything different than they've ever done. So we need to rethink the reward scheme so that we can honestly reward the behavior we're hoping for. The way it works now often is the most creative and ambitious and hardworking faculty in an odd kind of way or sort of penalize because they take on more work and it's more trouble and there's really not support in the university a support structure.

If we want to have more high-impact activities especially to support large lecture halls, forgetting that people in those research institutions have TAs, we need to come up with some sort of support where that can happen so the students get more feedback on their writing, on their group activities, or whatever is going to--capstone, whatever it is.

We talked about managing technology and how to use it as a support in managing usage and then our discussion simple devolved into best practices and we shared ideas we had for having more feedback on student writing and group work and managing technology so that students took responsibility for their focus in the classroom and how well that had worked. So that was our group.

Joyce Feucht-Haviar: We had two people in one group, so I won't repeat the group. Just kind of being a participant-observer across yesterday and today, a couple of things came to mind for me.

One is, we probably don't spend that much time--as much time as we should--talking about the educational enterprise in our various configurations. Most people tell me their departmental meetings don't usually talk about curriculum or pedagogy, or they're not viewed as creative venues of open discussion. There probably aren't that many opportunities for people -- even on the many committees that people sit on -- to say, "*Are we talking about the core work of the institution? Are we actually driving forward new ideas and new ways to do things? Are we surfacing those things that we want to change?*" It seems like most people talk about the fact that those meetings are procedural and for approvals and various sorts of things.

We're talking about the world of work in which entrepreneurship, innovation change over time. We're preparing people to go out into that world. And we are a group of highly educated individuals who are in that same side of the arena where change and evolution are probably a big issue for the future. And as we do talk about these issues, most people, at least as I was observing, had plenty of ideas about what we might do about them.

But I think by and large, we'll leave this room and not talk about them again for a good long time. I think there needs to be some way in which the institution has a forum that's built-in, that's not just episodic or occasional, because the thing that brings us all together to be here, is the teaching-learning curriculum. That's something that kept coming back to my mind. There's lots of information out there, some very good observations from the speakers. Probably people in the audience would have loved to follow-up on, sit down and talk to this or that person. And it would be crucial to do that to move the enterprise along, but by and large, we won't allow ourselves the time to do that.

And, yes, we're in a large organization, but it can move and have some innovative components as I've observed in other contexts. It is what we make it, because what we choose to do today will change what it is tomorrow. And if we don't choose to change it, it will be the same today as tomorrow.

Another thing that came up as the conversation was concluding in our group and that came to mind for me was the kind of students we educate. We are taking them into a different world. We're saying, "*See this larger picture. See these bigger issues. See this cross-culturally. See a different future for yourself.*" But there is another obligation in that, for many who are first generation in their family, for many who are going to shift their future from what their family enjoys, they will never be able to go home again. And so we are taking the responsibility for changing a life in many ways, separating it from where it came from, and we expect that's a good thing to do. And I suspect it is, too, but it has these other implications.

And most people, as they come and travel with us, don't realize how far we've taken them and how they will not be able to go home again. So I think it's an obligation, if they trust themselves in our hands, that we give them the best we can, and I think most of the conversations over the last two days are about how we do that -- important kinds of considerations.

Steven Stepanek: That concludes that set of presentations. Is there anybody in the rest of the audience that would like to contribute to this conversation? Jerry [assumed spelling].

Jerry Schutte: I have a couple of takeaways from this symposium and one of them has to do with the last comment. I think that we all agree there's a change in demographic. I think we all agree that we're paying attention to first generation students now more than ever. But part of the dynamic of that is that as we address the issues to students who can never go home again, I'm not sure that's entirely true because that demographic has younger brothers and sisters who have yet to have a role model of a college graduate in their family, who now is going to have one. And I think that dramatically increases the probability that they will become college students.

So I see the dynamic working here where five, 10 years from now, we're not going to have nearly as many first generation, maybe we can start having second, third, from the same family coming in. And I think that's a natural pathway from an immigrant population to a middle class population. It's not new, it's happened many times in the past. But I think it changes the dynamic of what we're doing. So I think we have to pay particular attention to how that dynamic affects what we do going down the road.

And one of the things that I was impressed with was the--Professor Nass' presentation, not so much the nuances of multitasking but how the whole generation of people are looking at the world differently. And I think that that's just one of the dimensions along which they're looking at the world differently. The nuclear family is going to be a very different animal at the dinner table 10 years from now than it is today for the very reasons you pointed out.

But there's another thing I took away from this and I asked Deborah Humphrey's talk this morning after her talk 'cause I didn't want to monopolize the time for questions. But it's something that's been annoying me for the whole 40 year I've been here and that is when you look at the world of education and its connection to mobility, you're struck by the fact that education income are highly correlated than when you take a microscope to that which really realizes that it's an avenue for mobility from working class to middle class and from lower middle class to upper middle class. But it's rarely a mobility ladder from middle class to new rich or old rich, almost by definition.

And when you focus on the new rich and you see how that will come about and it's coming about exponentially, five years ago, there was a hundred billionaires and now there's something like 5,000 billionaires. You recognize that it's moved not from a manufacturing economy but to a knowledge economy. And the interesting part about the correlate of that to education seems to me is that at the turn of the last century,

when the Robber Barons were doing what they were doing, it was essentially a manufacturing world. And consequently, education still had a place to play in the matriculation of people through that manufacturing world right up the CEOs. When you transfer to a knowledge economy, it seems to me there's a disconnect: that education no longer plays a role right up to the sort of CEO level because most of the new economy, the new knowledge economy, is coming out of the creativity of people, not so much their education. And the question I asked Deborah this morning is that, how do you see the difference--or do you see the same difference I see between critical thinking and creativity? Because I think we can teach critical thinking but I'm not so sure we can teach creativity. Because critical thinking is all about dealing with problem solving in the context of what it is, whereas creativity is problem solving in the world of what could be. And we don't deal so much in the world of what could be as much as we deal with the world of what it is.

So the annoying feeling I have after 10,000 students in 40 years is we're creating a very wonderful change of world in terms of the perception of occupational mobility, but we're not fundamentally changing the world of creativity. And whether you want to quote chapter and verse about the five or 10 of people that immediately come to mind like Steve Jobs, Bill Gates, and Larry Page, et cetera, or whether you want to talk about it as a more systemic situation, I'm conflicted over the fact of what our mission should be.

Is it to simply take people and inject them into the world of upward mobility? Or is it to create something more fundamental, to encourage something more fundamental if it can be, in the form of creativity? Now, almost everyone, I would think, would argue that you can't have one unless you start setting the precedent for the other. But I don't know. I talked to an awful lot of people that knew Steven Jobs, and I talked to people that knew Larry Page, and I talked to people that knew Bill Gates and they all tell me that's not where it came from: it didn't come creativity, critical thinking, it came from the creativity of seeing things the way they could be instead of the way they are.

Steven Stepanek: That is all the time we have. Thank you everyone.

[applause]

END

Provost Harry Hellenbrand, Cal State University, Northridge

http://www.csun.edu/leadership/harold-hellenbrand

"Next Steps"

Harry Hellenbrand: So let me begin with a definition of the liberal arts and the move on from there. I think that if we really sit down and think about *what the liberal arts mean, it would mean that it's a way of thinking that allows you to free yourself from as much prejudice, preconception, partisanship, and provinciality as possible so that you can think clearly and act accordingly.* We have been helped in this regard by some very powerful speakers in the past two days.

"What the liberal arts mean is that it is a way of thinking that allows you to free yourself from as much prejudice, preconception, partisanship, and provinciality as possible so that you can think clearly and act accordingly."

I

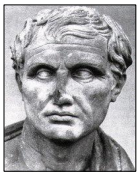
I think part of the task we have to do is think about how we could approach these topics in a liberal arts point of view. And I think, for me, some of it is getting to some of the preconceptions. I hate to use this terminology, easier ways of thinking about things at first.

The world is always going to be dominated rhetorically by those people who are the naysayers; and those people who are the yea-sayer's. And we've certainly heard both these days. I heard Jeremiahs about technology and upholders of the technology in business. For some people, technology in business is the way to solve the problems of the world; for others they're the path to damnation. And I think the extremity of both views, points out to us that there is probably a more complicated middle road that we have to find on this piece.
L

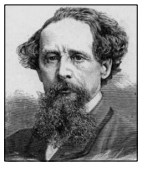
II

Second of all I think that we enter this discussion with some preconceptions about change that we have to think about. *Change is certainly going quickly. But that's been a human complaint for 2,000 years from what I can tell.* **Virgil** wrote the "Eclogues" and the "Georgics" about this stuff. **Goethe** wrote about it in "Faust". It's been a topic for **Dicken**s and any number of novelists in the 19th Century. **Henry Adams** wrote his "Rule of Phase" in 1909. And the "Education of Henry Adams" focuses on the -- moving from the electronic to the ethereal age. **Bevin** wrote about this stuff a lot in the 1890s and so on. It's been a constant topic. And I don't know that we can say that relatively speaking,

"Change is certainly going quickly. But that's been a human complaint for 2,000 years from what I can tell."


Virgil


Goethe


Dickens


H. Adams


Bevin

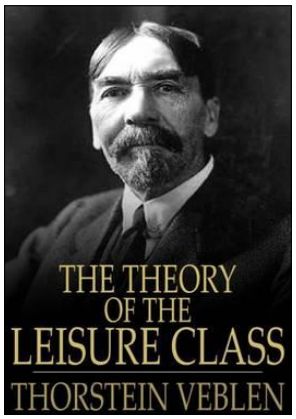
change is any more profound today than before.
And from a farmer's point-of-view a hundred years ago, I might not have noticed changed in the same way that I have it today, but would be more sensitive to changes in the weather than I am today. And technology changes now becomes a major factor in my life in ways that the natural environment is not.

"...we have certain beliefs about ourselves that the educational institution as we think of it -- which is public higher education that is supposed to be free and open to all, but has never been so."

And I think we have certain beliefs about ourselves that the educational institution as we think of it -- *which is public higher education that is supposed to be free and open to all, but has never been so*. And we have the preconception that it has been destined by God. And is the way that the university has been viewed from time immemorial up to 1963 or 1964 . And that's certainly not the case. The institution only values so much; probably as the creation of the Veteran's Bill of Rights in 1947. The GI Bill. And lasted conceptually through the mid 1960s and was barely instituted in the Civil Rights Era of the late 1960s. *So what we think is a natural right, it's not really such at all*, but has been a fish swimming in a much larger sea for many, many decades and centuries before that.

So I think we have to approach this with a certain amount of humility. And understand that what we take as permanent is actually in the history of the west a contingency. A momentary flame of enlightenment, so to speak, for 15, 20 years. And our assumption is it's permanent and we get angry when it's at sail because we see the permanency and the eternal quality of our higher education institutions being assailed and be smudged. There's another way of looking at it in the trail of history.

III

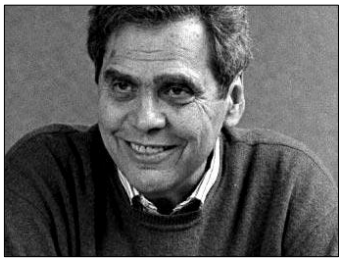


And I think we have to be understanding about the environments in which we live. I don't mean to be cynically accepting of them, but we have to understand the world in which we live. And I'll give two illustrations of this. One is, I think -- both of them come out of Thorstein Veblen who I read a lot again this summer. The Theory of the Leisure Class. The Higher Learning in America and any number of other books. And he basically said, *look, institutions of higher learning in America are about the liberal arts. But they swim in a sea of economics and business in a capitalist's world*. And we might not light that. We might rebel against it, but that's in fact, the fact. And what that basically means is that in the world of cash nexus, cash is the common currency and it's driving all sorts of businesses, and the university is itself a business. Doesn't mean we have to capitulate to it, but we have to understand that if we protest about that, and don't find a creative way of dealing with that fact, we're going to be eternally disappointed.

And he said, back in the 1890s, that technology ultimately was going to change the face of the university. Because ultimately *the point of business* -- I'm not exaggerating -- *is to drive out costs and make more profit for entrepreneurs*. Certainly provide a better quality product, and this is Veblen speaking in the 1890s. So what we think is unique to us today, he spoke about 125 years ago. And that this is what he was surround with at the University of Chicago and the changes he faced with American higher education in the late 19th Century. *So what we talk about today has been common currency intellectually among some people for 150 years or so on*.

But I think we can work our way from that point-of-view, to what we heard the past two days. The speakers were of tremendously high quality. I don't want to denigrate the ones who spoke at previous meetings, but I felt this time around there was nothing comparable to it -- to what I've heard before.

I think Daphne was quite effective in her discussion of the role of Coursera. And she really stated the issue when she talked about the 2 Sigma problem.(1) Looked at theoretically that's really what the technology is about; the balance of cost on the one hand -- because what you want to do is have a product that can reach out and touch as many people as possible, and engagement on the other hand. Which is the face-to-face consort that Jerry was just talking about. And no one doubts that at one extreme you can drive cost down to nil. And on the other extreme that you can basically touch somebody and pass on knowledge on a one-to-one basis. Both of those extremes are unworkable in some ways. And you see these extremes at play today. You have an education provided at a Haverford or a Williams, but this kind of education is just not scalable across the United States. So that's not really a practical solution. And then you have the Coursera world. Which looked at abstractly and run by a person less creative and innovative than Daphne, is also not a workable solution. Because you drive the cost down to nil and you end up with a success rate of 6%: and that's in one course. The success rate is at 6%, then imagine a full university working on the Coursera model: 40 courses in a row? Each one a success rate of 6%? The graduation rate would be in the negative figures at that stage. So it's not really a workable model long-term. That's why I'm not particularly worried about Coursera as a long-term incursion on the university. I think it would be a peace meal roll on effect on us, but the model just doesn't work. **It is the engagement peace we need to work on.**


Neil Postman

How many heard today that we are swimming in the sea of technology: that it's changing us biologically in many ways? That we haven't really adapted well to those changes yet and that's clearly going to be the case for the next number of years. It's going to take time to work through this piece. And the sensory overload that we get is something that **Neil Postman** talked about. In, "Amusing Ourselves to Death," 25 years ago when he said the media was drowning in the United States of America. So this has been an issue with us for a long time beyond just the technology that we're seeing today. And we need to work through this piece.

And I think, from Daphne's point of view, many of these problems are deal-able if you get the right engagement tools. You can drive up the cost so that it's not nil but it's 5 cents a student. You have peer-to-peer conversation. You have blogs. You have a media feedback. You have auto-grading. You have all these features that stimulate the individual. And she hopes that that will probably work, right? As technology is the solution.

And then you have the others among us who would hold onto the belief that we can somehow work in this world on a one-to-one basis with as many students as possible, and that's not going to work. So now we know there's going to be some meeting, somewhere, not in the middle but in the grayish middle of this stuff. And I think that's where we come in. And we have to really think about this hard. Because if you don't do this well, we're foregoing a huge opportunity and forgetting what we're about as an institution.

Institutions like the CSU began mainly as normal schools. They began focusing on education and public outreach. That is the DNA. What we're facing now is how people learn and how they learn in an era of changing technology. If anyone should be attacking that ideology ferociously it should be us. We are colleges that are dedicated to educating the public at large and educating teachers who go out to teach the public at large. So it should not be left up to our Coursera to dig up big data and reach conclusions. That should be work that should be done

"Institutions like the CSU began mainly as normal schools. They began focusing on education and public outreach. That is the DNA. What we're facing now is how people learn and how they learn in an era of changing technology."

individually on every campus of its student body. **Because ultimately what we would insist is that the regional character of each university and its students and its faculty are distinct**. If that's in fact the case, than we have to sort of acquire the data that makes our case. Do the studies. And solve our own version of the 2 Sigma problem. And understand that the answer is not in the extremes of the Williams College on the one hand and Coursera on the other. **The answer probably lies in the hybrid courses that people develop here over time.** They will be different from professor to professor. And we will eventually find which is suitable for what groups of students with what particular interests. We need to build up the data. Do the research. Fuse teaching and research together. Be progressive in thinking about this piece.

"When Cicero wrote his book on oratory, he did not see any contradiction between the liberal arts, civil service and the being in the militia. Because understanding was one thing. Acting accordingly was another thing. And acting accordingly involved virtue. And virtue meant working with others to improve their state."

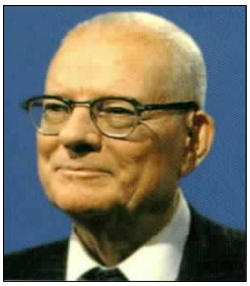
And that gets back to my main point really, which is the world that exists out there of the Coursera models, assumes a flat distribution model where there's a only central purveyor who's sending out mass product to many other folk and they take it all in the same way. Not a good assumption. And I think the real answer to this story is going to be in regional, local universities that do their work well. Research their own data. See how their teaching works and really explore and think harder about this piece.

And I think that the Coursera's of the world and the Williamsons of the world are irrelevant to what's *the main problem that we face these days. The main problem we face in this country -- I'm not -- and I'm not belittling this at all, because I understand the implications that I'm saying -- is not so much access to higher education, although that still remains an issue -- as much as completion and moving through the pipeline* -- I hate using the term but I'll use it right now.

IV

Another part of the problem in this is we're not integrated into our local communities and our local structures well enough. We're part of the CSU system and we share what that system offers from one year to the next. Each year 150 students come to us from other CSU institutions. 4,000 to 5,000 students come to us from the local K-12 schools. 4,000 to 5,000 students come to us from the local community colleges. *But fundamentally we're not integrated with those groups at all*. It's at odds and in patches in our relationship with those people who are structurally tied to an educational system that is irrelevant when you look at transfer. And we have ad-hock linkages to those institutions who provide most of our students.

W.E. Deming would tell you what the answer is, which is that you've just solved the wrong problem. You have to look at the supply chain that you actually have and work through it. Create partnerships and solve the supply chain that you do have. *What's our relationship to our local provider so to speak? What is our relationship to our local customers so to speak? Our employers?* And in most cases you will see that most universities will give you a series of ad hock answers, shrugs, and, " I don't know !"


W. E. Deming

That's not to say that NSF and NIH and others have not thrown money at this for decades, *but until we change organizationally and how we relate to our local communities, we're not going to have a great success on this piece*. And I think the same issue relates to regional development.

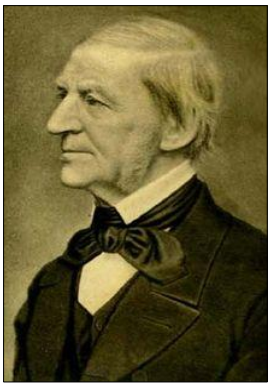
V

> *"When Cicero wrote his book on oratory, he did not see any contradiction between the liberal arts, civil service and the being in the militia. Because understanding was one thing. Acting accordingly was another thing. And acting accordingly involved virtue. And virtue meant working with others to improve their state."*

But then we go back a couple of thousand years: over 1,500 years at least to **Cicero**. *When Cicero wrote his book on oratory, he did not see any contradiction between the liberal arts, civil service and the being in the militia. Because understanding was one thing. Acting accordingly was another thing. And acting accordingly involved virtue. And virtue meant working with others to improve their state.*

What we have in the university these days is a disconnection between those two things. We, in our own courses, approach this matter piece meal. How many times have you made the connection for the case for students? But there needs to be a connection between understanding the discipline. Integrating it with other disciplines. Relating it to virtue and action and character.

We've had a 150 year retreat from the role of character, morality, and duty in American higher education as we've moved away from the collegiate model. And now what we're talking about is regaining some of that ground. That's probably what we need to do.


Ralf Waldo Emerson

And fundamentally as Bill Allen said, if we're all understood and connected to the business world out there, a liberal arts education can do good things. Because it's those critical thinking skills that are desperately important. And what Jerry was talking about before, **Emerson** talked about in the 1840s when he wrote his treatise, "The American Scholar". *What you need to do if you're going to be creative is somehow remove the blinders. You have to be able to see and think clearly. And that means being able to understand when all thinking has become fossilized. Mythology and religion. So that you could see the world new and freshly.* And there are too few among us who can do that piece. **So there's no contradiction between the creativity in the liberal arts and creativity in the business world.** And it involves the same mental habits of mind to pull that trick off. They're very hard, but they're important to do. And in each locality that is a different sort of thing to do.

I think that we can extend our power in our realm by working more consistently with our local partners. Does this mean abstractly preparing people for work in some generalized occupation. It's participating in the general prospect and future of a particular region, and understanding what those needs are.

VI

You could hardly find a university in the United States today who could tell you with explicitness what happened with their graduates, and I know we point that this can berate higher education, but it is also an indication of the problem. I'll make you a bet you couldn't find more than five universities in the United States today who could tell you what their graduates are actually doing 5 to 10 years out. If you could find those five institutions for me I would like to know who they are. Because I haven't -- I've been looking for them for 20 years and I can't find them. And if they really tell you what they're doing. Where they are or what they're doing. What their quality of life is, we berate that stuff because it relates us to a product. But the fact is we can't even do it. So we have to understand that connection before we can berate it I think.

V

So part of the liberal arts involves us looking back at ourselves and eliminating some of those preconcep-

tions we have about ourselves, which is, "Our mobility shines forth so brightly that it needs no defense." It needs no connection to anything else. It only exists as a virtue, thinking clearly if we can be acted on in civil society, we have an impact on others. And that's where I think we still fall short.

So I go back and close with what Emerson said in the American Scholar stated, which is that the true American Scholar, is "...that the true America scholar is not just he or she who knows, but he or she who knows and can do, and can know when to do." Because to know and not to share. To know and not to do is to live in a closet. And that's not a healthy thing at all.

So I think there's much that came out of these meetings the past couple days. The speakers, as I said, were tremendously good. And the conversation was robust. I thank Michael and others very much for pulling this off. It was quite a feat to get this done in such a short period of time. Congratulations.

END

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(1) The 2-Sigma Problem: http://en.wikipedia.org/wiki/Bloom%27s_2_Sigma_Problem; http://www.youtube.com/watch?v=wqLiLH6Sjnw

Higher Education in the Brave New World:

How Students Will Learn in the Context of How Professors Teach

This conference focuses on delivery and content that serves students in the future.

A STUDENT PROFILE

The symposium held on the campus of Cal State Northridge on
September 30, October 1, 2013.

This document is designed to help inform symposium participants as part of Common Platform information.
For a list of all Common Platform information please go to:
www.csun.edu/csufuture/newworld_info.html

The Cal State Northridge: Student Body and Community Profile

The student body of Cal State Northridge is much like looking at the United Nations. It is diverse in every way imaginable. It has a complex identity that the education community is committed to accommodate. If we could paint a picture of the student body and how it would look on the first day of class, what image would we find?

The following represents what a CSUN class room of students looks like in 2012.

College Ready Preparation

	State	National
English Comp	72%	67%
College Algebra	58%	46%
Social Science	58%	52%
Biology	35%	31%
All 4 ACT Benchmarks	31%	25%

Mental and Emotional Challenges

3.3 % of CSUN students have reported a disability. This includes AD/HD, visual limitations, communication and learning disabilities, deafness, acquired brain injury, psychological disability, autism spectrum disorder, and other functional limitations.

Diversity Descriptions

CSUN Undergrads 2013

Gender:

Male:	47.7 %
Female:	52.3 %

Ethnicity:

White:	32.6 %
Black:	5.6 %
Latino:	23.8 %
Asian:	9.6 %
Other:	20.7 %
International:	7.6 %

Average Age:

Undergrad	22.7 years
Graduate	31.4 years
All	23.9 years

Actuary Life Predictors:

(Average birth year = 1991)

1. Life span: 100 + years
2. Work life: Until 80 years old
3. Number of vocations in a life time: 5

Financials

Funding Source	# Students	Amount
Loans	16,647	$136,913,419
Grants	19, 011	162,578,234
Scholarships	1,330	2,506,307
Fed. Work Study	496	1,671,006

Divergent & Exceptional Life Experience:

Veterans:	789 eligible to enroll
Midcareer:	6,440

* With 6,440 midcareer professionals at CSUN alone—that number has grown by about 20% a year recently. This pattern of growth is likely to continue in the decade ahead. This group is diverse, older, with different life and learning experiences.

And Also:

CSU students in the decade ahead will include a growing number of graduate students (with many midcareer adults among them) and working adults returning to complete degrees or change careers as well as a growing number of international students.

The CSU's growing number of fully online degrees attracts students from across the nation and increasingly across the globe studying in their different living and working context.

www.csun.edu/~instrsch
www.bls.gov/data/
www.census.gov/#
www.usa.gov/Topics/Reference-Shelf/Data.shtml
www.heritage.org/research/reports/2013/03/college 2020
http://research.chronicle.com
college2020.com
CSUN's Veterans Resource Center
tsengcollege.csun.edu
http://www.calstate.edu/sas/documents/Fall2012Profile.xls

Teaching and Learning Models for 2020

As technology advances, so does the nature and quality of teaching tools available for proficient instruction, how will this impact Best Learning / Best Teaching Practices: now and for the future?

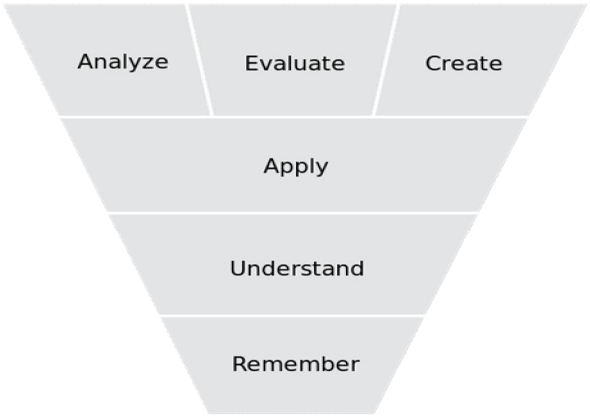
TEACHING MODELS

1. Traditions delivery: AKA, seat time / face to face / in class. The students attend class where the teacher instructs. Assignments are taken home to reinforce the lectures.
2. On-line: The students do not attend class in a room but rather on their computer.
3. Flipped Class Room: Putting the lecture portion of the classroom online to free up in-class time for discussions, problem solving, and/or interactive activities.
4. MOOC: "Massive Open Online Courses" delivering learning content online open to anyone who wishes to take a course. There is no attendance limit.
5. Blended: Usually the mix of traditional class room time and on-line instruction.

And Also:

Increasingly models for how a course is structured and taught are a "blank canvas." A faculty member can craft a distinctive learning experience that considers the course content, the learning outcomes, the students, and their own style. Part of the course may be in the classroom with a solid reason for gathering and an engaged use of time together, part may be in small working groups, part virtual, part in the field … the design of a course or assignment, and the orchestration of a complete and distinctive learning experience can indeed be innovative drafting that leads to a course that eludes category. As faculty have a wider range of instructional options the ability to create an exceptional learning experience expands—like shifting from a box of 8 to a box of 63 crayons—in the hands of those with imagination and dedication to add to knowledge and experience—and there are many such in the CSU today.

Dimensions of Education
"The Six Classes That Will Make Any College Grad Employable"
http://www.forbes.com/sites/billconerly/2012/08/21/how-to-make-a-college-graduate-employable/
Univ. of Wisconsin-Madison
Teaching and Learning Excellence
https://tle.wisc.edu/tleblogs/ambrower/college-2020-according-chronicle-higher-education/
Linda Darling-Hammond, "The Flat World in Education," Teachers College Press, 2010 https://ed.stanford.edu/faculty/ldh
http://fora.tv/2010/08/02/Linda_Darling-Hammond_The_Flat_World_and_Education
www.csun.edu/it/lectur-capture
http://www.educause.edu/library/massive-open-online-course-mooc



Categories in the cognitive domain of Bloom's Taxonomy (Anderson & Krathwohl, 2001)

How Learning Works

1. There is not just one type of learner.
   A. "**Active learners**" do well in almost any circumstance.
   B. "**Passive learners**" require help. Percentage.
2. Research on learning as a science has been going on for over 100 years. The brain has not changed in how it learns.
3. Current research on the Brain and how it works has added support to effective learning processes.
4. No matter what delivery or teaching model, there are five principles that must be employed to overcome obstacles to student learning.
   A. Cultivate student **motivation** by highlighting the value of the course that are success oriented and supportive.
   B. Build on students' **prior knowledge** and experiences.
   C. Encourage the **organization** of knowledge in explicit structures.
   D. Provide many opportunities for targeted **practice and feedback**.
   E. Design for **deep learning** and progression to **mastery**.
5. Benjamin Bloom among others has also identified the phases of cognitive development (higher order reasoning). Course design and instructional strategies play a large role in moving students to the levels of reasoning and habits of mind so values both within higher education and increasingly within the world of career/ professional practice.

The College Graduate in 2020

Getting a Job and Becoming a Participating Citizen in 2020 !

The world of the student is becoming more global.
Knowledge is doubling every 5 years.
Technology is reframing all aspects of business and social life.
What does everyone want and expect from public higher education in the future?

Regional Employers and Community

Employers need people who are:

1. Ready to compete in a world economy
2. A degree that means something dependable
3. There will be jobs that don't exist yet
4. Self motivated
5. Problem solvers
6. Critical thinkers
7. Collaborative team players
8. Trustworthy and honest.
9. Civic minded citizens, informed voters
10. Communicate community values and standards

Educators

Educators are tied to mission which promises:

1. A certain standard in education
2. Help students become more Employable
3. Help students become contributing members of society.

The Student (and family)

1. The student expects the rewards from the promise of being a college graduate.
2. Expediency to Degree
3. Mitigate the debt of education
4. A college experience that is useable
5. The information learned will make them ready for a job.
6. Upward mobility

The "Millennial Generation" Stats

1. Smaller % believe America is the greatest country
2. Less patriotic
3. 75% never married or single
4. Millennials represent 45.8 million people
5. 15% of men, 20% of women have 4 years college
6. 2% have Veteran status
7. Millennials are more optimistic that other generations

The Changing Reality:

The essential life and career skills for the 21st century have, in many ways, merged. It about refined higher order reasoning skills; purposeful innovation; a sophisticated ability to define, analyze, and solve complex problems; the ability to learn at a high level (basically the skills of research and scholarship applied to a wide range of career, community, and life questions); and to work well and communicate effectively with a changing array of other talented professionals (often in a global context). There is also a growing expectation that graduates will have a highly varied work and personal life. Authors like Daniel Pink suggest that careers for those with university educations will look increasingly like what used to be considered "freelancers". They will direct their own career, choose among opportunities, add to education as needed (and they will have access to that needed additional education), and move around more easily, physically and virtually, in a global marketplace. In his book "Rise of the Creative Class," Richard Florida paints a similar picture of a different world of employment for those with distinctive capabilities in any field. So, one could say that in the end, we are preparing graduates to be public scholars, Renaissance individuals in an emerging new age, thinkers and creative artists in a wide range of fields in career and life. In that light – how evolving, engaged, and innovative does the classroom (physical or virtual) need to be? Do today's faculty really need to be thinkers and creative artists in the classroom and in their discipline?

Daniel H. Pink, Free Agent Nation
Richard Florida, Rise of the Creative Class
Richard Bliss Brooke, The Four Year Career
"Five Essential Skills for Leadership in the 21st Century," Psychology Today, Published on June 19, 2012 by Melanie A. Greenberg, Ph.D. in The Mindful Self-Express

Special Appreciation

During the two day symposium, two Breakout Work Sessions for all attendees debating the themes of the day. The following were the leaders / moderators of those sessions:

Day One Break Out Sessions

Theme: **Models for Delivery: Online vs. Brick and Mortar**

Hilary Baker: Vice President for Information Technology and Chief Information Officer, Cal State Northridge

Terri E. Lisagor: Acting Chair of Family and Consumer Sciences
Associate Professor of Nutrition and Food Science, Cal State University

Dr. Diane Schwartz: Professor, Computer Science

Jon Stahl: Professor, Department Chair, Cinema and Television Arts
Screenwriting Option Head

Day Two Break Out Sessions

Theme: **The Future of Education: Functional vs. Liberal Arts**

Dr. Cynthia Desrochers: Professor of Education, Michael D. Eisner College
Cal State Northridge

Dr. Sheila Grant: Professor, Department of Psychology
Clinical Counseling, Cross Cultural, Persons with Disabilities

Christopher Jones: Vice President Policy and Public Engagement, AAC&U
Accounting and Info Systems, Tseng College for Extended Learning

Mark Stover: Dean, Oviatt Library, Cal State Northridge

Dianah Wynter: Associate Professor, Media Theory and Criticism
Department of Cinema and Television Arts, Cal State Northridge

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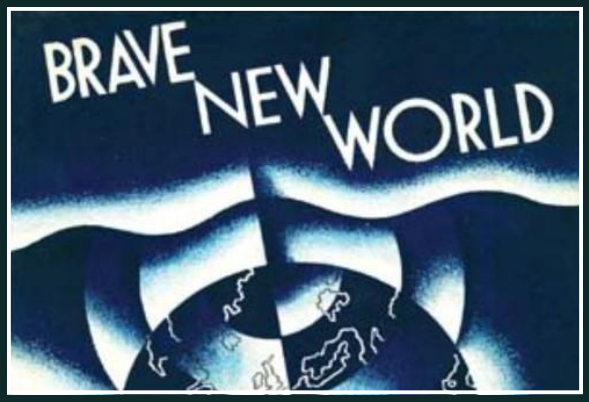
Event Planning Committee:

Talar Alexanian
Sandra Chong
Michael Hoggan, Chair
Zeina Otaky Ramirez
Jerald Schutte
Michael Spagna
Steven Stepanek
Heidi Wolfbauer
Christopher Woolett

Common Platform Resources: www.csun.edu/csufuture/newworldinfo.html
www.csun.edu/csufuture/newworldbio.html

Higher Education in the



CSUN SHINE