National Research Center for Career and Technical Education

The Career Side of College and Career Ready-A Webinar with Jim Stone, Gene Bottoms, Pam Frugoli, Sandy Boyd and Bill Symonds

Jim Stone: This webinar is on College and Career Ready and the Career Side of College and Career Ready. We have with us a distinguished panel I will briefly introduce. They can say a bit more about themselves as we move forward. Just a couple of quick logistical issues for those in attendance, I have a potential door prize I've been asked to announce in exchange for your business card, which will put you on our mailing list, which is mostly a series of random things that I think are interesting that gets sent out on a random basis. And this is loaded with some of the best research-based information you can possibly envision from the National Research Center, so we trade.

The other thing is, please make notes of questions. We will try to get to as many as possible. I'm delighted by the response of the panel and their willingness to come. Each of them here could spend about two to three hours talking about this topic. I've asked them to spend no more than about 15 minutes, that includes me, which, for those of you who know me, is extraordinarily difficult. So we're going to move quickly, but I do want to leave some time for you all to engage in conversation, as well as our colleagues on the web to send questions in, and we will get to as many as possible, and those we don't get to during this time period, we'll try to add to our online version of this event.

So, very quickly, Sandy Boyd from Achieve Inc; Gene Bottoms will be the next speaker from High Schools That Work, Southern Region Education Board; Pam Frugoli, I hope I said that correctly, from the Department of Labor, who comes to this from that DOL perspective; and Bill Symonds was the project director on something that most of you are familiar with, Pathways to Prosperity, a report recently released; and, of course, there is me.

So let me begin with just a little bit of a philosophical perspective on this whole question. For those of you in the back that can't see the fine print on the bumper stickers, the car being towed says, "My child is an honor student," the towing vehicle says, "My child knows a cam from a rotor."

In this conversation about college and career ready, it seems to me that one of the things that we need to pay attention to is this notion of college and career ready includes more than college ready. And I think from reading what each of my colleagues has written over the years, I think there's a general sense that all young people need to be college and career ready. I think where we may find points of difference is how we choose to define that and the evidence on which we might base those assumptions and, indeed, those positions. And so I've asked a diverse group of people here to share their sense of what this means and, again, hopefully we can engage you in this conversation.

Let me begin, I'm going to provide a few background points of view. I will begin by stating very clearly that the Center does not have a position per se on this topic. The Association for Career and Technical Education does have a paper on the notion of college and career ready that I urge all of you to go online, you can download it, or I suspect there may be copies of it available here. But in this conversation, oftentimes

it's framed around labor market needs and anticipation of future labor market trajectories. And so let me just talk about a few things because, as a researcher at the Center especially, I'm always interested in what are the underlying assumptions and what data are there to support those assumptions, or are there other perspectives that data might suggest.

So the first question often is one of STEM. It has become the new thing to talk about. College and career ready and STEM, they seem to flow together. As a child of a long time ago, I won't mention the specific years, I was around when they shot the Sputnik up, and suddenly everyone had to become a rocket scientist, and I think most of you know the subsequent history. But if we look at labor market projections coming from a couple of different perspectives, STEM occupations are expected to generate somewhere between 5 and 6 percent of available work. Another interesting piece of data comes from actually tracking people who graduate with baccalaureates, masters or doctoral degrees in science and engineering, and looking at the annual labor market opportunities for employment, and you can see that we're graduating far more people with credentials in those areas than the labor market suggests we might need.

Now I will say that this 150,000 annually does not include retirements or otherwise separating from the industry, but even if you were to double that number, you can see that, at least based on these data, we seem to have a reasonably good supply of people with these kinds of credentials. Indeed, the National Research Council recently published findings from a rather extensive conference that was looking at issues of future skill demands in the labor market, and a statement was made by one of the participants that said that basically it's not that we don't have enough, in this case, chemists or life scientists, it's that they're looking for people who can work in a workplace and work cooperatively. If I use the term "soft skills" I think I begin to capture what they're really talking about. So, again, is there a shortage of people with these kinds of credentials? There's at least some evidence that suggests maybe that's not the real issue.

Another set of data that I just find intriguing to stare at are two sets of projections about the education needs in the emerging workplace over the next decade. One that has received a lot of attention lately is from Tony Carnavale and his colleagues at the Center for Education and Work. And if you look at the three red cylinders, as they look forward, based on a set of assumptions they make about how one projects these things, they would argue that about 33 percent of the openings that we anticipate over the next decade or so would require a baccalaureate or more - masters, professional education and so on. About 30 percent fits into a category that they've defined as some college.

Now you've seen headlines that will say things like "Two-thirds of the emerging jobs require college." Well this is how that number is derived. And then their report indicates about 36 percent are indeed the largest of all three categories require high school or less. The blue bars represent the U.S. Department of Labor's data derived from their website where they show probably – well, not probably, they show a 10 percent differential in terms of anticipated baccalaureate degrees, but then they divvy up the remainder of the labor market in different ways. They suggest that on-the-job training - they do not have a high school or less category, but on-the-job training, which would sweep up some of that, is nearly 60 percent of the emergent jobs.

Now one of the fun things to do is to watch a group of labor market economists kind of argue with each other. But I think what's intriguing about this graphic is that both perspectives, using different sets of assumptions, will tell you that a quarter to a third of the emergent jobs actually will require baccalaureate or more for entry, that there's some chunk of work in the middle, and we might call those middle-skill occupations, that require skill sets that are assumed to be available only after high school, and if time permits I want to come back to that. So, again, more interesting evidence about how things are shaping as we consider the concept of college and career ready.

Very quickly, I want to share with you something that ACT has done, and some of you may have seen this. But ACT has looked at ONET data and tried to come up with a sense of what career ready means in terms of academics. And very quickly, they looked at zone three jobs, which we'll call it a living wage, that require level five Math skills. There's a seven component scale, five is above the median. But let's look at what that means. From their report - and I apologize if this is too tiny to read, but these slides will be made available to you. If you look at the Algebra that they associate with level five and with an ACT score range of 20 to -23, you see two columns; one is the work key measures. And as you look at the work key measures especially, it's interesting to try to figure out which of those, if any, are actually Algebra.

If we move to Geometry, we find something similar. And, indeed, what we've been doing is beginning to map these kinds of reports against course content. So if you look at the Algebra standards for a number of states, or if you look at actual course content for a number of state, we've looked at California, we've looked at Minnesota, we've looked at a number of states, what you find is most of these level-five Math skills are embedded in Algebra I and less than that, the kinds of skill sets that one develops really in elementary and middle school Math, which is consistent with Jim Rosenbaum's analysis from a few years ago about the Math skills necessary for the workplace that's emerging.

Again, Geometry, when you look at the kinds of skills there that are necessary for zone three, level-five jobs, which might be something like an electronic technician. This is actually a job ad for a position, and these are the requirements. And if you actually break those requirements out into the kinds of skill sets, you see a number of technical skills, you see what we might label soft skills for the sake of conversation, you see a lot of need for experience, work-based learning, which we'll come back to later. And, indeed, when you look at these ads, most of them have as a prerequisite a two-year credential, typically an AAS because this is assumed to be the place where one finds these skills.

Another measure - and again, I'm focused on, you know, Mathematics because it's easier to converse about this because it's more clearly delineated by courses. A study that was cited in 2007 showed that while most workers actually do use Math, the kind of Math that they use on a routine basis is relatively simple - addition, subtraction, multiplication, fractions, estimation measurements, those kinds of things.

I also sort of – this is just kind of fun. When you start looking around at what college majors require for Math to graduate with that college major, if you look at Liberal Arts, and these are just three out of many, what you find is is most Liberal Arts majors are required to take a Math course to get that Liberal Arts degree. Clearly, if

you're moving into a Math intensive major, Engineering, any of the Sciences, all of those kinds of things, clearly you need more Math, but for Liberal Arts majors, they – Mathematical thinking is what the University of Minnesota requires.

So most of you have seen these kinds of employability skills, workforce readiness skills, but I would also add something from the OECD report, "Learning for Jobs," where they talk about the need for in addition to, the numeracy and literacy skills to continue learning beyond whatever we consider secondary education, you also need to prepare young people with job skills that have immediate relationship to labor market opportunities. Now, this comes from a report, "Learning for Jobs," which I highly recommend. I would add the notion of industry certifications. We're doing some work on that, as some of you are aware of. We've identified a number of certifications that can be developed through high school career and technical education programs. I just met with somebody yesterday from Florida and they have a much longer list, so we're anxious to learn more about what they're doing.

Let me lay out what I think is the transition question here. If we take a mythical group of 100 young people who start 9th grade, best estimates are currently, depending on where you are, and there's a great deal of variability within states and among the states, but let's just take the number of 70 percent finish high school within four years. You get a fraction of a percentage increase if you include fifth year seniors, this does not include GEDs. This means we now have about 30 percent of that cohort moving into the workplace without anything to share with an employer. Of those 70, 62 percent start college immediately within the first two years following high school; that numbers been going up and up over the last decade or more. But now we have another 25 percent of that cohort moving into the workplace with high school only as their credential. Forty-three percent start college. I think most of you are familiar with the issues around completion, a high rate of dropout, so now we have another 19 percent of that original cohort moving into the workplace with some college credits and a lot of debt, typically. Fifty-seven percent complete within six years, which is the new normal for a four year degree. I have to confess, it took me over ten years to get mine, so I'm not criticizing anybody.

We have now a system that if college preparation and college completion is the goal, we have a system that works reasonably well for perhaps a quarter of the young people who start 9th grade. I think it's important, as we think about college and career ready, to keep this in mind. I think most of you are familiar with this. There are reports out now that point out that this is the first generation of young people less likely to finish high school than the preceding generation. And it's another benchmark on which we trail virtually all of our economic competitors.

The "Learning for Jobs" report that I alluded to, again, required reading. It's homework. I will send out a requirement, so pay attention. A couple of points that I want to make on this one, and that is, again, the immediate job skills they recommend is something that's necessary, the taking full advantage of work-based learning, and the idea of preparing students for further study and jobs. And this is an important distinction, I think, in the conversations going on in that report compared to the conversations going on in this country. And then career guidance, an absolute critical necessity to this whole process.

And, again, looking at this report we find the percentage of young people who engage in this kind of intensive work-based learning ranges from 5 percent in nations like Ireland to more than 80 percent in the Czech Republic. Even in France,

Korea, and Japan the figure exceeds 20 percent. It's not without some irony that in Korea right now, which has one of the highest rates of college completion, is trying to convince more young people to go into what are essentially regional vocational centers because they don't know what to do with all these college graduates. They've been very successful at doing what we think we may want to be doing. Again, another sort of interesting point, the percentage of young people who meet these kinds of standards for intensive, what they call "VET," vocational education in training, our percentage is so low it doesn't even make the graph.

I would finally point out that it's important to recognize that high school – this is Paul Barton at ETS has made this observation, and Bill will talk more about this later. High school is the last publically funded opportunity we have to prepare all young people to be successful adults. Whether you accept the percentage as close to 50 percent or 40 percent, there's a substantial percentage of young people who start 9th grade who, for whatever reason, will not successfully complete a college experience and achieve that kind of postsecondary credential that we consider to be important.

Now what do we do about that? So I'm going to stop there and pass this along to my colleague from Achieve, Inc. and we'll kind of move down again. I've asked folks to talk very quickly so that we can have time for your conversation.

Sandy Boyd: Thank you, Jim. Okay. So I think this is the paper that Jim was referring to that ACTE put out last year, and frankly, we were really excited to see this, because for those of us that focused on academic preparation and that really is kind of Achieve's wheelhouse, so that's what I'm going to talk about. This seemed to me to be a place where we could maybe all be in agreement on what we meant by core academic skills. So that's going to be my focus today. And I'm looking forward to the discussion later for conversation.

So this is straight from the ACTE paper that I think we can all agree that all students need a foundational academic skills and knowledge, especially in English and Mathematics. And I want to say from the start, because Achieve has spent so much of its time on English and Mathematics and actually we're starting work in Science now that that is not enough, we never have though that that was enough, but there – but English and Math are core subjects which we do think are really important for people to be able to be successful in other areas. So I'm not suggesting just because I talk about English and Math that we think that's enough, even on the academic side.

So there seems to be some sense of a lot of overlap in core academic skills that kids need to be successful. And it's also, I think, important to say, in some ways we probably didn't say this enough in a lot of our early work, that when we talk about academics, we don't just mean content knowledge. We actually do mean these skills, which you hear a lot from employers, an ability to work collaboratively, to write well, to be self-directed, to be able problem solve, critically think, that those are, in fact, part of the academic foundation that we're talking about. And, in fact, we believe that you can't really have one without the other. You can't really separate academic content from skills. And that, in fact, that is where you get to things like what Hewlett has called "deeper learning," being able to apply the knowledge that you have requires that you have a rich content base, and that's where the skills are developed. And I'm going to go in a little more detail and talk a little bit about the

common core state standards, which I think actually do a pretty good job of calling out this link more directly than ever before.

So let me talk a little bit about how we got here and where I think some opportunities for us all to work together may be. First of all, I'm so glad I took a bunch of my slides out because I would have done Jim's slides, so that's another good – that's another good area of comparison. But this is sort of the, cut another way, some of the Carnavale work on the economy, kind of the reality of the economy. I'm not going to do justice to this slide because underlying the numbers here it's really complex. But what we can see is sort of a growth in the number of jobs that require more education, but not necessarily as much as a four-year degree. And you see a real decline in the number of jobs available to adults without a high school diploma. In fact, the 10, 11 – 10 percent, these jobs are typically transitional jobs. Those aren't career jobs; those are not jobs that will give you a living wage predominantly. So there's less opportunity all the time for students that drop out of high school. That's probably also something we can agree to.

Some other facts that really serve as a foundation of our work, we know that students who enter a postsecondary education, that there's about a third need remediation in English or Math, and that if you begin in any postsecondary institution, no matter why you're there, if you're there for a certificate or a two-year degree or a four-year degree, if you begin by having to be remediated, the odds that you actually complete what you want – what you're there for, that you reach your goals are – hopefully that wasn't a reflection on my presentation so far. This is why I'm not a waiter.

Anyway, if you start behind, the odds that you'll finish are not good, and to Jim's point, you may end with a lot of debt and not much more to show for it. We also have done some interesting polling. A few years ago we actually asked recent high school graduates who were in the workplace or at colleges or universities what they thought now that they were out of high school and were young adults, what they would have done differently or how they felt about their high school experience, and they reported that they felt like there were a lot of gaps, frankly, in their academic preparation, much less their technical or employment skills preparation. But they really felt like they were missing some important things.

Deeper in the survey you see that they particularly wish they had taken more advanced Math courses because that's something they were struggling with. In a recent poll that we did last summer where we actually were curious about this agenda and what did people think about the college and career ready agenda, and we asked the voting public. And it was interesting, we did it at a period of time where there was pretty much no agreement on anything. Our pollsters said they seeing, you know, the electorate before the midterm election was very disenchanted with everything.

This was the only survey that our pollsters did the whole summer where they found any kind of agreement. And there was agreement, bipartisan agreement, not at all dependent on ethnicity or education background or jobs or anything else. But the voting public really does believe that education and training beyond high school is necessary for future success and that all students really need to be held to a pretty high standard for high school graduation and that they need to be better supported to get there. So we saw a lot of common ground, I think, out there among the public. And, of course, you've see probably these other number as well from faculty

and ACT and others, what folks say about the preparation levels of students as they enter postsecondary or – let me back up a second because I'm sure we're going to talk a little bit more about this.

We throw the term around, college, very loosely. And I spent a fair amount of time last spring in focus groups actually trying to find out how in an elevator speech I could use the term "college" to mean a certificate program, two-year degree, four-year degrees, all of those other things we really mean, a postsecondary experience, and did not come up with a magic solution. But when I say "college" I mean that as a shorthand for postsecondary education. I don't mean that as a four-year degree.

So this ADP project was maybe the first time in standard setting in figuring out what K-12 standards ought to look like in end of high school expectations where we actually asked faculty at two- and four-year institutions and employers what they thought students needed to know and be able to do enter the workplace and be successful academically, what they needed to know and be able to do in English and Math. And that's how we created the American Diploma Project benchmark.

We found a high degree of convergence, and ACT did as well when they did some research after in both Math and English in terms of what professors and employers were saying they needed high school grads to be able to know and do. And, again, you see a lot of the things that Jim brought up and that you hear frequently. A lot of focus, not just on content but on skills like communication, an ability to write, teamwork, problem solving, think through problems, logic, that sort of thing.

So we came up with our definition of college and career readiness, and this has always been Achieve's working definition. And that is that if you are college and career ready when you graduate from high school, that means you are able to qualify for and succeed in entry-level credit-bearing coursework no matter where that's at. It could be a certificate program, two-, four-year degree, apprenticeship, whatever that means.

I know from my previous experience at the National Association of Manufacturers that sometimes those apprenticeship programs and certificate programs are frankly more demanding than just general entrance to two- or four-year institutions. So we're keenly aware of that. But that's our expectation.

So we worked with about 27 states to raise their end-of-high-school expectations, and then our work was used as the foundation for the common course state standards and Math and English that were released last June. Forty-three states and D.C. have adopted the common core. Forty-five states, if you heard Mike Cohen's presentation this morning, are involved in one of the common assessment consortia or both of the common assessment consortia. So these standards are, in fact, becoming pretty much – these are the norm that most states are moving towards in terms of what their end of high school expectations in English and Math are going to look like.

We have a ton of information on our website. I cannot do justice to the common core, but I think it's really worth saying that these standards are very different in many ways from previous standards in that they really pay a lot of attention to application and to skill development, and, again, based on employers expectation, higher ed, international benchmarking, the best of state standards out there. And in English language arts, some of the big changes are much more than emphasis on

informational text reading, not just literature, an ability to read in different content areas, to be able to write in different content areas, not just personal essays, but to be able to synthesize arguments, sort of the writing we actually do at work, sort of communications or speaking and listening skills, presentation skills, again, like you'd expect in the workplace.

In Mathematics, the big changes in Math are there are fewer standards and there's an expectation at every grade level that you'll go deeper and to fewer standards. One thing we saw when we looked at international standards from the highest performing countries was that they had much fewer topics, especially in the early grades, and that meant kids actually could learn the material, and they didn't have to come back to it, there was less repetition. So in grades K-5, in particular, there's a lot of emphasis on fluency in numbers because my husband is an 8th grade Math teacher and the number of kids that are still hung up on fractions is, you know, astonishing. You hear that from high school teachers as well. So the idea is to get those basic skills done and in and that you can then begin more advanced Mathematics without having to repeat the basics again and again. Much more emphasis on Mathematical modeling, using Math, Math applications, Statistics, again, these are things that we've heard over the years from employers, from professors, and, you know, it's something that I think you'll see more and more.

Now it's important to note to some of Jim's slides, instead of getting hung up on course titles, I urge you all, especially on the Math side, to look at what the Math and high school actually requires. It's now going to be incumbent upon states as they implement the new standards, and this is the case and time you implement these new standards to actually figure out how you organize these standards and the courses. And our model course pathways that are included in an appendix in the standards, but there will be more to come on that front, so instead of getting hung up on class – or course titles, it's important to actually really look at, I think, the standards. And, again, graduation requirements is another area where states are going to have to pay close attention.

Just a couple of things besides the assessments that Achieve is working on that I think are worth mentioning, the GED is being redone as well in this environment, and Achieve is work ACE to revamp the GED. Right now it's a pass/fail. It won't be in the future. The GED in Math and English will also be aligned to the common core state standards, and students – adults who take the test will get, it's likely that they'll get multiple scores, including an indication of whether in fact they're college and career ready. So I think you're beginning to see sort of an alignment on at least the baseline academic foundation. And I think there's a lot that we can do together to make sure that we're reinforcing that for all students and figuring out different ways to get more students the academic foundation that they need to be successful no matter what path they choose. Gene.

Gene Bottoms: Very good. Gene Bottoms with the Southern Region Education Board in Atlanta, Georgia. Jim has done a good job of setting the framework and Pam has given you a good overview of the common core. And let me commend Achieve for their work on the common core. They are a new set of standards, they do have a lot of application in them, it will make a lot of sense for the career and technical field to pay a lot of attention to those standards and how some of them can, in fact, be applied through career and technical classes.

So let me just tell you an assumption – a point of view I'll be coming from that's been a point of view for half a century, if I'm going to error in high school, I'm going to error on maximizing opportunities for students, and I've done that for my children, my grandchildren, and I've always practiced that in terms of high schools. I'm not one that narrows options, but broadens opportunity – broadens business of opportunities. So that's why I've said we have a number of agenda items at SREB that supports a college and career ready agenda. And my first slide will have those bullet points, but I'm just going to mention of the eight strategies.

One of those strategies is to align a college ready core with a career-focused program of studies. We think that's fundamental if we're going to reach a graduation mark of 90 percent of the students in this country, and having at least two-thirds of the students having some kind of credential beyond high school. Now let me just point to – Jim had excellent sets of facts, and he always does, but this weekend in reading a business magazine, this fact stuck with me: Apple has 25,000 workers in America, 120,000 in China. Those jobs aren't coming back, I suspect. There's 3.5 percent unemployment of college graduates in this nation. The overall unemployment is 9 percent, and that means it's much higher for those who do not have educational requirements. And I know the economy is picking up because are now beginning trying to steal some of my best people. That's always a good sign.

So we're fast reaching the point where we're going to have a shortage of people developed versus the jobs that are emerging. Jim's kind of validated this. We think at SREB two-thirds of the jobs are going to require some kind of preparation beyond high school, I think he and Pam kind of agree on that. But we have 25 percent plus who do not even finish high school and that has to be a challenge.

Now let me get you on the ground for just a minute. We've been working now for over 20 years and during that time we've been in more than 3,000 high schools across the country, and currently are working with about – somewhere between 1,700 and 1,800 high schools, middle schools, and technology centers. So I just want to look at the 2010 data from that network of skills.

These are CT students, these are students who take four courses in a CT sequence of courses in high school, some at tech centers, some it covers high school. Seventy-seven percent plan to go on to some form of further study. 70 percent males, 85 percent females, now you see the same widening gap here among males in these schools as you do at large. And someone said this recession is a male recession in part, they have much higher unemployment there. In terms of readiness for college, using a set of benchmark we've had, about 57 percent meet the readiness goals for reading. Males are significantly down from young ladies. You can see the numbers there. We fail to develop the same literacy skills among our young men which is, I think, the most basic vocational skill in the 21st century in the workplace. And then you see the Math readiness, the percent who meet Math readiness skills there, and you see the differences for males and young ladies. So young ladies seem to get it more than do males. That surprised you ladies.

Now of those – now, this is interesting. You saw 77 percent plan to go on. As we followed up in '06 to '08, 75 percent of the CT students who had finished core credit entered in some form of other study, males 71 percent, young ladies, 79 percent. And you can see the kinds of institutions, technical skills, two-year colleges. About 60 percent go on to four-year institutions, oftentimes in a career field that's kind of aligned to their high school career studies. To quote Bob Schwarz and Bill's notion

that you can align high school studies to a career focus, you'll get more folks going on in those fields. Remedial work, 17 percent in Math, 16, 21. Now it's higher nationwide. I'm not sure why it's lower for this group of schools because, I guess, we have pushed that board. And you can see that reading and other areas. So I just kind of leave that with you.

I have a young lady who is a great editor, but she sometimes edits my work. Well, I did not mean to say preparing students for a duel, I meant to say preparing students for a double purpose. CT folks have to remember that at least 70 percent of your students have plans to go on for further study, you cannot view them as terminal at the end of high school. So you have to join with the rest of high school to think about that double purpose. I mean we've been tracking this now for 20 years, and we have seen this gradual decline, decline, decline.

So in terms of the notion of college readiness, if you're interested in a publication that kind of lays out our thinking on this area, you'll find the next generation of school accountability. We had a very distinguished panel shared the former governor of Georgia, laid out a number of issues, and one of the things we did agree on, that there is a threshold of knowledge and reading, writing, and Math that all high school graduates must possess. We're not convinced that those are the same as college readiness. We're not sure that we're at the point yet that all high school graduates will meet college readiness standards. After long and arduous debate with our group that's kind of where we came out on that topic in terms of high school graduates.

But in terms of readiness for college, we were pretty close to what Pam was saying; that you have the reading, writing, and the Mathematical skills necessary to enter into credit-bearing courses without the need to take remedial classes. Now there was some on our group who felt like the current cut scores were not high enough. I'm not sure I agree with that. My sense is they're high enough if the youngster knows why they're there. We have too many folks going to college for the sake of going and do not have a purpose aligned to it, and purpose is known for great motivating factor. I think they have the wherewithal to succeed if they have a reason for being there. If they can declare a major on day one, they have a burn in their gut to pursue it and they see themselves in that field and then that's where I think we're probably weak.

I think counseling for the reason for going to college is very weak. Counseling for going to college is very strong. Kids have got to go college, but why they're going is not a big part there. So indicators of career readiness, to us, and this where my friend Jim and I disagree a little bit, but I err on the side of broadening the options. I see nothing that convinces me that youngsters do not need four years of Math. If you're going to operate this capitalistic system, if you can run the numbers, you're going to get the promotion. You're going to become the contractor rather than someone who works for a contractor, you're going to move up. And while they may not need pure Algebra II, it is the reasoning and understanding that some of us got in Algebra II in high school that has served us well over a lifetime.

Reading readiness indicators for postsecondary studies, certainly reading is crucial for careers, as well as for the workplace. Meeting Math readiness indicators for advanced training, certificate. I'm not sure if one needs the same Math skills for the different advanced training out there. There are some of those advanced training programs that have no Math base. There's some that have a very strong Math base and are going to need higher level Math than you need to get into Liberal Arts

program to succeed. The soft scales, Jim made that point very well, I'd certainly buy into that.

But we also like to recognize kids who pass an employer's certification exam out of high school. And there I would certainly point to Virginia, who has done that very well. In fact, they let those exams count to replace two verified academic credits. I'll also point to Florida who, today, a system gets a bonus in terms of increased funding for every student who passes the employer certification exams, and those exams carry the same weight as an AP exam in their school report card system. So I think both of those two states are worth looking at in terms of there are certain – those exams, I do think, have merit.

Now in terms of – well, I'm three slides behind. That's all right. Something about the common core curriculum, and there are many ways to earn the common core, but as you look at these numbers here, students who complete all three parts of that common core curriculum - you can begin to see that those only finish about two parts of that curriculum, a much higher percent have to take remedial courses. Those who take two or three parts, as you can see here, fewer have to take remedial courses in college. And if they take all parts of what we recommend, that's four years of college preparatory English, because we find that the lower level English classes are primarily designed for males, 70 percent of the students in those classes. They're courses you have to read a little in, think less.

But the English courses that seem to advance you – even Jim sent me a research paper recently that said that what other academic course besides Math one could predict earnings on but taking that junior/senior level English course. But if you take all three parts of that curriculum along with a career concentration, you have a much fewer percent, but at least taking two parts of a college ready core, four years of college preparatory English, four years of Math, three lab Sciences, if you take two of three parts of that curriculum, with Math being one part, that's what you get in that middle, you have about 14 percent who will have to take – you can see the percentage there in the middle who will have to take those curriculum – remedial coursework.

In terms of looking at the technical area, we looked at employer certification exams, studied those a couple years ago. That publication is on our website if you have interest in it. We recommended 86 exams that could be used for high school youth. We recommended nine others as provisional. We recommend provisional based solely on the fact that there was nothing in the database in which employers could validate a cut point, which means they would have value in the workplace. But there are certification exams that have merit. I'm sure there are a few materials on the market today. I'm think I've already given this one here, but both Arkansas and Georgia gives the Work Keys. There are other states that do as well, I'm sure, and I'm just not up to date on those. It is way to get into soft skills and some minimal level skills.

A friend of mine who I bust so much about work, he decided to take the exam to see how truthful I was. He said, "basically Gene, I had to get 31 out of 33 Math, and the one complicated Math problem and one that required me to reason and think," so it is a fairly low-level exam. And when I asked ACT if they would back up their research, they did, to validate some of the things Pam referred to, they're not willing for that exam to be used if you can pass that exam to replace, you can go directly into credit-bearing courses without taking their other courses. So while they tried to

make the alignment, they're not really willing to back it up. I called their senior – one of their vice presidents out there for that area, and they simply would not do it for I testified for a state committee in one of the states. I like the Florida industry certification exams, and I like what Virginia's been doing in that area.

A couple of other points, the senior year, an awful lot of students decide they're going on for some form of other study, and by the end of their junior year we think they ought to know whether or not they're ready. We developed, a couple of years ago, about a 100-page guide of how one ought to redesign that senior English course for kids who were going to technical schools, that were going to have to go into remedial coursework in reading and writing. It is very much tied to CT, reading technical kinds of material, explanatory materials. That framework for that course builds very heavily on these seven indicators. We think these are crucial indicators of one's ability to read and analyze material, which is going to be true in the workplace.

We've most recently put up there a similar course on 17 indicators that we think if students can meet, they can meet because of readiness efforts in most community colleges, including for advanced training to design that senior Math course. We have some evidence that if it's taught well, it can, in fact, work. And some of the things we focused on that course are these items here. Let me just kind of conclude my remarks, and I think Bill will probably touch on this.

But a recent child study trend report provides a developmental perspective about the confidence students need to enter college, and they have a series of readiness indicators to college and most of development and for careers. And here are five areas that make sense. Now I'm not saying you've got to be that .5, to be clear. I'm not saying you've got to belong to a church. You ready? But I do find that young people who have some sense of purpose in their lives, some sense of calling in the historical perspective, are far more successful in whatever they choose to do. And I think that's something we still talk very little about in CT classes.

In fact, I think in CT classes we talk very little to kids about what's your interests, what's your dreams, where do you plan to be four years from now, what's going to drive you. In fact, it's almost absent in the debate on common core standards, on readiness for college, and that's something – that sense of purpose, that sense of reason for being, how do I make all this make sense to me, is a factor that we ought not to overlook, and I know Bill's going to build on that. And thank you very much.

Jim: Thank you, Gene. Pam, we'll come back to the Algebra II debate, I hope.

Pam Frugoli: Okay. I'm Pam Frugoli. I'm from the Employment and Training Administration at the Department of Labor, so my presentation isn't quantitative at all. But I just want to say that when I was asked to talk about this topic that we have been looking at this and there are so many sources about what are the foundational competencies. Federal agencies have different perspectives; the work readiness credentials, some of which you mentioned; the common core standards; partnership for 21st century skills, there's a lot of state projects on this and there are others.

So we've actually, at some point, sort of tried doing a crosscut analysis - you can't read that, but that's just to show you how many different sources there are in different things - and what we find is a lot of varying terminology. You know, even in defining literacy, we have information literacy, digital literacy, media literacy, ICT literacy, and does that overlap with basic skills, you know. Then even in – obviously

everyone thinks that reading is part of literacy, but that is defined in so many different ways, reading comprehension, reading with understanding, reading for information, blah, blah, blah.

Communication, so that's broken out into the listening and speaking, sometimes it is broken down into three pieces. So we decided – this is just background for what our approach is – and first I want to acknowledge, I'm going to talk about the labor perspective and approach, but we do work with the Department of Education and know that they have worked with their programs of study within CTE on the common core knowledge and skills. And what we have done at Labor, we feel this is appropriate to our role, is we have focused on the foundational competencies for specific industries and specific occupations.

And I do want to mention that in our system now, we also are emphasizing credential attainment and industry-recognized credentials. We actually have a high priority performance goal to increase credential attainment by workforce system participants by 10 percent by mid 2012. And I'm actually very interested in some of the things that Gene and James have referred to about industry-recognized credentials because we have resources to try and help the workforce system know more about it.

And I want to say, when we talk about the workforce system, a lot of – we pay for training and a lot of it goes to community colleges. So I mean we are not offering the postsecondary training, but we're helping people to obtain it. And also, I just also wanted to mention that right now we are working with the Office of Vocational and Adult Education and with parts of Health and Human Services on the whole ramping up for health information technology. A lot of grants have gone out under the Recovery Act to, first of all, help medical facilities buy health information technology, but then also we need to train the workforce that will be using that. And so we're trying to work together so we don't have duplication of efforts.

So what we do at Department of Labor are industry competency models, which I will show you. We have a building blocks framework that we start with, and then we have actual 18 specific industry models. I'm the manager for that and also for the Occupational Information Network, ONET system, which, for over 900 occupations, talks about knowledge skills, work activities, tools and technology, and other characteristics and requirements of occupations. And we have, in the past, done the Secretary's Commission on Achieving Necessary Skills; that was in 1990-1992. But it's amazing we still get inquiries about that from people, and we have to say, well, what we do now is this, but I thought I'd throw that in there for those of you who are interested.

So, also, one of the ways we deliver our information is on the web, of course. So the competency – the industry competency models are contained in this competency model clearinghouse. So that's the web link for it. The occupational information is in two sites now, in ONET OnLine, and we just released, on February 3, a new site called "My Next Move," which is ONET information, but it's at a different – it's a simplified language and simplified navigation, so it's more suited for young people, for people with maybe lower literacy levels, but they can still explore careers and then it links through to ONET online, so if they do want to look at more detailed information they still can. You know, we haven't gotten rid of ONET OnLine. But I think you will want to look at that.

So this is what the Competency Model Clearinghouse looks like. You can just see some of the models we have is advanced manufacturing, aerospace, automation, bioscience. We have three kinds of construction - commercial, residential, and civil. And you see that little pyramid there, but here it is bigger. This is how we have organized the competencies.

So we have three foundational tiers that underlie every industry model. Then we get to industry specific tiers in the middle, tiers four and five; and finally, occupation specific at the top. So because you may not be able to see that from the pyramid, tier one is personal effectiveness competencies, and I think this corresponds to what James is talking about with soft skills; then tier two, our academic competencies, which, of course, we are all talking about here; and tier three, our workplace competencies, which some of the career readiness credentials and work-based learning and, you know, technical skills, things that we all recognize people need to function in the workplace.

So just so you can get some idea of what is in each of those tiers, personal effectiveness includes interpersonal skills, integrity, professionalism, initiative, dependability, and reliability, and willingness to learn. And these are just terms. We also have – behind that we have, you know, more language explaining what we mean by those things. Then, obviously, you know more than I do about foundational academic competencies. So, you know, it includes the three "Rs" and critical and analytic thinking, which has been mentioned, active learning, computer skills.

So tier three, workplace competencies, the list starts to get longer, but it includes teamwork, customer focus, working with tools and technology. Business fundamentals is something that came up, because I should explain that when we developed this sort of pyramid model we originally worked with some industrial-organizational psychologists who actually do competency models for a private business, and so they set up the structure. But then when we build the actual models for specific industries we work with industry partners, okay.

So, for example, this is the first three tiers of the advanced manufacturing models, which is something that we did with the Manufacturing Institute and with, you know, groups of employers that they brought together for us. And I've highlighted here that, in addition to what I already showed you from the basic building blocks, when this was just updated last year they added lifelong learning as a personal effectiveness competency, they added information literacy, and then they added sustainable practices as a part of the workplace competency. So each model can be slightly different and is customized by the Industry Association.

Now the other thing is, so these are national models, and we recognize that national models don't always do it. We do have a model for information technology, but if you look at the economy in the United States, you'll see that, you know, Silicon Valley in California sort of specializes in a lot of Internet things. You know, Minnesota, Wisconsin does a lot still with hardware. And in the D.C. area it is all about cyber security. So, you know, we realize that there are different specializations, and so we have built online interactive tools that allow people to take these competency models and customize them for states, for local and regional economies. And we have also, on the website examples, of people who have done this.

We recently taped a webinar where Missouri talked about how they were building green competency models. The Goodwill organization talked about competency

models that they have built for working with their customers. And the geospatial industry has also – is using the competency models for curriculum development. So we get a little – you know, we do have the foundation competencies, but then we also go on the specific industry competencies.

So we actually have a tool for you to start with one of our competency models and then adapt it and customized for, you know, whatever group you're working with. And we also, then, have a way to build a career ladder off of that so you can put the jobs in place. I didn't go into a lot of the pictures of that because I didn't think that we would have time. But you can actually put the blocks together for a career pathway, put in information about the job, and then put in information about what it takes to move from job to job, and you can actually build a little diagram. And so if it's an employer certification that moves you from one job to the next, you can indicate that.

So these are all just links to the various tools and, you know, there's a tutorial on the website, there's webinars, and we do have examples and write ups of people who have used them.

So then on the occupational side we have the occupational information network system. So it has a content model that includes many, many descriptors and variables on occupations. But I think the ones that are most relevant to our topic today are the ONET basic skills, which includes, you know, content. So that's some of really mostly what we would consider the academic competencies, and then the process skills, which includes the critical thinking, active learning, learning strategies, and monitoring.

Then, in addition, even though I'm not going to go into all of them, we have six social skills in ONET, we have complex problem solving skills, 11 technical skills, three system skills, and four resource management skills. Now the beauty of this is not so much that we have these terms but that all of these 900 occupations in a database that are available online are rated as to the importance and level of all of those variables. You know, so it allows you, then, to check, you know, the things that you're teaching, you know, which occupations are they important in and at what level.

So this is what ONET online looks like now. We also emphasize green jobs now, or jobs in the green economy. We've identified three sort of different emphases that some jobs are just going to grow as a result of the green economy, some will actually have different skill demands, and some are sort of new and emerging. But you can go in here and search for an occupation and find out what the ratings are on all of those variables, including the basic ones. And then this is the new site, "My Next Move." So you can see it's very simplified. There are sort of three accessing strategies like keywords, the industry, or we have now put the ONET interest profiler, which is a career interest assessment online.

It's also been reduced to 60 questions. We found that people didn't want to do 180 questions online. They wouldn't finish. And also, it is based on RIASEC, so if you have your RIASEC scores, like, from taking the ASVAB or from other assessments, you can just go and enter them in and then let it – it then will pop up lists of ONET occupations that relate to your interest profile, and you can search it. James mentioned before, the job zones – you can search it by job zone. So job zone one is you either have or you haven't completed high school yet. Job zone two is you have

high school, maybe a little postsecondary, and so forth. So then you can see what related to your interests at different levels of education.

So this literally came out in February. We hope you might be interested in using it or directing students to it and so forth. And this is also – if any of you have used ONET online, you realize you get a seven-page report of text on every occupation, which can be very daunting for some people. So what we've got here is a one-page report that shows you the top most important knowledge skills - abilities, personality traits, technology that's used, the educational requirements, job outlook, and links to explore more.

Another feature is that this links through to actual job openings in your local area, you can put in your zip code or your state. It links through to help you find colleges that offer training for these occupations. It links through to wage information. You know, we provide national wage information, but you can go look up state and local information. So it's pretty nifty. And I just wanted, you know, to share that with you because basically this is how we're approaching this, getting out information about what skills are needed to everybody through the web.

And just because there are so many work readiness credentials, and I just think that – there's one study that looked at a number of them by jobs for the future that compared work readiness certificates, so I thought I'd put that link up. And I also – in addition to the slides, I just sent James this afternoon, just a one-page list that has all the links on it, because we're really trying to save paper now, and so I don't like to bring handouts. I think it's just easier if you post that along with the slides and then the links will be live, so they're all going to be on one page for you.

Jim: It shall be posted.

Pam: Thank you. Okay.

Jim: Bill.

Bill Symonds: Okay. Well, thank you, Jim. It's a pleasure to be here. I don't know if I'm batting cleanup or if I'm like the guys they bring in at the end of a football game where the score is 50 to nothing and you've got to have somebody on the field. But I want to keep my remarks fairly brief so we have at least some time for discussion. I'm going to be talking about the "Pathways to Prosperity" report, which we released just a month ago, and since then the reaction and interest has been really overwhelming. You know, it's generated in the media some controversy. We've been attacked as advocating a return to the bad old days of tracking and encouraging young people not to aim for the stars, but rather that, you know, they're headed to a dead-end job. Nothing could be further from the truth.

We actually launched this study because we were so concerned that we were failing to prepare such a large percentage of our young adults to lead successful lives as adults. That's the reason why we embarked on this whole project. We spent a long time working with many partners, including Gene Bottoms and Jim Stone, who were actively involved in many of our meetings. And the report seems to have struck a real chord across the nation. We've even heard from the Bering Strait School District in Alaska, which serves 15 Eskimo tribes in Northwest Alaska. And I think it speaks to the fact that many people feel that somehow our whole operative school reform

has gotten a little bit off-track. We're losing an awful lot of young people in the process.

So to bring it into focus, what we're talking about, right before we released the report we asked a few prominent people to offer comments about the report, and Joel Klein offered one that went right to the heart of our topic today. He said, "This is a must-read paper that focuses on the need to develop meaningful career training as a part of comprehensive school reform. Career training has been ignored for far too long but is essential if we're going to address the career ready piece of the puzzle that, along with a college ready piece, is now all the buzz."

So I think what Klein is getting at is that while we often mingle the terms "college ready" and "career ready," in fact – and there are some important overlaps between the two – in fact, there are also some very important differences. And I'd like to tell you a little bit about our research and how we identify – you know, how we're doing on the college-ready piece and how we're doing on the career-ready piece and then close with some comments about what we think we need to do as a society if we're going to better prepare our young adults.

So we've started with a question of what's the pathways challenge which is, you know, why are we failing to prepare so many of our young people? And there's really several different ways to look at this. But one is strictly looking at the college-ready piece, is that we've increasingly lost our global leadership in educational attainment and achievement. We've heard a lot about that from President Obama recently. Secondly, and this is more the career-ready piece, that, you know, right now, teens and young adults have been hit far harder by the Great Recession than people over the age of 25.

We think work experience is a vital part of making the transition from adolescence to adulthood. It's especially important for low-income and minority students, maybe not as quite as important if you're, you know, living in the upper middle-class, but for the low-income and minority students who are often falling behind in school, they really need this experience, and increasingly they're not getting it. And the third factor is that the whole nature of the transition to adulthood has really changed dramatically. If we had been here four decades ago, back then the average young woman was married at 21 and a mother at 23, and most guys got a job right out of high school. Now if you were living in a factory town you often just went across the street and went to work at the steel mill or whatever. So the world has really changed, and its vocational system hasn't necessarily adopted.

So this is some information here about how the labor market has changed. Jim has already done a great job of summarizing this. But, you know, we look at the question of what's our goal, and this part of our message has been somewhat misunderstood by some because, you know, we've been described as attacking college for all. What we're really saying is that the concept of college for all is a lot more than just going to a four-year college. Now, unfortunately, if you go into a lot of high schools, even in low-income neighborhoods, you're going to see posters about Stanford and Berkeley and this kind of thing, even though only a tiny number of kids in that high school are ever going to go there. They're not talking about all the other options that are open to those kids. And one result of that approach is you make many of the kids feel like they're losers, you know, they're not part of the chosen ones, they're not going to have much of a future. It's really a defeatist approach, and what we're suggesting is that we need to give a lot more value to other approaches to post-high

school education, including community colleges, apprenticeships, the military, by the way, does an increasingly good job at career training.

Now let's break this into two portions. How are we doing on more of the academic preparation, the college ready, and how are we doing in the career ready? So in the college ready, you know, the news is really not good, and all of you in this room know the facts. We've lost our leadership. For over 100 years we led the world in educational attainment. We've lost that leadership in high school graduation, in college, as Jim, and I think Gene, also mentioned. We send an awful lot of young people to college. Many of them drop out before they ever get a degree, and as a result we're falling behind other nations in terms of college attainment.

And so the bottom line is that by the age of 27, even though we live in a society where education has never been more important, only 30 percent of young Americans have a four-year college degree, and only another 10 percent have an Associate's Degree. So that's where we are right now. That's a long way from the goals that have been set by the College Board, President Obama, and lots of other people. And another startling fact, which we really need to pay a lot of attention to, is the gender gap. Right now, 57 percent of the students in our nation's colleges are women, only 43 percent are men. And we're really kidding ourselves if we don't think that's going to have a major impact, not only in the workforce, but the composition of our society.

So now let's look more at the career ready side. So as Pam mentioned, you know, there have been a number of studies recently about how well prepared are young people for the skills they're going to need in their jobs. And the business community has issued a number of reports in recent years suggesting we're doing a really poor job in this regard. "Are They Ready to Work" came out a couple of years ago, issued by the Conference Board and some others, and concluded that the vast majority of high school students simply aren't ready to hold down a job. The Partnership for 21st Century Skills, of course, has suggested we need to teach a broader range of skills. In Tony Wagner's book, "The Global Achievement Gap" said that even our best high schools are failing to prepare young people with many of the skills they're going to need in the workplace. And as I said, in terms of getting work experience, we're really, you know, shortchanging many very young people right now.

This chart shows that teenagers have been hit really hard, about more than half of them were employed back in June of 2000, last June it had fallen to 28.6 percent. We haven't seen numbers like that since the Great Depression. So our conclusion is, in terms of why are we failing to prepare so many of our young people, we think our focus has been too narrow. We have spent a lot of time as a nation talking about what you need to do to be college ready. No Child Left Behind has stressed Math and reading and the need to raise that. We're not opposed to accountability, and we certainly would agree that, you know, you need a strong foundation of Math and reading skills. What we're saying though is, if we really want to prepare all young people we've got to broaden our approach to both education and youth development. And secondly, the transition to adulthood has changed and we have to adapt our educational institutions accordingly. And our conclusion is that we need a broader, more holistic system of pathways to prosperity.

So another thing we did was spend a long time looking at what's going on overseas. Jim mentioned "Learning for Jobs," published by the OECD last September. Bob Schwartz, who was the leader of our project, he's the academic dean at the Harvard

Ed School, spent quite a bit of time in Paris working with the OECD. And it was really a fascinating look at how other nations pose the same challenge we're discussing here today. We saw a variation of this chart earlier.

What it shows is that in many countries what we call CTE is really the mainstream approach to education. In Switzerland, which has been ranked by some as the most competitive nation in the world, two out of every three high school kids is involved in vocational education. So it's not something that's disparaged or demeaned as often as in the U.S., it's really the mainstream approach to education. And what did "Learning for Jobs" learn from all of this? They looked at 17 nations. One conclusion is that for many teenagers, an approach that combines work and learning is actually the most effective way to have them learn. It's more engaging. They can see the relevance of what they're doing, and it really leads to results.

So it's actually, from a pedagogical standpoint, if you want them to learn, if you want to master – them to master the skills that Sandy was talking about, this is the better way to get the job done. A second thing is that we think this is correlated with the fact that many of these nations with the best systems are passing us up in attainment. They offer their young people a broader range of pathways, more of them are graduating as a result. And thirdly, it makes sense if you've got an approach to education that's more related to what's going on in the workforce, it's going to be easier for you to transition to the labor market.

So our bottom-line conclusion was that when it comes to college and career readiness, we're increasingly an outlier in this country. We've put too much emphasis on strictly an academic approach to education, not enough on a broader, more holistic system. And so we need to develop a broader system. So, finally, we made some recommendations, and I'm just going to look at what are these today. But our three core elements were that we need to develop a multiple pathways approach, I'm going to get to that in a minute. Secondly, that if we're really going to prepare young people, and we're focusing on high school and beyond, we need to engage employers in a much more expanded way than we've ever done before. And thirdly, we're calling for a new social contact with young people. And what that means is that our key sectors, the education sector, the business community, and employers really need to come together and say, "You know what, we're going to get the kids in this community prepared to be successful adults and we're going to put in place the programs and opportunities they need to do that."

So one thing we had in the report was that last June only 9 percent of African American teenagers living in families making under $20,000 a year had a job. Think about that. Only 9 percent had a job. Now if you go out the suburbs, white families making $75 to 100,000 a year, four out of ten of those kids were employed. And it's just – you know, obviously, the low-income African Americans really need the job, they need that work experience, exposure to adults, and they're not getting it. So that's the kind of thing a social compact would address.

So let's look a little bit more closely at this multiple pathways idea because it goes to the heart of what we're talking about today. The first thing is we're saying that, you know, career education is not only important, it's absolutely essential, but we need to do more to elevate it to world-class levels. We can't put students in courses that are dumbed down or really don't train them for the 21st century economy. Secondly, we really have to put far more emphasis on high quality career counseling.

I spoke to a group of students at Harvard College recently that wanted to hear about the Pathways report, and I asked them how many of you got any career counseling in high school? Not one hand went up. Now this was – these kids were from all over the country. None of them got any career counseling. And by the way, even at our elite colleges – I talked to a young man recently who graduated from an elite private Liberal Arts college, and he had a degree in jazz, and I said, "What are you going to do now?" He said, "Well I'm going to get a job." I said, "What are you going to do?" He said, "I think I'm going to be a banker." So he went down and talked to the bank and they said, "Well did you study economics?" "No." "How about finance?" "No." "How about accounting?" Well they didn't even teach accounting. So the end of the interview the guy said, well, you know, I think you're going to have to go back and start over if that's what you want to do.

So we've really neglected career counseling. And by the way, this has to be more than done over the Internet. It's got to involve face-to-face contact. This is an area where we think employers can really make a big difference. And the third area is that we have to expand dramatically opportunities for work-based learning. So, again, this goes to the idea that you can learn a lot on the job you can't learn in the classroom. Now does this actually work or is it just a theory? Let's take the case of Bill Gates. For those of you who've read the book, "Outliers" by Malcolm Gladwell, he talks about Bill Gates.

So Bill Gates did come from a wealthy family. They were able to send him to a private school in Seattle. When he got there, he found out they had something called computer programming, it was just taking off. And he started spending a lot of his time there. Then he found out that if he could sneak out of his house in the middle of the night he could get into the computer labs at the University of Washington and do some more programming. That led to an opportunity to do some programming for TRW. So while he was in high school he spent thousands of hours working on computer programming. He then got accepted to Harvard but dropped out after one year, you know, to launch his career. So he's a classic example of the fact that work-based learning not only can work, but it does work. But in our country we really have not given enough importance to that.

So what we're really suggesting is that if we're going to meet the challenge we're discussing here this afternoon, we have to sort of rethink our approach to education and develop a broader, more holistic approach. Right now we're leaving millions of young adults behind. They aren't prepared for success. And so we think we need a national conversation about our approach to education. We need to engage employers because they have such a vital role in helping young people prepare. Regions that are interested in this need to start thinking about how they're going to do this. And since the report was released a month ago, we've heard from organizations in 16 states that want to start working towards how can they develop a more viable system of pathways for their young people and incorporate a lot of the great ideas we've heard about today. So with that I think I'd like to open it up and turn it over to Jim for some discussion.

Jim: Terrific. Well, again, thank you to the panel. And I appreciate the fact they stayed right on target, including me, so let's give the panel a hand. I'm stunned at my own success. I'd like to open it up to you for questions. You've heard a brief conversation about a variety of perspectives. By the way, I would also ask, you're here at the National Policy Seminar to think about the next Perkins, among other things, and I think that this panel has provided a terrific base of knowledge and

research to begin to consider what the next Perkins might ought to look like. Should it be Perkins 5 or should we really rethink kind of how we're going and how we – where we want to go and how we intend to get there?

Each of these organizations has reading materials. I know, it's a drag. But your homework assignment is to read reports from Achieve, Inc. and from SREB, and I would also add the National Research Center, in addition to those Pathways to Prosperity and other reports that we've referenced here. And also to look closely at what the Department of Labor has available in terms of really detailed analysis of the kinds of skills needed in the workplace. This needs to inform that conversation. So with that, I'm looking for hands to be raised with questions. Okay. This is just like class. Yes, ma'am.

Questioner: I'll start.

Jim: Please do.

Questioner: One of the things that I've heard over and over for the last day-and-a-half now has been the need to open up conversation and draw in the fact that the career-ready team is the way to go, talking about prosperity, talk about, you know, that system and all of that. And yet, when we try and have those conversations, and some of us have those conversations in our states, the wall around the academic community is very high, and there are very few places to chink that armor and help that conversation open up. Do any of you have some suggestions about how to go back – so my philosophy is we should be the guys in charge for a change, instead of guys trying to get through the wall.

Jim: Panel?

Sandy: Well actually, a couple of things on that front. As we look at our work going forward, we're actually really interested in helping with that conversation, and we're aware of a few places where it's really successfully happened. For example, Nebraska has spent – they've had a two-year program where CTE teachers and Math teachers have worked together to figure out how they can reinforce each other's curriculum, and I think those are really important discussions. And to Bill's point and Gene's point and Jim's point, I mean, to be able to contextualize the learning and show how, you know, you can apply what you're learning in Math class over here in your CTE class, that seems to me to be an area that's potentially wide open for discussion.

So I know we've identified a number of states who are interested in having those conversations, on the academic side, are interested in having the conversation with their CTE folks. And I hope that's something that we can pursue because I hear that repeatedly that there we're too siloed. So if we're going to do any of the things that Bill suggested we're going to have to figure out how we break down the silos first.

Gene: Let me just respond on a couple points, practical points. We have about 6,000 folks a year who attend our annual Summer Staff Development Conference, and it's about half academic folks and about half CTE folks that actually come in teams from schools, and they're working together to form high schools. I think you look for those kinds of opportunities. People who come to conferences together across academic and CTE areas learn how to talk to each other, bring your school principals along. That is an excellent vehicle.

Just a couple of other points: There are some states now beginning to reshape state policy that begin to encourage this blending of the academic and the CTE. I would foot the Florida as a good example of that. There's some special work that's been going on in Virginia. I think Georgia's in the process of revising some of its policies that will begin to move in that direction. Texas made some major improvements in its policy to give emphasis; in fact, they recognize four or five courses that can count as that fourth Math and Science course that are based on CTE courses that have a strong Math input base.

But it means that we have to – the academics, I still believe, are a core piece of the vocational skills that kids need. My last point will simply be you cannot wait until you get to community college to begin to start this journey. CTE is a way in the 9th grade for some kids to begin to find a purpose. And there ought to be the labs where you begin to use your reading, math, and science skills and do real things with it. Some students need that pathway. I see no way are we going to reach the goals we've set unless we find ways to blend the two together into new and creative ways.

And we found the biggest hook, you've got to graduate more folks. And once you begin to focus on that – but we don't need a separate track for a separate lower level diploma. We don't need to separate folks out into the haves and the have-nots. We need a blended approach to this that's very mainstream in its approach. And all kids need a focus, whether it's an academic or a career focus in high school. Those are all biases.

Jim: Let me, if I may, take this from just a slightly different perspective. I had a couple of slides I pulled out just to reduce the time, but I wanted to come back to something because I think this issue that – what I would consider to be necessary first condition to this conversation is kids have to finish high school. Whatever numbers you use, whether it's 68 percent or 70 percent or in the low 70s as a percentage of young people who finish high school. There's one state in this union that the figure of high school completion statewide is less than 60 percent, there are other states where it's in the upper 80s into the low 90s. But some of you are aware of the work that we've done over the years.

We've continued to test the question of whether, again, separating everything else out, whether participating in career and technical education has any impact on keeping kids engaged, engaged to the point of finishing high school or engaged to the point of at least not dropping out, again, not dropping out and not finishing high school are actually two different things. And you may be aware of at least three of the studies that we've conducted and published. The first was done in 2001, and that's where we began to understand the ratio at that time, and these were young people who graduated high school in the early to mid 90s. It was a ratio of approximately one CTE to every two every two traditional academic courses that provided sort of maximum holding power. We replicated that study using a Department of Labor database in the late 1990s. We found similar findings, that ratio held up.

We had a third study that was conducted, a longitudinal study, a different kind of study not using a database, but actually going into three high-poverty, and this speaks to the questions that Bill was raising and Gene and others have raised, three high-poverty, high-second-language-learner communities where schools typically don't serve the young people well. And we found there also that regardless of the structure of the school, participation in career and technical education had a

significant effect on moving young people through to finishing high school. I would argue again, it's a necessary first condition. I shared these data with some of you yesterday. This is an analysis that we've just finished, literally, using the most current National Center on Educational Statistics database called "NAAL 2002."

These are young people who finished high school in 2004, presumably, if they were successful. And here's what we found. If we control for the usual list of suspects, again, the female question that Gene has raised, their grade point in 9th grade – or their grade point average based on their transcripts, not self-report, based on their socio-economic status, again, to Bill's point, and race and ethnicity. What we found was is that young people who took three or more - and this speaks to Gene's point about a focus and a purpose - young people who took three or more CTE courses of any particular kind, there's no differentiation here by program, but took three or more in a particular focus, call that a concentration if you will using some current language, those young people were about a third less likely to leave school prematurely than those who had one or less CTE credits on their transcript.

Now that comparison group is roughly 26 percent of the population. These data reflect –I won't get into all the details. It's a probability sample of high schools across the country and high school kids across the country. So this reflects a national database. What it shows is – and by the way, those who take less than CTE, there's no difference in the likelihood of dropping out from those who just take basically none, which we classified as less than one. Those who take three, but don't have any particular focus, are about 58 percent less likely, so there's some effect there. But it is that focus, it is that purpose, it is that concentration, whatever vocabulary you want to associate with it, engages kids. So the question is, I guess, less than rhetorical. And, again, this is controlling for all the other things we know affect graduation and success in high school.

Career and tech ed has a real role to play, and as part of thinking about college and career ready, clearly this is a piece of it to be absolutely certain. So I wanted to share that because, again, I think the fact that we lose so many young people is appalling. And Bill's study looks at that percentage of 27-year-olds, and I think most of you, again, are familiar with these data.

So let me go back to more questions from the group. And, by the way, I'm going to – I would like you to step up to the microphone, two reasons, one is so everyone can hear you on the Web, and two, we will make you famous, which I'm sure is a major motivator for everyone in this room. So questions? Yes, sir. And if you wish to form a line now that the – now that the ice has been broken, please.

Questioner: I want to say how much I appreciate the Pathways to Prosperity. I made a copy and gave that to my Congressman because I said if you want to look at where we need to go, you need to read this. But one of the points you made was this is a cultural issue. And I'm going to beg to differ. In 1964 the Army did all those things to me that you said needed to be done. And by the way, you did recommend the Army as a good training program. So I'm going to suggest that in the last 30 to 40 years we've been saying the same thing over and over again, that we need to change this stuff. But one of the things I have not heard anybody talk about is process. Nobody talks about high school being anything other than start at 14, end at 18, it's got to be four years. You've got to start at 8:00 in the morning and leave at 3:00 in the afternoon. Boom, boom, boom. Is anybody talking about changing the

core cultural processes we use to define education in order to get some of these things done?

Jim: Well I'll let some of the other panelists offer their thoughts on that.

Bill: You know, the whole challenge of how do you change an institution like high school is really enormous. And I guess that, you know, people have commented on the fact that, you know, because we adults went through that, we want it to look the same way for our kids. The other overwhelming fact, though, is the most common thing kids say about high school is they find it very boring, particularly what's going on during the school day.

I think if we move to a broader, more holistic approach, you can start breaking down those barriers. If we're going to have more work-based learning, for example, it's not going to be just between 8:00 and 3:00, you're probably going to be staying later. The example I gave about Bill Gates, I mean, his parents, at one time, wondered why he was always so tired in the morning. The reason is he hadn't been sleeping. You know, he was over at the University of Washington doing the work-based learning. So he was not confined to the normal school day. But maybe some of the others have some comments.

Jim: Yes. There actually has been some conversation about this. And let me premise this, first of all, a reference – a publication that's a few years old now, "Tough Choices, Tough Times" from the Center on Education and the Economy, I believe it is.

Okay. Which essentially makes the argument that I'm going to make here. And let me present this argument in this way, one of the findings of – and I can't remember now, Bill, to be honest, if it was the Pathways report or the "Learning for Jobs" report, but one of the findings is that these young people in these other countries who go through these work-based learning intensive debt programs exit those with the kinds of skills that we expect to come after a two-year program in technical education at a community or technical college. Okay. So these are young people at 17, 18 or whatever, are coming out with the skills that we're compelling our young people to wait to attain. So rhetorical question one is, are our kids dumber? I don't think so. I really don't think so.

So then we scroll around in this "Tough Choices, Tough Times" concept. Now, without getting into the specifics, if we began to think about this idea that maybe by the end of 10th grade, like many of these other countries - I mean, we always point to Finland, well, at 15 they're pretty much done with the sort of traditional high school and they move off, as these other data showed, a high percentage then move into this intensive technical education. What if we really began to think seriously about that, and what if what is now considered to be a postsecondary credential as the necessary ticket to a successful middle skilled pathway, which is – which holds real opportunity for an awful lot of young people, what if we began to think about that as the last two years of high school instead of waiting for post-high school? And I'll kind of wrap something, I'll go back to my Algebra II argument with Gene while I have the mic right now. By the way, I've cut his off.

Sandy: I'll take it up for him.

Jim: Oh, darn. If we look at the concept of what's – again, sort of back to the analyses - the kind of Math that's really necessary, I would argue, is really found in Algebra I, Geometry, and all the stuff that precedes it. So what if instead of adding on Algebra II, Algebra III, Algebra IV, and so forth, what if we actually focused on mastery because the challenge is that these young people, no matter how much Math they've taken when they get out of high school, don't have those foundational fundamental Math skills necessary in the workplace. And it seems to me, and, again, this is my read of it and it's a thought, is that if we sort of brought these notions together, if we said, "okay, let's make sure they really have a good contextual way of learning the kinds of Math really necessary for both college and career. "

And, again, for that percentage who are moving off to Math-intensive majors in college, that is a different, I don't want to use the work "track," but it is a different pathway, they're going to need more Math in high school. Absolutely, clearly they're going to need more Math. And for some of these middle-skill advanced manufacturing kind of possibilities – I think Achieve, in fact, put out a paper that identified some advanced manufacturing positions where they presumably need this stuff.

But for an awful lot of young people, they would be better served, and I think this is part of Bill's point, by having those intensive workplace learning opportunities that relatively few of our young people get. And, indeed, there's fewer now than there used to be because - and this goes to the question of courses that was raised earlier, the school day, the school year is a zero sum game. If we keep expanding the required number of courses, we keep limiting the number of options and opportunity. And if work-based learning, the real stuff, which is out in the workplace, requires time in the curriculum space, we literally don't have the time anymore. We simply don't have the time. We squeezed it out. And so, again, this is a major radical rethinking of both what we mean by getting – preparing young people to become successful adults and how we get there.

Sandy: So I'm glad actually that the international stuff was brought up, and I think this is the case in, you know, the Pathways report too. There's always a lot of reference to these, the countries that do better on PISA and TIMMS than we do, and actually how they organize their system. When we looked at high-performing countries and did the international benchmarking for the common core state standards to figure out how much Math and English were expected in those other countries. We frankly had to cut it off at 15 in those countries because we wanted to look at what all kids got, right. We wanted to do an apples-to-apples comparison. So, you know, you're right, the choices are made after you take your A-level exams in some countries, and sort of at the end of, you know, being 15 or 10th grade or whatever it's called, and then you decide sort of what pathway to go on.

But I just want to be really clearly that the academic – on the academic side, what we're requiring in literacy and Math by the end of high school in the common core state standards is essentially what those high-performing countries require for 15-year-olds, right. So I think this discussion is really important, but don't think that that means that those countries have – you know, somehow their academic preparation on the English or on the literacy and Math side is somehow, you know, less than what we were expecting in the common core, which we all know is a lot more rigorous than a lot of states are districts are currently expecting. So it's just an important baseline to keep in mind.

And I think with 44 states having adopted the common core and 45 states looking at assessments, moving in that direction, that hopefully we can move past the Algebra II argument and the Math argument, it's not really quite Algebra II, but it is a lot of Math. And hopefully we can figure out actually how to make the courses better, how to contextualize those courses, how to reinforce those courses with CTE courses, how to actually get more kids to that common baseline level. Because one thing this discussion always makes a little bit nervous about is who decides, and that's actually one thing that really separates us from European, right. It is true that we lose too many kids along the pipeline, but there are multiple ways to get back in and you can always go back to college, you can always do – you can come back in, and we don't like to make choices for kids too early. That's why we don't have tracking anymore and why that's not favored.

So I want kids to graduate from high school with all their options open, with a purpose for their lives, and feeling good about their choices, and taking that placement exam - I've got a kid going to college next year – taking that placement exam, ready for credit-bearing work so they can, you know, meet the purpose that they're there for. So just a couple of thoughts, be a little bit cautious about the international comparison.

Bill: Well, Sandy, you know what, one interesting aspect of that when you look at vocational education in Switzerland, if you take hospitality, which we think of as a low-end field here, in Switzerland you're expected to be at least trilingual when you complete that. You're going to have to speak at least French, German, and English. I've been to Switzerland and it's actually true. I mean the people do speak the language. We're not holding our students to the same –

Sandy: Absolutely.

Bill: - standard at all in this country. I mean, if you're in the hospitality business, shouldn't you be speaking Spanish, for example, shouldn't that be one of the job requirements that should be expected if you're going to serve all of your guests to a high standard? So just because it's vocational doesn't mean it doesn't have to be – it can't be very rigorous.

Jim: Anybody else want to weigh in on that question before the next cheerful volunteer steps up to the microphone?

Gene: Jim makes a good point about teaching Mathematics differently. And there is a national Math curriculum, and maybe the common core is going to replace it, but what's in every 80 percent of Math teachers' heads is Procedural Mathematics. We're going to give you a set of procedures – (laughter)

Jim: Let the record show the audience is having a visceral response.

Gene: It does not focus on reasoning and understanding. And Jim makes an excellent point, and until we get to that point, youth are going to need four years of Math because the way we teach it, you do not get much, and unless you continue to get it, you're going to lose what little you got. Now the new Math standards provide us a window into changing that by focusing on fewer Math and then, I will say I've studied those some and there is an emphasis on application there, and that, the CT community needs to be weighing in heavy on in finding outlets to those in two-year CT courses.

But there are some different models emerging out there, one is called "early college" where students are going to community colleges for four years now. We have some high schools in our network that have literally organized themselves into small learning communities and operate large high schools as almost semi-autonomous schools around a career focus but with a solid college-ready core link to that. When I look at a group of high schools with very mixed demographics, and where you have 60 percent of the students taking a career concentration, and that's linked to a college-ready core, you're looking at an average graduation rate somewhere between 85-90 percent. To a comparative group of high schools who have very similar demographics, you're looking at a 70 percent graduation rate, but only about 35 to 40 percent of the kids are taking a concentration in the career area. It's – there are ways to break and it's happening. And I can mention other patterns that are emerging throughout the country that offer a lot of promise.

And I think as the President has opened up this notion that other forms of certification beyond high school in the State of the Union Address a year or so ago gave great credence to that. And I will tell you as state policymakers, they are searching for ways to bring the academic and CTE together. What you have to guard against, it's awful easy to set up the old tracking system, and you do not keep business of opportunities broad and open for all kids. And so that's something you have to guard against to keep that blending up. But we have to graduate more folks and look to different ways to do it. The virtual high school is on the move. In some states a lot of kids are now earning their high school diploma through the virtual route.

Jim: Well we have exceeded our time, but I have a dispensation from those who control some space to continue on for a few more minutes. So I do have a question – several questions that came in online. One deals with – online on my phone actually. There is a question about this SCANS report that came out some time ago, late '80s, as I recall. Initially – and I think you referenced that, Pam, as - I recognize those five competency areas, resource management, system thinking, and interpersonal skills, and so forth. The question was asking about where that has gone since. Now it's clear that the Department of Labor is still using that framework, but apparently the listener - in fact, I'm not sure I have, we have not seen much of that. There was a burst of effort, there was a subsequent report that talked about teaching the SCANS skills, but it seems to have been lost in conversation.

Pam: Well I mean we don't call them SCANS skills, but the reason I cited is because they've been integrated into ONET.

Jim: Right.

Pam: So we – and, you know, at Department of Labor, we don't focus so much on curriculum, but we focus on occupational requirements. So they are in ONET. All the occupations are rated against those same skills, and so they can be used. We don't particularly, ourselves, use them for curriculum involvement.

Jim: Okay. Thank you. Well we do have time for at least one or two more questions. This is your chance to really figure it all out. These folks here have the answers. Oh, I'm sorry, did I over speak? (laughter)

Okay. Well I want to, again, thank the panel for their willingness to come and engage in this conversation. As you can tell, there are many points of agreement. I think there are at least a few nuances around which we might choose to disagree and continue to argue once the mics are off. But I hope, again, that you take this conversation and think about what it means in terms of what it is that you wish to really see moving forward, and specifically in terms of Perkins, but it's a broader conversation than Perkins.

And, again, how do you go back to your state and really begin to get policymakers to think about the kinds of things we're learning from Pathways to Prosperity, the kinds of things that Achieve, Inc. is presenting to us, the rich work that the SREB has been doing, our own work at the National Research Center, how does that inform the conversation. In short, kind of like make sure we do our homework and move ACTE toward a policy that I think they're moving toward, but informed by what these organizations and others can contribute to that conversation. So I want to thank all of you. I want to thank all of you who are online as part of this today. And, again, if we could give our panel a measure of appreciation. Thank you.