Education Consumers Foundation

Reaching Workforce Preparedness Aims Requires Effective Teaching – Beginning in Preschool!

Text and slides from presentation at TSBA breakout sessions

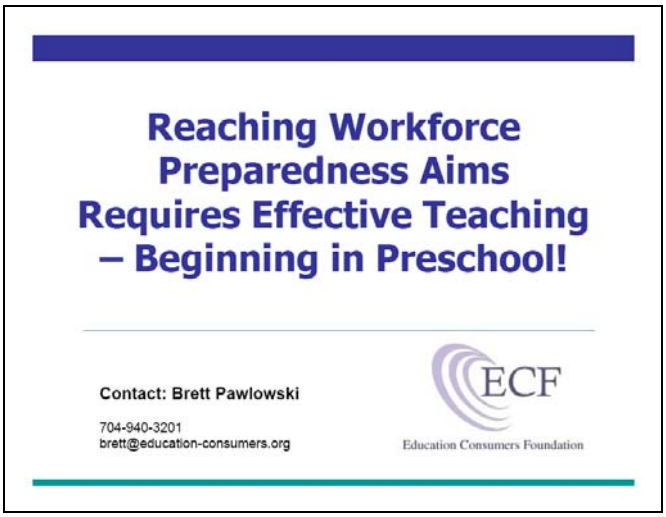
Dr. J.E. Stone, founder and president, Education Consumers Foundation
Brett Pawlowski, Education Consumers Foundation

November 15, and 16, 2008

Opryland Hotel, Nashville Tennessee

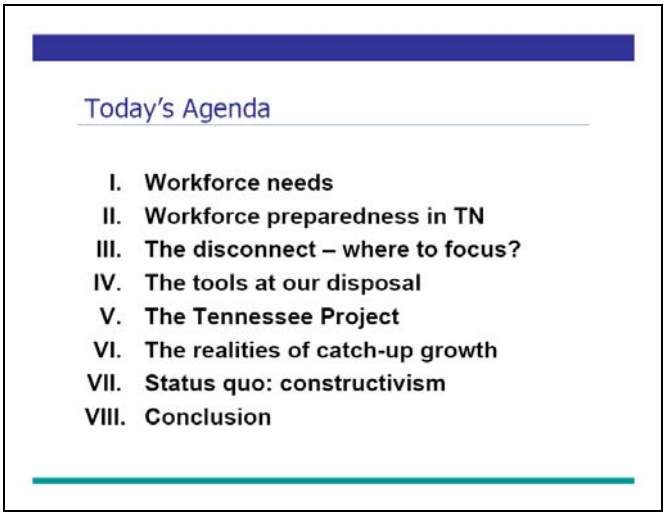
Brett Pawlowski:

Today, we want to talk how school boards and system executives can address the problem of workforce preparedness at its origin. In order to do so, however, we first need to drill into some critical details about the problems faced by schools and about how certain beliefs about children and approaches to teaching are likely to affect that which you are able to accomplish.



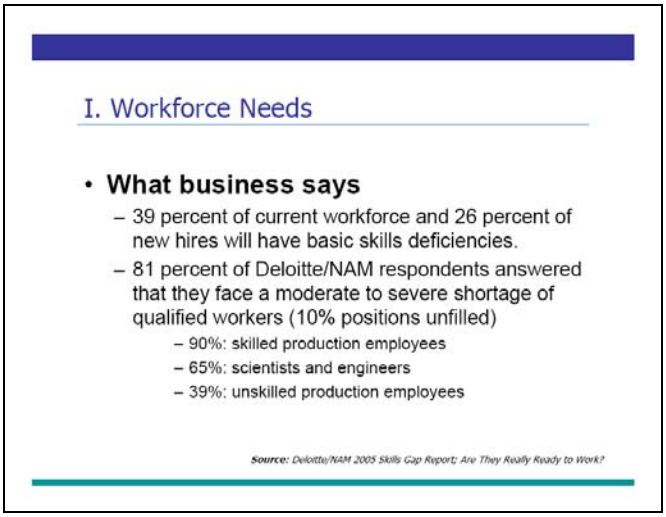
When we talk about workforce preparedness, I'd like to be clear on what we're discussing. We're working under the assumption that part of the job in public education is to instill in children the skills and knowledge they will need in order to become economically independent – to find good jobs, support their families, and achieve all that they can achieve in their careers. Right now that's not happening for nearly enough children, and we're here to talk about a way to change that.

We'll be covering several things today:

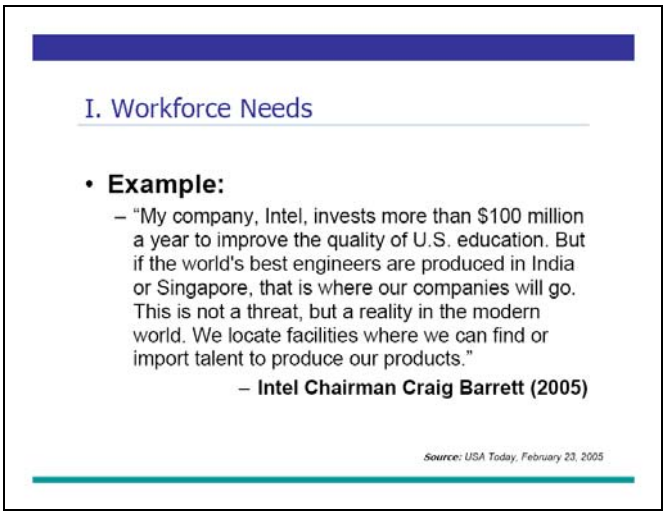


In order to understand what workforce preparedness means, we need to find out from employers what they're looking for, how they see the current state of the workforce, and what challenges they foresee in the future. We'll then look at current levels of preparedness from the K-12 system and talk about how to address the disconnect.

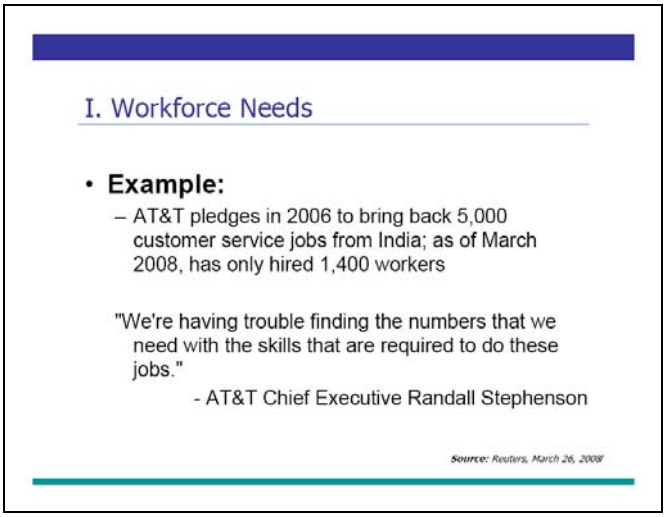
We'll start by discussing what businesspeople, nationally and in Tennessee, are saying about the current state of the workforce and what needs they have now and in the future.



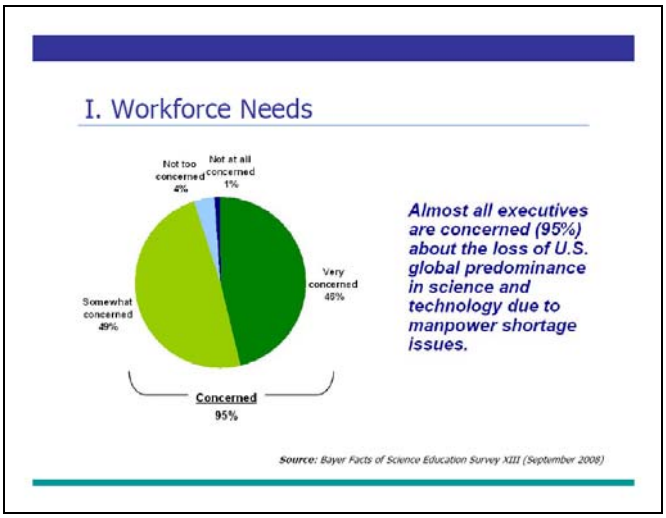
According to surveys by groups like the National Association of Manufacturers and a consortium led by the Conference Board, employers are having a hard time finding qualified workers to fill open positions. Interestingly, the NAM survey found that the greatest area of need is not among those with four-year degrees, but rather those in the middle-skill positions – jobs that require some kind of postsecondary education, perhaps a two-year degree or a technical certification, but not a four-year degree.



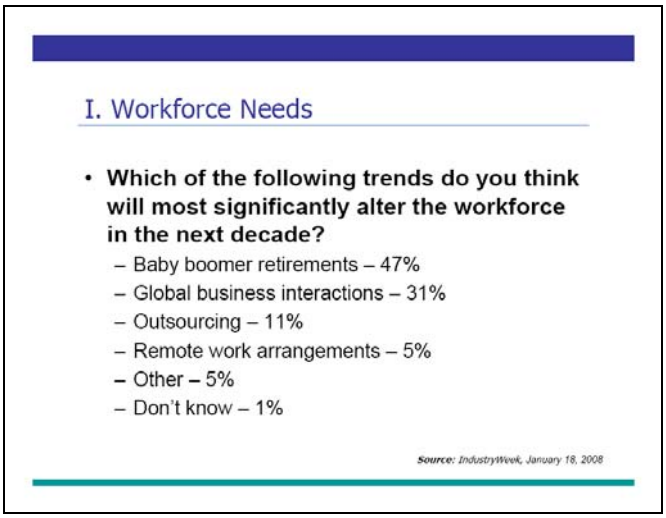
As an example, Intel puts a great deal of money into public education, particularly in the STEM areas – but Craig Barrett has said that if he can't find the kinds of workers they need in the US, they will be forced to locate plants where they can find the kind of talent they need.



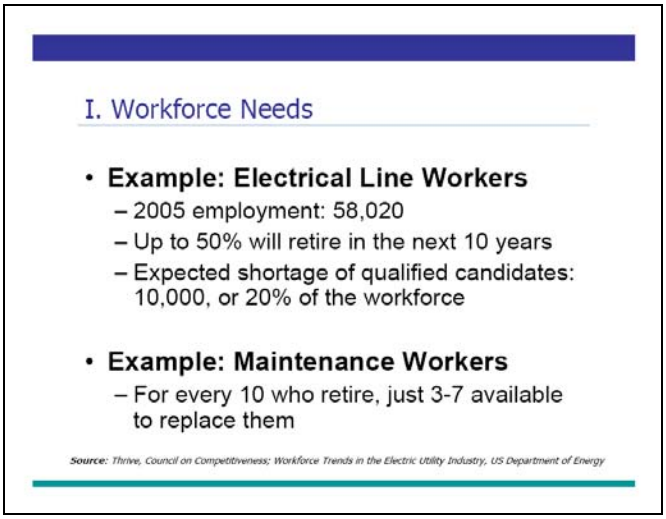
Another example comes from AT&T, which sent 5,000 jobs overseas a few years ago and now wants to bring those jobs back. The problem is, they can't find enough qualified workers to fill those jobs, and after two years have only been able to bring 1,400 of those jobs back.



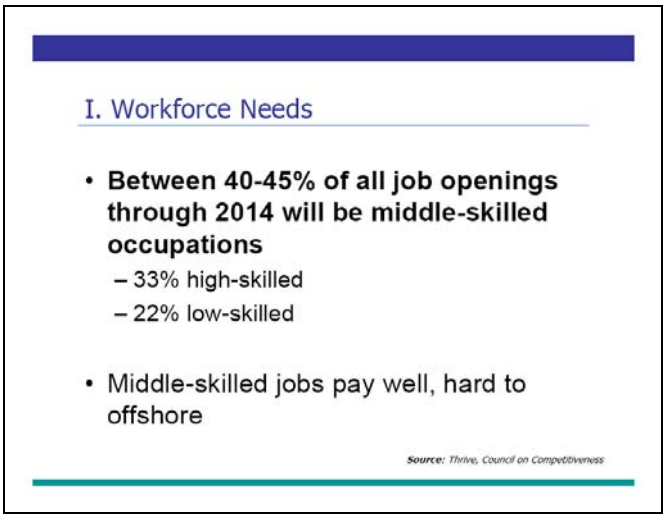
This comes from Bayer, which does a survey each year of executives of Fortune 1000 companies. (This is the 13th year of their survey.) They found that 95% of executives are either somewhat or very concerned about the US losing its edge in science and technology due to a shortage of qualified workers.



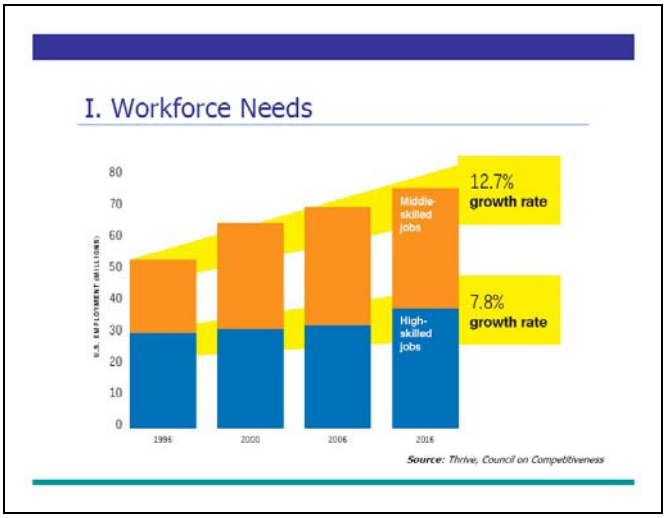
That's the situation as it stands today; the next question is where things go from here, and this survey from Robert Half International is a pretty good indicator. This is the first year (2008) in which baby boomers are eligible to take social security retirement benefits, and over the next twenty to thirty years we're facing a huge exodus of skilled workers from the US workforce as shown in the following slides.



To see the impact of these retirements, just look at the utility industry. Looking at a position like line workers, the US Department of Energy expects up to half of current workers to retire, and as a result of the lack of a qualified workforce, foresee a shortage of qualified workers of up to 20%.



These electrical line and maintenance workers are examples of middle-skill jobs – positions that require a technical certification or two-year degree, but not a four-year education. They're positions that require technical skills and knowledge, and given the demand for workers in these good-paying fields, it's clear that we need to help a lot of kids prepare to meet the qualifications for these jobs.



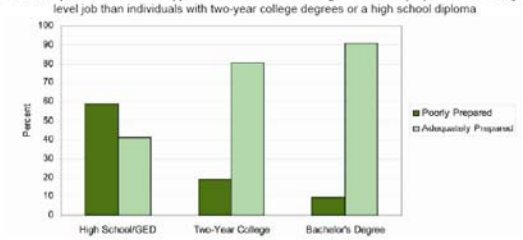
This slide, a graphic from the Council on Competitiveness, simply reinforces the fact that middle-skill positions are some of the fastest-growing in the country, pointing to the need to prepare large percentages of our students if we are to give them a chance at economic self-sufficiency.

Now, with a sense of what employers need now and in the future, we can turn to look at the current levels of preparedness of today's students. We'll start with a series of slides featuring the responses of Tennessee employers to a survey conducted by the University of Tennessee on behalf of the Tennessee Business Roundtable.

II. Workforce Preparedness in Tennessee

Figure 2: Preparedness of the Tennessee Workforce

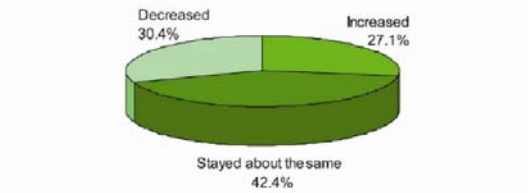
Most companies indicate that applicants with a bachelor's degree are more prepared for an entry-level job than individuals with two-year college degrees or a high school diploma



Source: Business Attitudes Toward Education in Tennessee, University of Tennessee Survey (2008)

II. Workforce Preparedness in Tennessee

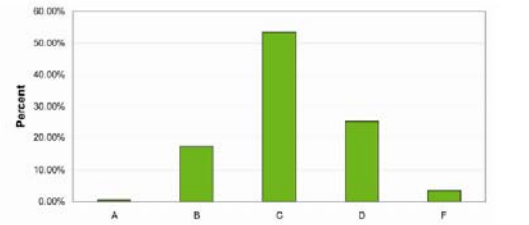
Change in the Quality of the Tennessee Workforce over the last 10 Years



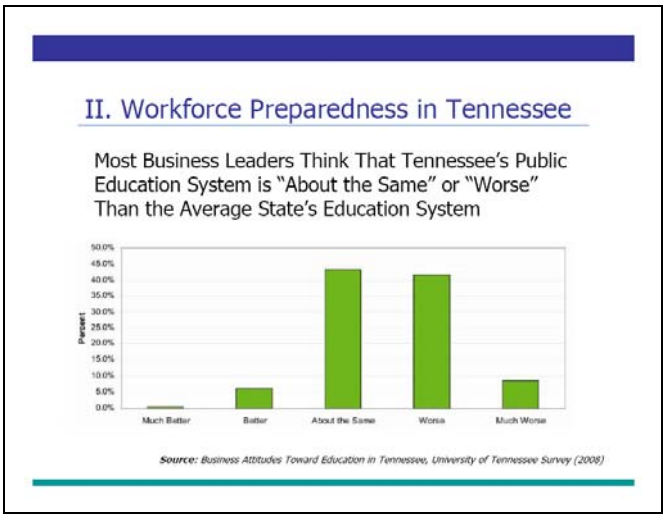
Source: Business Attitudes Toward Education in Tennessee, University of Tennessee Survey (2008)

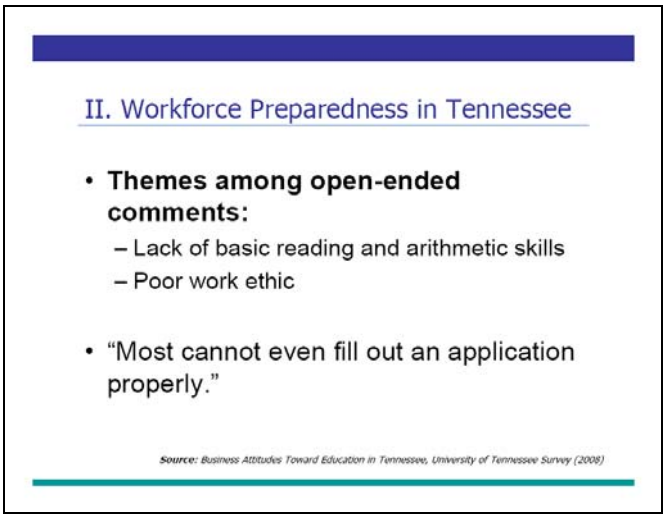
II. Workforce Preparedness in Tennessee

Grades Given for the Overall Quality of K-12 Public Education in Tennessee



Source: Business Attitudes Toward Education in Tennessee, University of Tennessee Survey (2008)



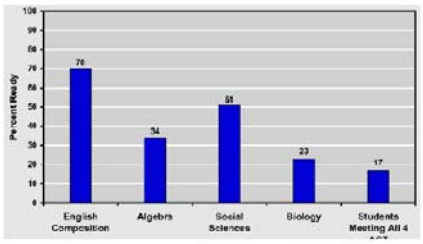


Clearly, employers don't give high marks to the current quality of the workforce in Tennessee, nor do they have great confidence in the K12 system to produce a qualified workforce. It's helpful to look at the comments of individual respondents, which cluster around issues like a lack of basic skills in areas like reading and math, and a poor work ethic among workers. Some even said that most workers aren't capable of completing an application for employment, much less doing the actual work!

The next couple of slides show that among Tennessee students taking the ACT, few are prepared for college-level work in subjects like algebra or biology; and in fact, more than half of students entering two-year and four-year institutions in the state need to take at least one remedial class to address skills and knowledge they should have gained during their K12 career.

II. Workforce Preparedness in Tennessee

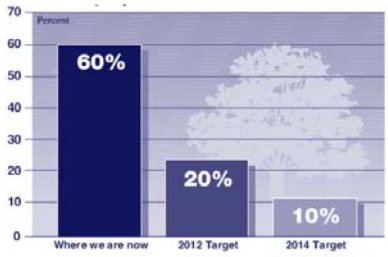
2006 Tennessee ACT-Tested Graduates Likely to Be Ready for College-Level Work (in percent)



Source: Tennessee State Board of Education – 2007 Master Plan

II. Workforce Preparedness in Tennessee

Percentage of first-time freshman students in developmental studies at Tennessee two- and four-year institutions



Source: Tennessee State Board of Education – 2008 Master Plan

III. The Disconnect – Where to Focus?

- **Much of the reform effort is focused at the high school level**
  - Graduation standards
  - Curriculum requirements
  - Dropout prevention initiatives
  - Improved instruction efforts
- **Will this work?**

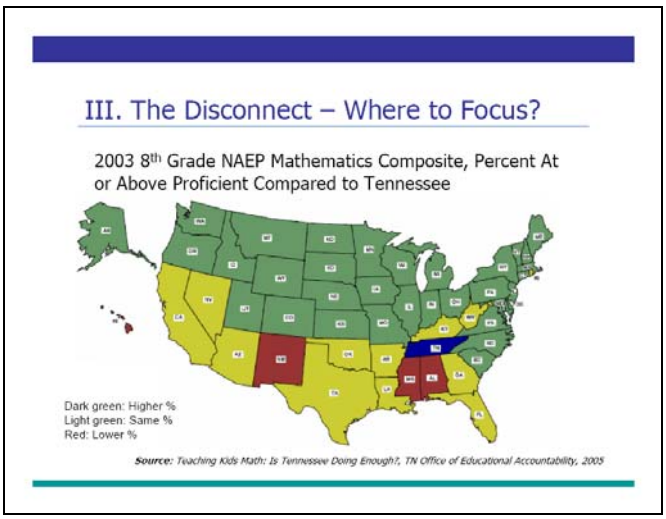
Source: Thrive, Council on Competitiveness

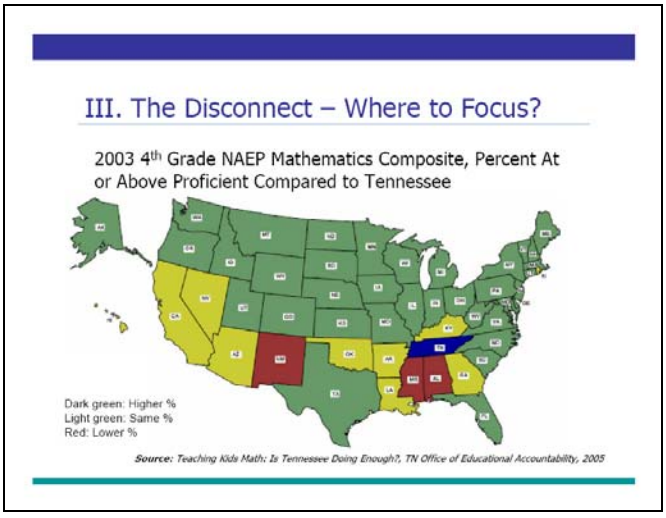
The information I've shared here on employer expectations and worker preparedness isn't new; people have already started working to address the disconnect between the two. Most of the reform work is taking place at the high school level, where the problem is the most obvious.

The question is, will these high school-level initiatives work? And the answer, unfortunately, is that will almost certainly not. And the reason for that is fairly obvious.

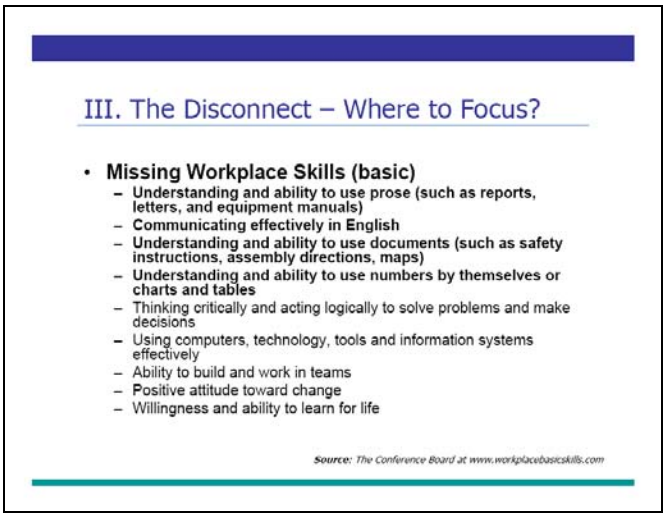
Many of you are familiar with the National Assessment of Educational Progress, a set of longitudinal assessments from the US Department of Education also known as NAEP, or more commonly as the Nation's Report Card. According to NAEP, only around 30% of students in 8th grade are proficient in reading and math; in other words, 70% of children nationwide entering high school are not prepared for high school-level work.

To make matters worse, Tennessee is actually below the national average, with many states clocking in with higher percentage of proficient students in both the 8th grade and the 4th grade. The states in dark green on the attached chats have higher percentages of proficient students in math; states in light green have approximately the same percentage of proficient students; and those in red have lower percentages of proficient students.



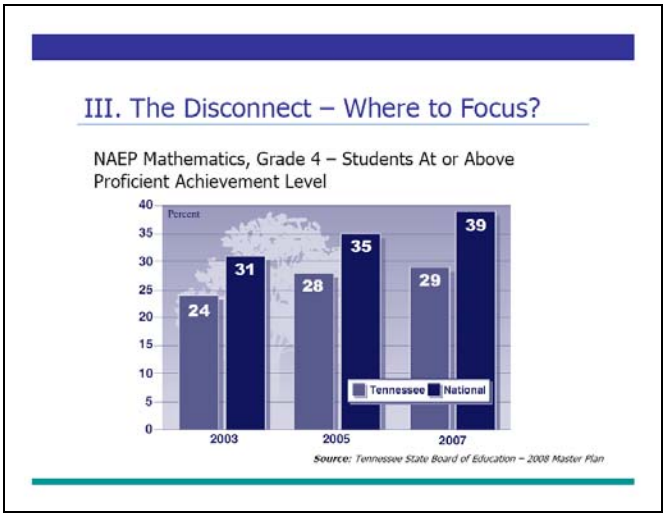


As we talk about workforce preparedness and proficiency rates, let's take a step back and recall what employers said: that many applicants were deficient in basic workplace skills. The list on the next slide, courtesy of the Conference Board, highlights the kinds of skills they're talking about:



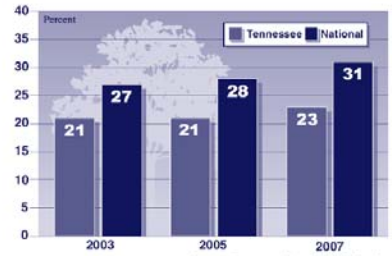
Looking at the first several items on the list, it's clear that we're not talking about high school-level skills: these are skills that should be mastered in the upper elementary grades. These are 5th and 6th grade skills, and working on education reform at the high school level is a case of too little, too late.

The next several slides come from the Tennessee State Board of Education, and show the relationship among proficiency rates in Tennessee with those of the national average over time:



III. The Disconnect – Where to Focus?

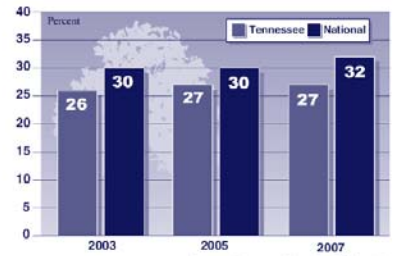
NAEP Mathematics, Grade 8 – Students At or Above Proficient Achievement Level



Source: Tennessee State Board of Education – 2008 Master Plan

III. The Disconnect – Where to Focus?

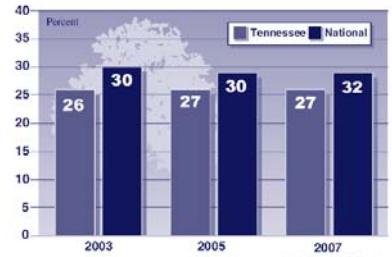
NAEP Reading, Grade 4 – Students At or Above Proficient Achievement Level



Source: Tennessee State Board of Education – 2008 Master Plan

III. The Disconnect – Where to Focus?

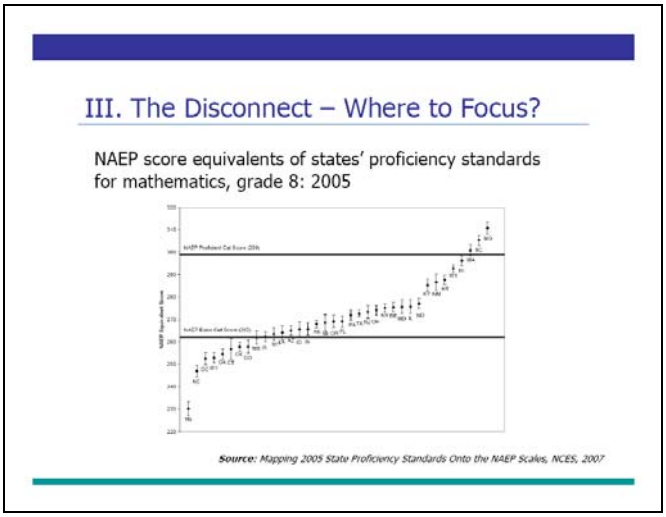
NAEP Reading, Grade 8 – Students At or Above Proficient Achievement Level

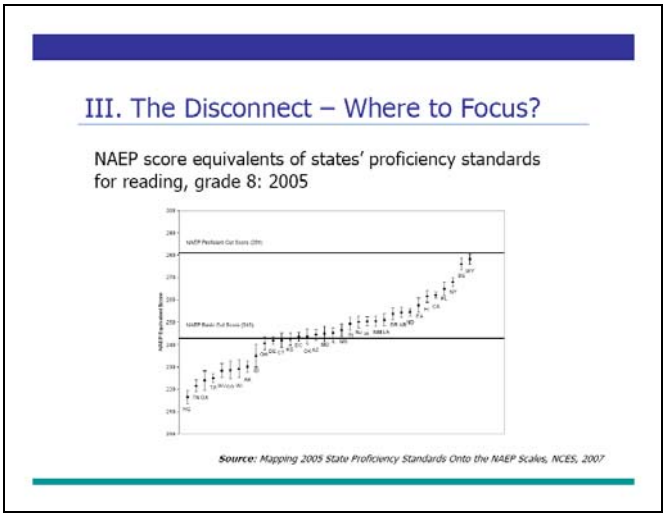


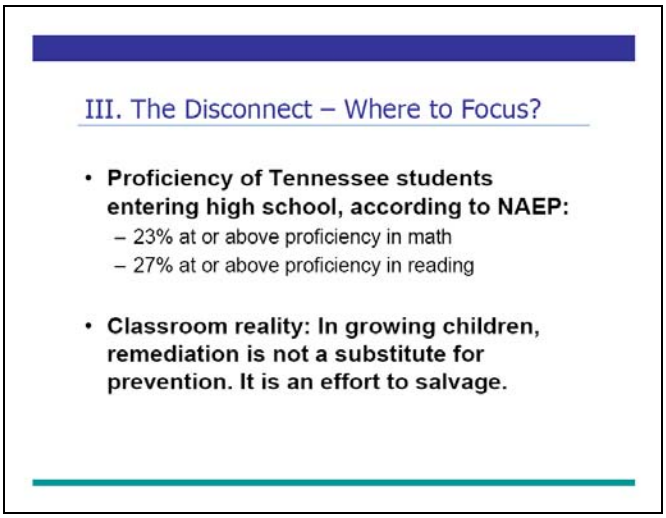
Source: Tennessee State Board of Education – 2008 Master Plan

Some of you might be surprised to see numbers like these, considering that the state's assessment system shows that around 90% of our students are considered proficient. The test itself is fine; the problem is where they've set their cut scores. "Proficiency" in Tennessee is a very low standard; in fact, the US Chamber of Commerce has given Tennessee an "F" for Truth in Advertising About Student Proficiency as a result of the false impression that its proficiency ratings provide (see http://www.uschamber.com/icw/reportcard/default for more).

The charts below come from the US Department of Education; they map the proficiency standards of each state against those of the National Assessment of Educational Progress (again, considered to be the gold standard). As you can see, Tennessee is the most lenient grader in mathematics, and the next-to-most lenient in reading. In both of these matchups, a "proficient" ranking in Tennessee does not even meet the standards of a "basic" ranking on the NAEP.

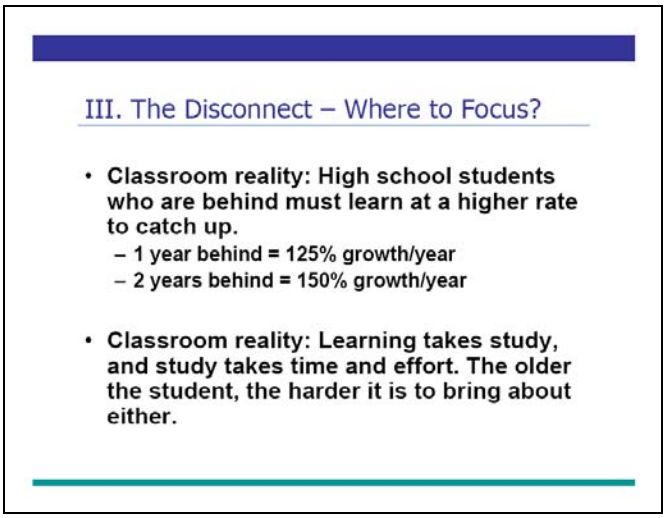






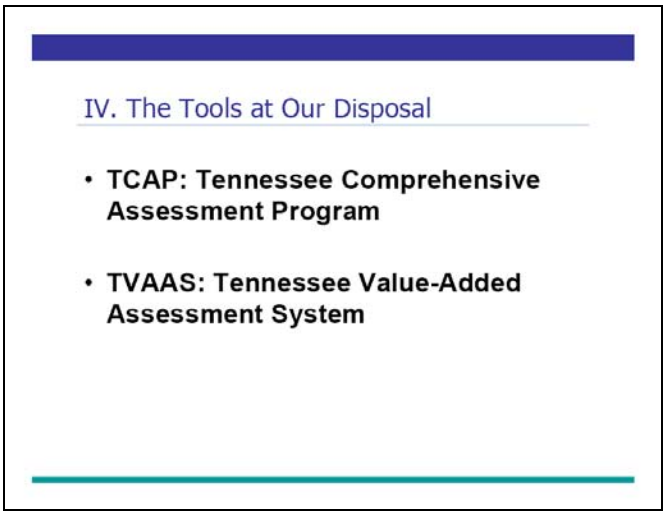
I mentioned before that most of our education reform efforts are taking place at the high school level, and as a result we don't stand much of a chance of fixing our problems. This is because we're working under the false assumption that students are entering high school prepared for high school level work, and that we're losing them somewhere along the way. As you've seen from the NAEP data, this simply isn't true.

According to the NAEP, more than 70% of Tennessee students are not coming into high school prepared for grade-level work. What this means is that our high school-level efforts are not focused on keeping kids on track; instead, they're more accurately described as remediation efforts, in which we try to bring kids up to grade level. They are, in effect, salvage efforts

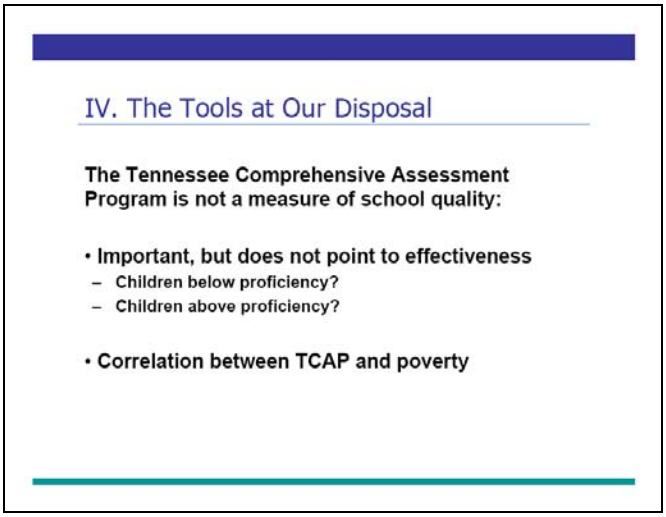


Students coming into high school below grade level have just four years in which to catch up. For a student one grade level behind, he or she has to learn at a rate of 125% per year in order to finish the 12th grade at grade level. A student two years behind has to move at a rate of 150%, learning 50% more than his peers in every one of his four years of high school.

How likely is this? Not very: we're asking teenagers who are one or more years behind their peers, at the most distracting point in their young lives, to buckle down, become star students, and learn at a significantly faster rate than the rest of the student body. This sort of dedication and commitment may be possible at a seminary or a military academy, but it's just unrealistic to think that it's going to happen otherwise.

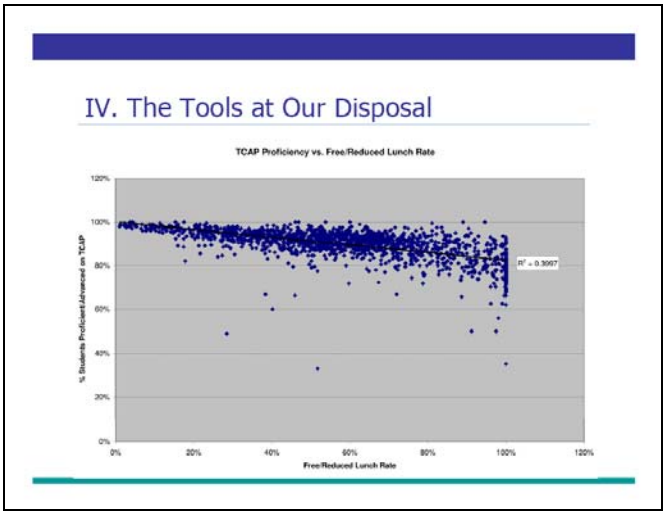


It's pretty clear that the solution to this issue is to start earlier – much earlier – to make sure that students stay at grade level before they start to accumulate deficiencies that have to be remediated later. Working from that assumption, let's take a look at a couple of the tools we have at our disposal for measuring academic progress and performance: the Tennessee Comprehensive Assessment Program, or TCAP, and the Tennessee Value-Added Assessment Program, or TVAAS. Both of these programs are managed by the state's department of education and both offer public reporting of results on an annual basis; however, people are far more familiar with the former, and generally consider TCAP proficiency rates to be the measure of a good school.

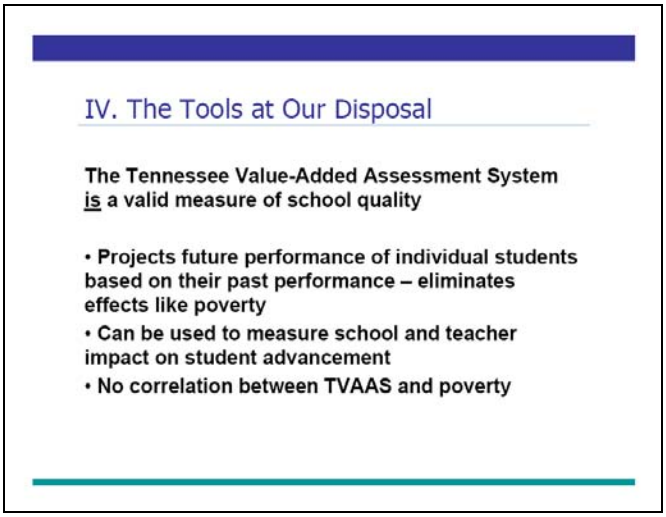


In reality, however, TCAP is not a measure of school quality. It does show the percentage of students at grade level, but tells you nothing of how far students are progressing academically.

As an example, consider a student who comes in two grade levels below his peers. If he gained 150% in academic growth over the course of a year – essentially learning 1.5 years of content in one year of school – that would be amazing progress. However, in terms of the TCAP, there would be no indication of such progress, and the student would simply show up as below proficient. On the other hand, consider a student who comes in above grade level and coasts for a year. Despite making minimal academic progress, that student would likely still score at or above grade level on the TCAP.

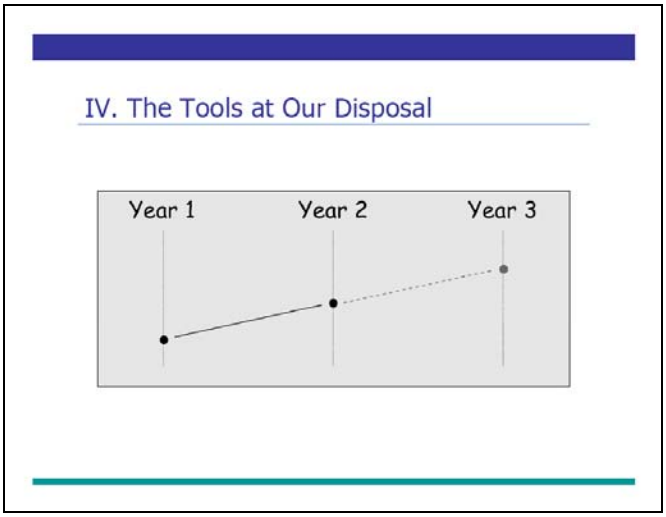


In reality, TCAP correlates more closely with community affluence than it does with effective teaching. This chart shows the TCAP proficiency rates of every elementary and middle school in Tennessee charted against the percentage of students in each school participating in the free and reduced lunch program, which is commonly used as a proxy for poverty. The correlation makes it clear that TCAP is a measure of what students bring to their schools, and not what schools bring to their students in the form of effective teaching.

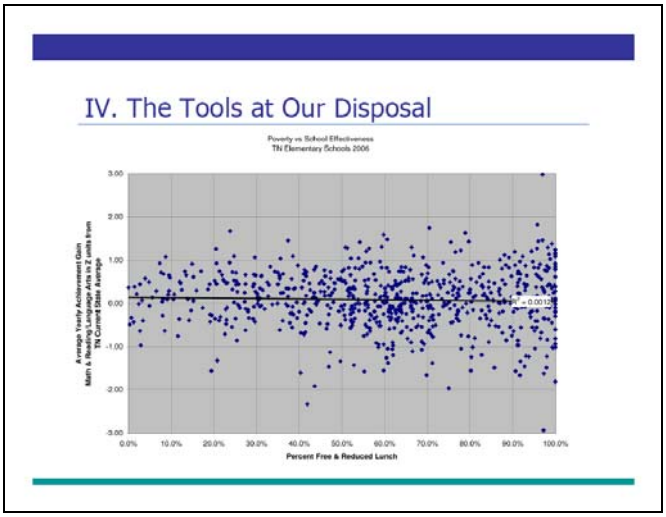


The Tennessee Value-Added Assessment System, or TVAAS, on the other hand, is a reliable indicator of school effectiveness – what the school brings to the students, in other words. Thanks to Tennessee's ability to track student performance individually, TVAAS is able to look at each student's past performance on state assessments and project their future performance. If a student performs above these expectations, one can assume that something happened that allowed them to accelerate their learning; if they come in below expectations, then one can assume that something prevented them from reaching anticipated performance levels.

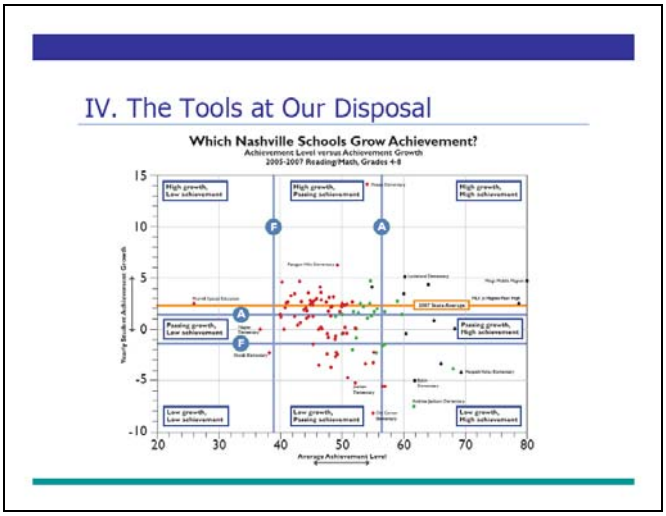
When aggregated at a classroom or school level, these value-added scores can be used to identify how well teachers and schools are advancing student learning beyond what would otherwise be expected. The public has access to school-level data; only school personnel have access to data at the classroom level.



This chart provides a simple illustration of this concept. Looking at a student's test scores over two years, one can project where that student will score on a future assessment. If actual performance is above or below that projection, one can look to the effectiveness of teaching as a cause.



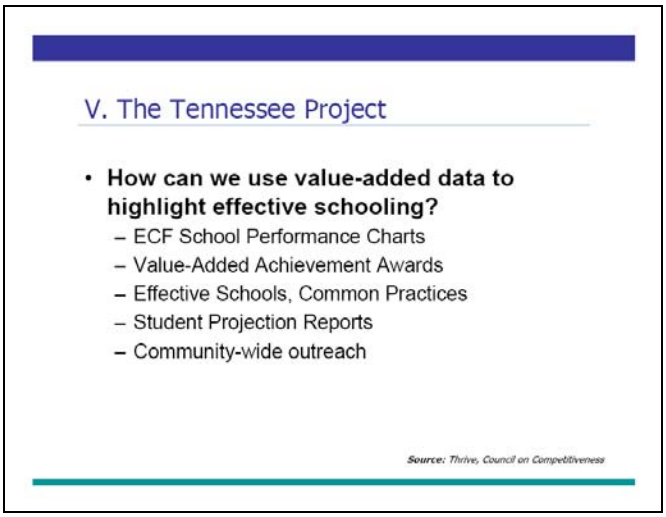
You've seen the correlation between TCAP proficiency rates and poverty rates; this chart maps TVAAS performance against poverty and shows no correlation between the two. It's important to note that any school can do great things in advancing student learning regardless of the characteristics of the population they serve. Highly affluent students, already performing at or above proficiency rates, can achieve far more; students in high-poverty communities, many of whom are below grade level, can move quickly and ultimately catch up to grade level.



This is what we call our "birdshot chart"; it allows you to see how schools stack up when looking at both TCAP and TVAS performance. (Note that a full-sized PDF of the chart in this slide can be found at http://www.education-consumers.org/DC_Birdshot_2008.pdf; it features elementary and middle schools in the Metro Nashville system.) A few notes:

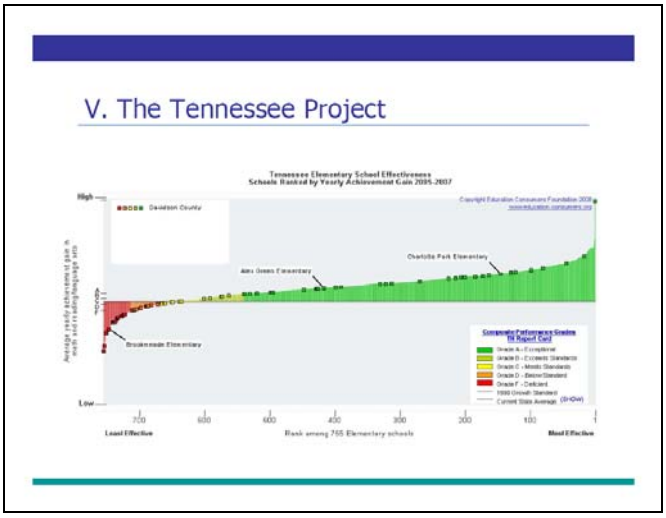
- Schools with high TCAP and TVAAS scores are at the top right; these are schools made up of students who are being fully prepared for rigorous college work; they're the students who can write their own ticket in life.
- At lower right are schools with high TCAP and low TVAAS scores; these are students working at grade level, but who are being allowed to coast. These are students who will require remedial classes in college.
- Schools in the upper left quadrant have low TCAP and high TVAAS scores. Students in these schools are operating below grade level, but are catching up to grade level thanks to high annual gains.
- Schools in the lower left have low TCAP and low TVAAS scores. Students in these schools are below grade level and show no signs of catching up. These students face a real uphill battle unless their rate of learning increases dramatically.

For those school board members who would like to see a birdshot chart for their own districts, please let us know and we'll be happy to accommodate.



While the Education Consumers Foundation (ECF) is a national organization, we have been spending a great deal of time working in Tennessee recently. This is due primarily to the availability of data from the state's value-added assessment system, the longest-running, and one of the most sophisticated, in the country. As a consumers organization, serving the interests of parents, their representatives (including school board members and legislators), and citizens at large, we believe it is critically important that the public be made aware of the availability of value-added data and understand what it means for the education of our children.

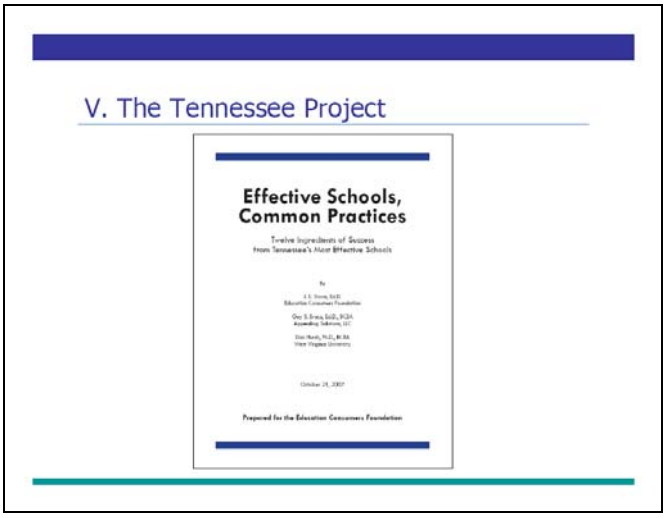
I'd just like to highlight some of our initiatives here, which are conducted under the umbrella of our "Tennessee Project".



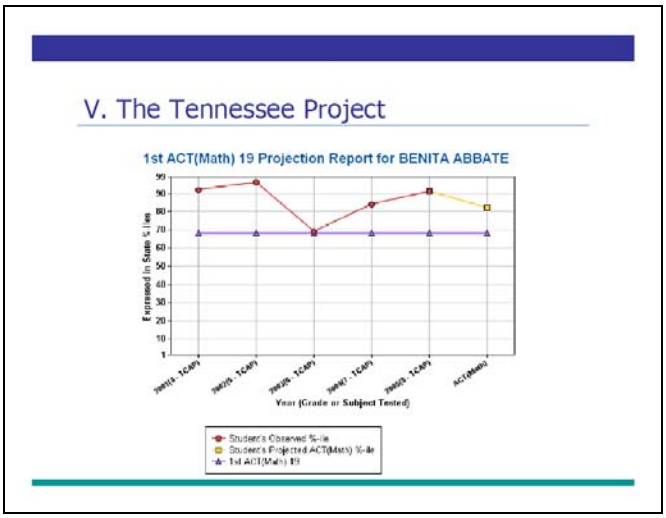
While the state does make school-level value-added data available to the public, it is extremely difficult to interpret this data when looking at the raw numbers provided by the department of education. That's why ECF has taken this public data and created interactive and intuitive School Performance Charts that anyone can work with to get a sense of relative school performance.

This is a screen shot of one of our charts; it shows the value-added performance of elementary schools in the Metro Nashville system. (We have a separate chart for K-8/middle schools.) Note that all of our charts are online at http://www.education-consumers.org/tnproject/spc.htm; visitors can look at individual schools, all the schools in a district, or even multiple districts, and print the results.

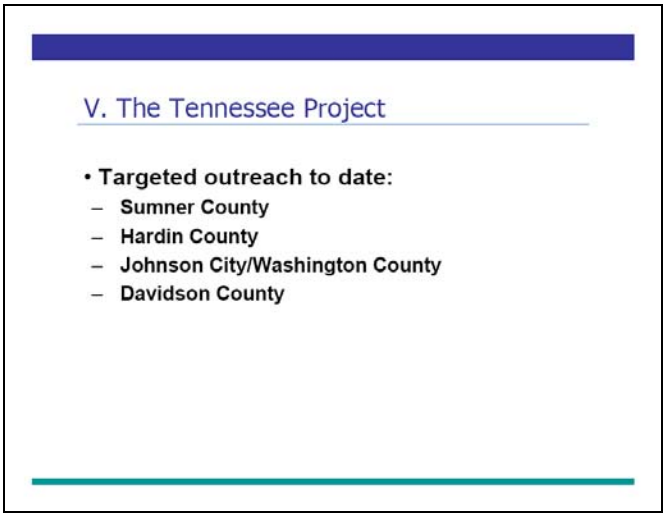
For the past three years, we have been recognizing principals of the most effective elementary and middle schools in the state through our Value-Added Achievement Awards. Each year we look at the highest-performing schools in East, Middle, and West Tennessee, and bring three elementary and three middle school principals from each if the three regions (18 principals in all) to the state capitol to be recognized for their work. (Note that eligibility is limited to those principals who have been in place for at least five years.) These winners are recognized at a ceremony which has been co-hosted by the commissioner of education; they also receive unrestricted cash grants of $1,000 to $3,000 in appreciation for their work. See http://www.education-consumers.org/tnproject/vaaa.htm for more.



After seeing a handful of principals winning Value-Added Achievement Awards two years in a row, Dr. Stone decided to send a researcher out to several of these consistently high-performing schools to see what they were doing to drive student achievement. He visited six schools and found that they all shared several practices; these practices, twelve in all, are listed, along with information on the research behind them, in our ***Effective Schools, Common Practices*** report, which is available at http://www.education-consumers.org/tnproject/EffectiveSchools_CommonPractices_ECF.pdf.



One of the resources made possible by the Tennessee Value-Added Assessment System is the Student Projection Report; this is a screen shot of one of the many reports available through the TVAAS interface. As I mentioned before, performance projections are calculated at an individual student level, and parents are able to request reports on their child's projected outcomes (such as performance on the ACT). This gives parents an opportunity to work with their child's school, or alone if necessary, to intervene while there's still time to change the course a child is on.



One of the challenges we have faced while working in Tennessee is the extremely low level of awareness of TVAAS among parents and other citizens. We therefore decided to start testing community outreach models in certain pilot markets. We continue to test messaging and channel strategy to determine the most effective approach, but have seen early successes through several of our efforts.

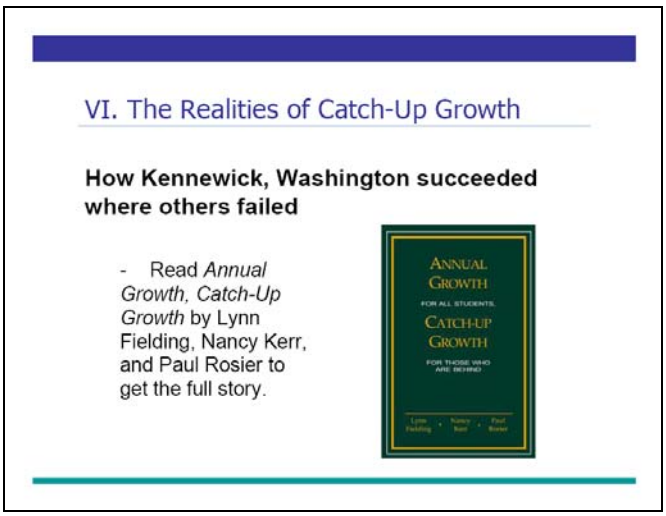
At this point we'll take a short break; after we return, Dr. Stone will speak about the realities of catch-up growth and how we can promote effective schooling in Tennessee.

Dr. Stone:

Brett talked about the poor prospects for high school-level interventions, and the fact that problems are showing up much earlier in students' academic careers. So where does that leave us with respect to our college and workforce preparedness problem?

It leaves us with the alternative of attacking the problem much earlier in the schooling experience—while students and their life circumstances make such goals attainable. It is not a quick solution; but unlike high school remediation plans, it is a workable solution.

Now that we have told you the bad news, I am happy to report the good news that the early intervention alternative is not just a hypothetical possibility. A public school district has demonstrated that it can be done.



(Link to *Annual Growth, Catch-Up Growth*: https://readingfoundation.mmaweb.net/store/growth.jsp

In 1995, the Kennewick, Washington school system faced the typical problems of too many drop outs, low graduation rates, graduates ill-prepared for college and the workplace, and the whole litany of schooling issues that negatively impact college and workforce preparedness.

Kennewick is a school district comprised of thirteen elementary schools, four middle schools, and three high schools enrolling 15,000 students. The Kennewick area in Southeast Washington has a population of 185,000.

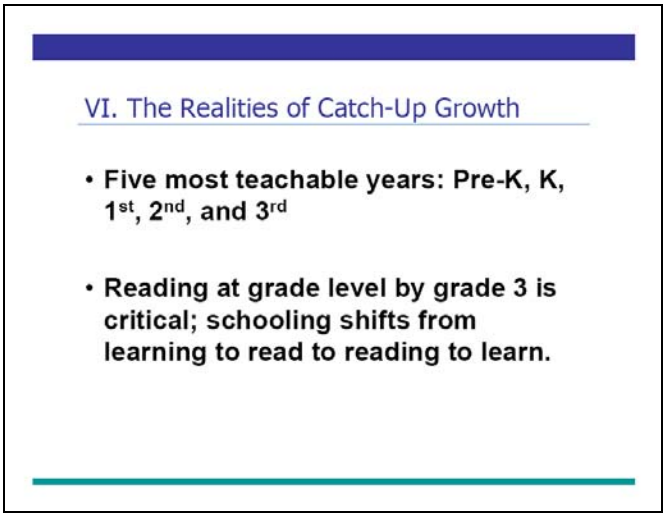
> Here is how they did it. In 1995, the Kennewick board and administrative leadership examined its situation and determined that poor reading performance was the core problem. Deficient reading skills were undermining everything else the school system was trying to accomplish; so the board set an unprecedented goal of having virtually all students reading at third grade level by the end of the third grade. http://www.education-consumers.org/Kindergarten%20learning%20gap.pdf

That they achieved this aim and are now turning around their entire school system was a remarkable accomplishment. To give you a point of reference, the NAEP data indicates that only one-third of 4th graders are "proficient" in reading. Kennewick—a typical public school system—moved their number up to 90% for the district as a whole.

One thing that those in Kennewick discovered is that the lower a student's percentile ranking, the further behind he or she was:

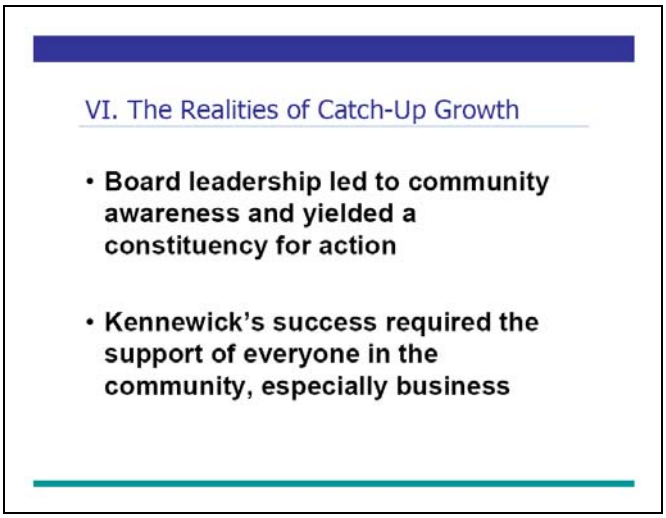
37th percentile =	1 year behind
24th percentile =	2 years behind
12th percentile =	3 years behind
1st to 5th percentile =	Rarely achieve 50th percentile

Before I go further, I want to highlight a consideration that was fundamental to their adoption of this goal: Something like 40% of students start kindergarten one to three years behind their peers. (Visit http://www.k12.wa.us/EarlyLearning/EarlyLearningToolkit/PlanningImplementing/ReadyChildrenFINAL.ppt for more on this from Kennewick.) If these students are to have a shot at reaching today's college and workforce preparedness aims, this gap has to be closed at some point in the course of their schooling.



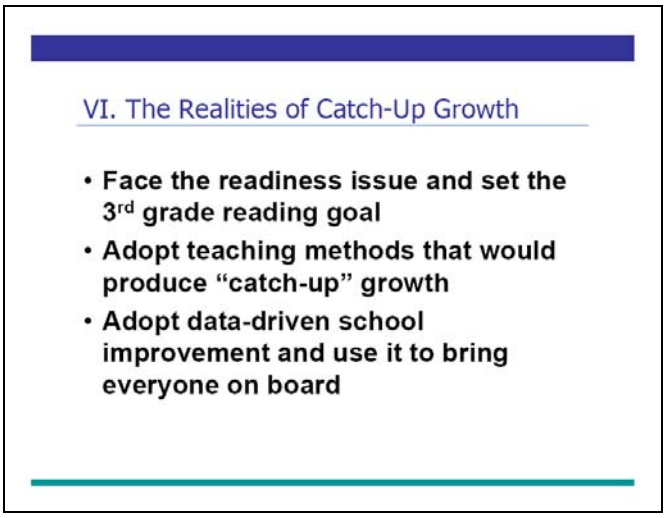
Given that there are 5 years of schooling between the beginning of preschool and the end of third grade (preschool, K, 1st, 2nd, and 3rd grades), this time period is the best and perhaps the only real opportunity for these at-risk students to experience the rates of academic growth necessary for them to catch-up to their peers. I will have more to say about this schooling opportunity later, but my point for now is that this span of years offers the best chance they will ever have to make it educationally.

The details of how Kennewick succeeded may be found in this very informative book by Lynn Fielding, Nancy Kerr, and Paul Rosier: Annual Growth, Catch-Up Growth. There is a link to it on the home page of our website (https://readingfoundation.mmaweb.net/store/growth.jsp).
I would urge anyone who is interested in improving student achievement outcomes to read it.



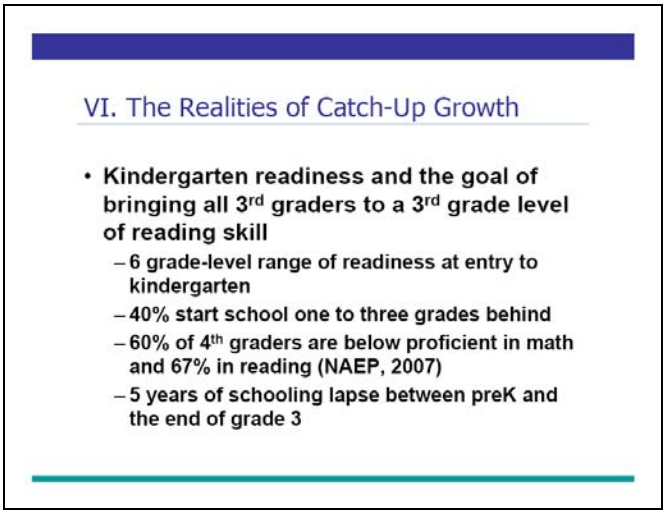
Leadership for Kennewick's effort began with the school board and was expanded to other stakeholders including elected officials and the business community. During the several years this initiative was in place, the four board members who were leading the charge supported a tax increase and ran for reelection. It was a referendum on their program. So, the point is that the board built and maintained a community-wide constituency for their initiative.

In addition to local support, the district linked up with outside foundations for technical help. The board member who was most responsible for leading the effort is a tax lawyer (Lynn Fielding) and he is still on the board.



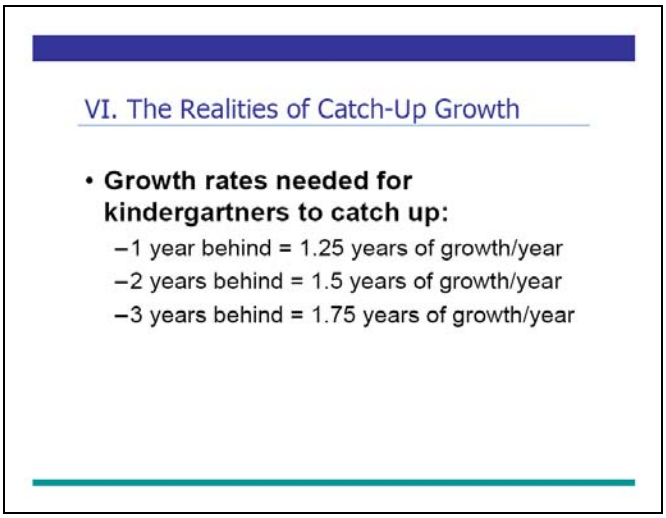
When you read the book describing Kennewick's initiative, it sounds easier that it really was. If it was easy to change schools, improvement would be blossoming everywhere. Certain features of their program had to overcome obstacles that are found in almost every school district.

In the following, I will focus on the features of the Kennewick program that posed significant challenges and how they overcame them. The use of school, teacher, and student performance data was a critical aspect of their effort.



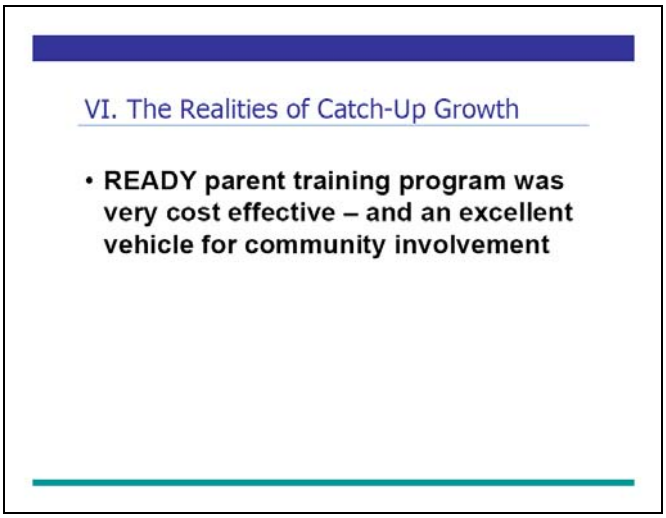
Kennewick began by studying the school readiness of kindergarten students and they found huge differences—ones that are often amplified as children progress through school.

What they found was not unusual. Typically, school districts find that there is about a 6 grade-level range of school readiness at the kindergarten level. Some children enter kindergarten as much as 3 grade levels above average but about 40% are anywhere from one to three grade-levels behind their age mates. If the children in this lower group are to reach 3rd grade level in reading by the end of the third grade, they have to start as early as possible and progress more quickly than their peers.



In other words, their school experience has to produce "catch-up" rates of academic growth; and since there is a practical limit to the rates at which children can progress, they need all of the time they can get. A child who arrives at kindergarten 2 years behind has to make 6 years of academic growth in the time period that the other children are making 4.

Kennewick addressed the readiness issue by working with children at the earliest opportunity. At the prekindergarten level, they used a parent education program called READY. In kindergarten, they used explicit, direct, and systematic instruction.



Reaching out to children prior to school enrollment, Kennewick developed a voluntary parent training program called "READY" and made it available through school facilities, day care centers, and other outlets. Community organizations and local businesses helped in this effort.

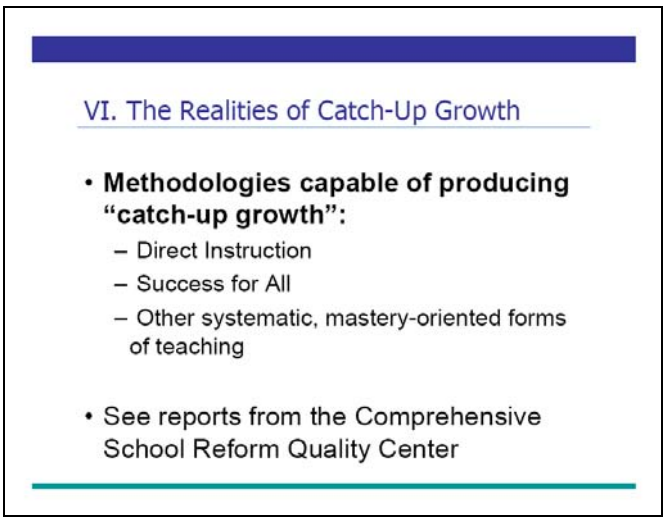
The READY program taught critical school readiness skills such as how to say alphabet, how to print, how to count, and how to simply focus on a task for 5 minutes.
http://www.k12.wa.us/EarlyLearning/EarlyLearningToolkit/EffectivePractices/Kennewick/KennewickFINAL.pdf

Again, reading proficiency by third grade was the critical goal. Third grade is the point at which schooling changes from "learning to read" to "reading to learn." Children who have not mastered reading by the 3rd grade cannot fully benefit from subsequent schooling because so much of it depends on decoding the written word.

And, again, the NAEP data makes it clear why the achievement of college and workforce development aims depends on addressing student success in these earliest years of schooling. Not only are 70% of 8th graders not prepared for high school, 67% of 4th graders are below proficient in reading and 60% are below proficient in math.

The longer students attend school with such handicaps, the farther they fall behind and the more difficult it becomes for them to catch up. Each missed competency is like a brick on the student's back. As the bricks pile up, they become discouraged and eventually they collapse. Remediation with discouraged learners at the 9th and 10th grade level is educationally speaking, "Mission: Impossible."

Here are some observations about achievement growth and catch-up growth that the Kennewick gathered from its experiences: http://www.education-consumers.org/maxims.pdf



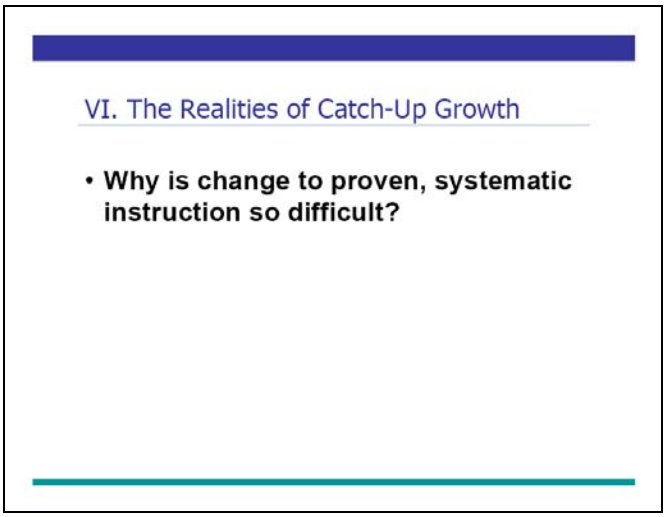
Links to CSRQC reports:

- http://www.csrq.org/documents/ExecutiveSummaryFinal.11.17.06.pdf
- http://www.csrq.org/documents/CSRQCenterCombinedReport_Web11-03-06.pdf (pp 113-125)

What was probably the single most important factor in Kennewick's success was the adoption of what they call **"Superb Direct Instruction,"** however this step may have been one of the most challenging features of their program to implement.

Happily, some schools accepted the board's challenge, looked at their results, changed to Direct Instruction, and immediately began to recognize that DI was bringing about the necessary catch-up growth rates. Eventually, all 13 schools moved this direction.

Unhappily, it took several years for some schools and some teachers to become convinced that more effective and efficient teaching methods were needed—and this brings me to the somewhat obscure but challenging issue that Kennewick had to address: Getting schools and teachers to change their approach teaching at the preK-3 level.



Convincing preK-3 teachers to use focused, systematic, and mastery-oriented instruction was a major accomplishment. To those of you in the business community, the use of proven teaching methods to build critical skills may sound like common sense; but I can tell you that to preschool educators, it is a risky and controversial step.

Here is the problem. Owing to certain concepts that have for decades been part of the training received by early childhood educators, most practitioners believe that systematic and direct teaching of preschool academic skills puts children at risk for a kind of academic burnout. They call practices such as DI "overscripted" and refer to them as "drill and kill."

Their assessment is based on a concept of intellectual development that has largely been abandoned by the scientific community but remains (in greatly revised form) in the policy of early childhood education's national association—the National Association for the Education of Young Children.

In its 1980s iteration, NAEYC policy on "developmentally appropriate practice" (DAP) strongly discouraged activities such as admonishing children for inappropriate behavior or teaching them the letters of the alphabet. Today, the NAEYC's policies are more sensitive to research and the obvious societal need for more effective schooling but most teachers are products of the older view (http://www.naeyc.org/about/positions/pdf/PSDAP.pdf).

For additional discussion of NAEYC's shifting policy, see: http://www.education-consumers.org/research/briefs_1202.htm

In plain language, Direct Instruction and kindred methods are more like traditional teacher-directed schooling. DAP—at least the traditional version—is more like playschool.

Since these are distinctions about teaching practice that are below the radar of most administrators and policymakers, I want to take a few minutes to show you what these approaches look like in the classroom.

Here is what Direct Instruction looks like. This is a promotional video produced from a systemwide implementation of DI in the Gearing, NE public schools.

(Link to Gering video: http://www.nifdi.org/gering_video.html)

The next clip that I will show you can be found on YouTube. It describes and illustrates the aforementioned Developmentally Appropriate Practice approach. The video is from The Learning Community website: http://www.thelearningcommunity.us/home.aspx

(Link to DAP video: http://www.youtube.com/watch?v=a-h4IhIqkcc)

As you can see, the Developmentally Appropriate approach is a much less structured approach that stresses play guided by student interest. It is based on a theory that instruction must be in harmony with a child's intellectual development or it risks engendering frustration and an aversion to learning.

The DAP approach came to be centerpiece of early childhood teaching practice in the eighties when it was adopted by the National Association for the Education of Young Children as part of teaching standards. Their aim was to give early childhood educators a unique professional identity.

Despite the fact that empirical studies have never substantiated the child development risks predicted by DAP, the doctrine has remained at the core of NAEYC recommendations regarding "best practice" teaching ever since. In recent years, a variety of research findings have resulted in drastic revisions of the DAP doctrine, but the term has remained in use. Today, the vast majority of university-trained early childhood educators continue to think of DAP as the essential guide to safe and effective teaching for young children even though its prescriptions for practice are much different than originally conceived.

Given sharp divide between what teachers believe and what research shows, school leaders are left with a difficult challenge: A substantial number of children are entering school far below their peers and there are approaches to teaching that would enable them to catch up; but teachers may be skeptical or opposed to trying a new approach.

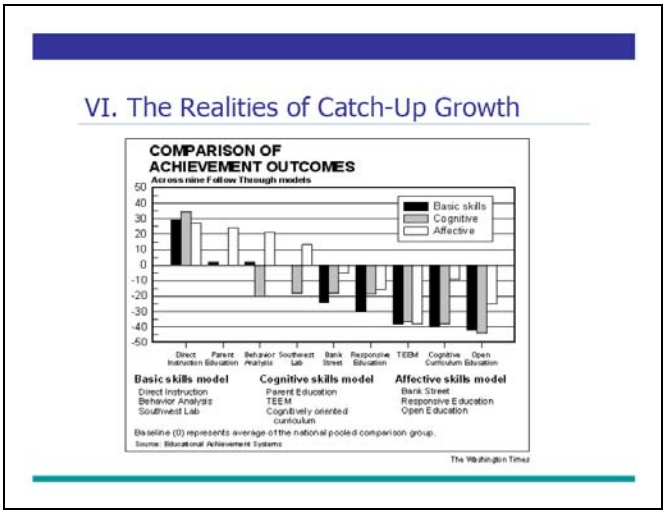
So, how did Kennewick's leadership manage to sell the change?

It took 10 years, but they convinced a few of their teachers and principals to try Direct Instruction on a small scale and carefully tracked the results. Then they asked the other schools to compare their results with those being produced by DI.

How did they select DI as the approach to try?

They looked at the research evidence. http://www.city-journal.org/2008/18_4_pre-k.html.

You have seen the report from the Comprehensive School Reform Quality Center. Here is an older and larger study.



The Follow Through Project was launched in 1967 as a part of the War on Poverty (http://www.education-consumers.org/research/briefs_0201.htm). It was and is the largest, longest running, and most costly educational experiment ever conducted. It ran from 1967 to 1995 and cost roughly $1B. It was explicitly designed to determine the effectiveness of the various teaching methodologies that are used to teach at-risk children. Over 20,000 children participated.

Regarding the Follow Through chart shown above: The study examined academic, cognitive, and affective outcomes. The horizontal line in the center of the chart represents the level of each outcome produced by comparison groups, i.e., classes that were taught without any special program.

The nine sets of bars represent the outcomes for the several competing teaching models that were tested. Three contrasting approaches were used: ones that emphasize basic skills (DI, Parent Education, Behavior Analysis), ones that emphasize cognitive skills (Southwest Lab, Bank Street, and Responsive Education), and ones that emphasized the development of affective skills (TEEM, The Cognitive Curriculum, and Open Education).

As you can see, Direct Instruction, the program adopted by Kennewick, produced substantially better outcomes than traditionally taught classes (i.e., the centerline) and vastly better results than most of the competing models.

Importantly, notice that most of the competing models produced worse results than traditionally taught classes. Plainly, teachers do have good reason to be skeptical about approaches to teaching with which they are not familiar. Many of these failed models were repackaged and are still in use today.

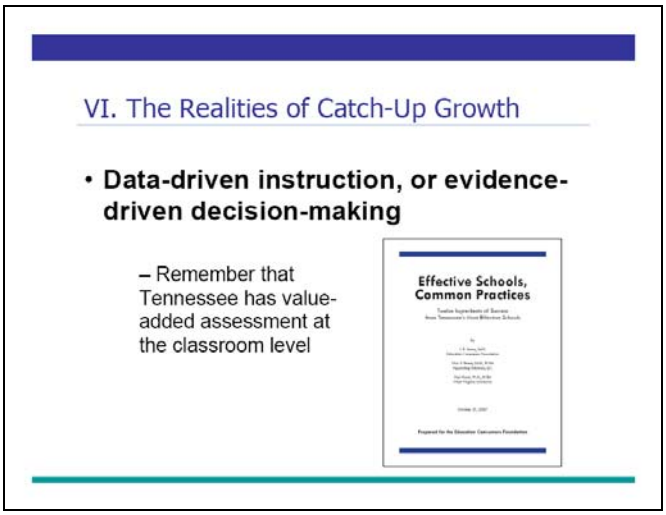
Notice, in particular, the Bank Street College of Education's approach. It is this approach that most closely resembles the DAP that you saw in the preceding video clip.

For more on how educational research is shaped by marketing considerations, see our "Buyers and Sellers of Educational Research:" http://www.education-consumers.org/research/briefs_0201.htm.

Plainly, the evidence from this largest-ever study of what works at the K-3 level supports the DI-basic skills approach to schooling and, of course, the Kennewick schools used this type of instruction to produce a dramatic change.

At this point, I am sure that many of you are asking yourselves how the Developmentally Appropriate approach remains so popular and the Direct Instruction approach is so unpopular, and I will try to answer your question in a moment.

First, however, I want to deal the practical issue of how the Kennewick school district managed to convince its K-3 teachers that a change was needed.



Link: for information on data-driven instruction: http://ddis.wceruw.org/resources.htm

The generic name for the approach used by Kennewick is **data-driven or evidence-driven decision-making.** Kennewick looked at existing student performance data, pinpointed the areas where action was needed, and tracked results. The key element in convincing the teachers and other stakeholders in the value of Kennewick's plan was district-level instructional leadership supported by solid data. Central office personnel were patient and supportive, and with the help of the Northwest Evaluation Association, they let the academic growth data show what was working and what wasn't.

Unlike the State of Washington, Tennessee already has a testing and accountability system focused on student achievement growth (i.e., TVAAS), so assessment at the K-2 level is, in principle, an extension of current practice.

Unfortunately, testing and student performance data for grades K-2 is available only in those districts that have elected to undertake such assessments and, moreover, the tests recommended by the Tennessee Department of Education have proven to be poor predictors of third grade performance (see http://tn.gov/education/assessment/tsachk2.shtml). Thus, school systems seeking to duplicate Kennewick's program may need to seek technical assistance from the Northwest Evaluation Association (http://www.nwea.org/).

Without question, some of Kennewick's teachers and schools were already using effective practices, but many were not. Without good data, it would have been very difficult for a principal or supervisor to say which teachers were doing a good job and which needed to improve. So the data-driven approach was essential to implementation.

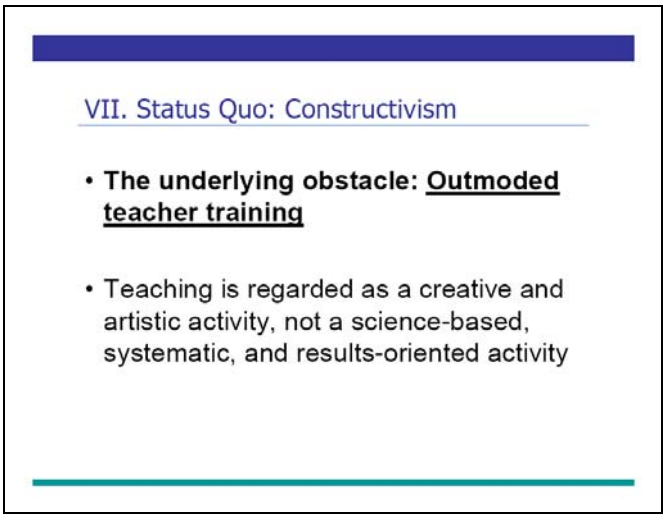
By measuring individual student performance monthly and weekly, teachers, administrators, school board members, and other stakeholders were able to see what was working and what was not. Schools and teachers were given the training and coaching to adjust accordingly. Results were tracked school-by-school, teacher-by-teacher, and student-by-student. Parents and taxpayers were kept in the loop.

Bottom line: The academic growth of each student was tracked and no child was permitted to fall through the cracks. Interestingly, those are the very practices that the Education Consumers Foundation found being used in Tennessee's top performing schools.

I earlier mentioned the work that we are doing in Tennessee with value-added assessment. Perhaps the greatest virtue of value-added data is that it permits teachers, principals, and supervisors to see how effective individual teachers are in lifting student achievement—a hugely useful tool in identifying models of effective teaching and helping teachers improve.

In 2007, we did a study of principals who had won our value-added achievement awards for two or more years in succession. These were the schools producing the highest student growth rates in the state.

The report is titled *Effective Schools, Common Practices,* and we found that **all of them tracked student data very frequently** and **all were using some type of systematic, mastery-oriented teaching methodology**—ones similar to Direct Instruction. As Brett mentioned previously, you can visit http://www.education-consumers.org/tnproject/EffectiveSchools_CommonPractices_ECF.pdf to download a free copy of the report in PDF format.



Now I want to come back to the question of why despite the evidence of studies like Follow Through and the experience of school districts like Kennewick, DAP remains so popular and DI is largely ignored. I speak here as a 35 year veteran of teacher education.

The short answer: Teacher's are trained as artisans, not practitioners of applied science. They are encouraged to develop a teaching style that suits their personal strengths, weaknesses, and dispositions. Effective teaching is the aim, but demonstrated effectiveness is not required. Not surprisingly, some teachers develop effective practices, a few become as effective as carefully tested programs like DI and Success for All, but most have to learn through trial and error over a 7-10 year period.

Most early childhood education teachers (K-3) use the DAP approach. DAP is simple and appealing and it has been heavily emphasized in NAEYC-approved teacher training programs for decades. By contrast, DI is relatively complex, challenging, and valued because of its strong research foundation. Not surprisingly, DAP is far more widely used.

Unlike professions such as medicine and engineering, teaching is only loosely guided by science. Teacher trainers look at research-based teaching practices and programs the way that an artist might look at a new type of paint or brush. They view them as a new item for the teacher's palate, not as an advancement that will become a new standard for practice.

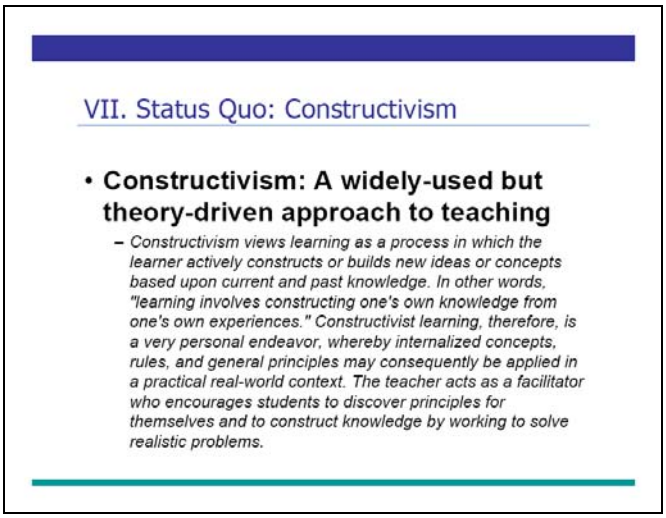
Practicing teachers hold this same view. Demonstrably effective practices are merely an option to be employed or disregarded on the basis of the teacher's style and "beliefs," not on the basis of measurable outcomes with students.

Teaching has no legally enforceable standard for competent practice. Unlike doctors, lawyers, and engineers, teachers cannot be sued for negligent malpractice.

Teachers typically undergo a four-year college degree program in which they are taught a variety of theories and practices, and then given a semester of supervised practice teaching. From there, they are pretty much on their own. Half of new teachers quit in the first 5 years.

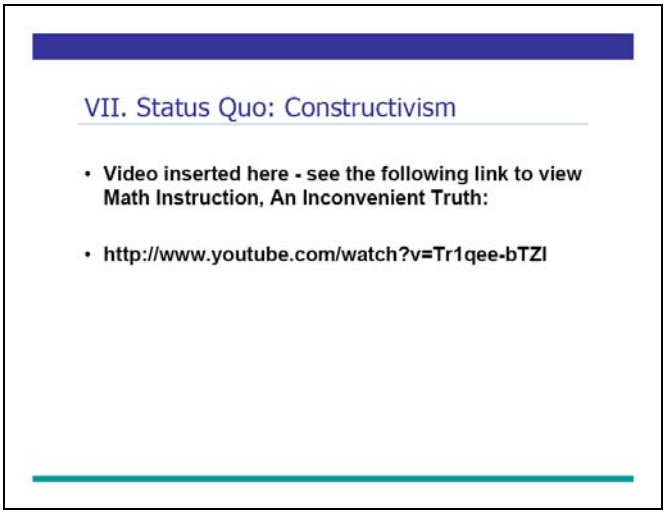
In summary, the practices used by most prek-3 teachers are a personalized composite of methodologies. They may be effective or ineffective, but they are outmoded in the sense that scientifically-founded and demonstrably effective alternatives are available but largely unused.

For more on the lack of alignment between teacher preparation and public policy, see: http://www.education-consumers.org/research/briefs_0101.htm.



DAP is but one of many such theory-driven but largely untested approaches to teaching that teachers may be encouraged to incorporate in their professional skill set. Constructivism is another popular approach.

The following video clip demonstrates how constructivism applies to the teaching of mathematics. It goes by a number of names including "the new, new math" (not to be confused with the "new math" of the 1960s). Its proponents claim that it does a superior job of teaching students to think mathematically. Whether it also does a good job of teaching students how to find the right answer to simple math problems, I will leave for you to decide.

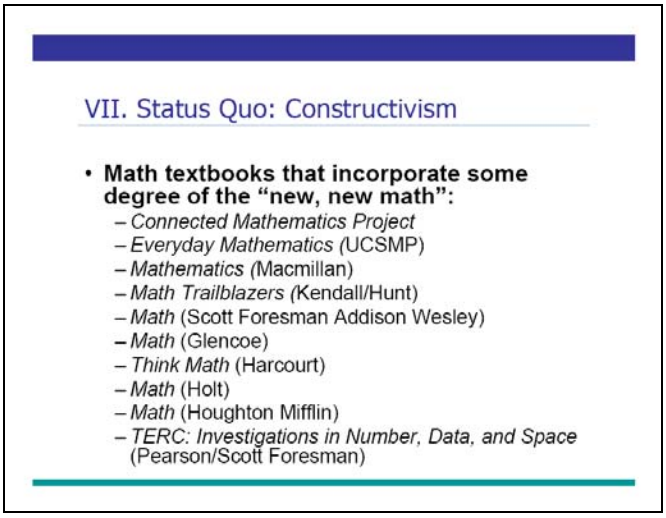


(Link to Math video: http://www.youtube.com/watch?v=Tr1qee-bTZI)

You can see for yourself that whatever the purported advantages of this mode of teaching, it makes computational skill very difficult to learn; so like any reasonable person, you might ask why teachers are encouraged to use such a methodology.

The short answer is that like the 1960s "new math" fad, this approach appeals to the community of math education professors who publish articles, give talks, and have meetings with each other, all regarding the latest and greatest ways to teach math. Of course, they also teach their ideas to teachers and to budding teacher educators; and as a result, some level of market demand for constructivist textbooks is created—and so the new, new math spreads throughout public education.

Although controversial among practicing mathematicians and scientists (http://www.nychold.com/) constructivism has become very popular among math educators. The example that you saw was from a textbook titled Everyday Math, and it was entirely consistent with the standards promulgated by the National Council of Teachers of Mathematics—so it gets included in the teacher education curriculum and many teachers have been taught that it is "best practice" in the teaching of mathematics.



Once a fad like constructivism gains traction among teacher-educators and textbook publishers, teachers are largely forced to incorporate it into their craft and do their best to make it work for students.

They are given lots of incentive to do so. They are tested for their knowledge of constructivism by the professors who train them and by teacher licensure exams like the PRAXIS. They are expected to learn more about it in graduate courses and workshops. They tested for the use of it if they apply for an advanced certification like the National Board for Professional Teaching Standards. Their annual job performance assessments may require that they demonstrate it in their classrooms.

In conclusion, the facts and observations recited here today all support a central conclusion about schooling and improved workforce preparedness:

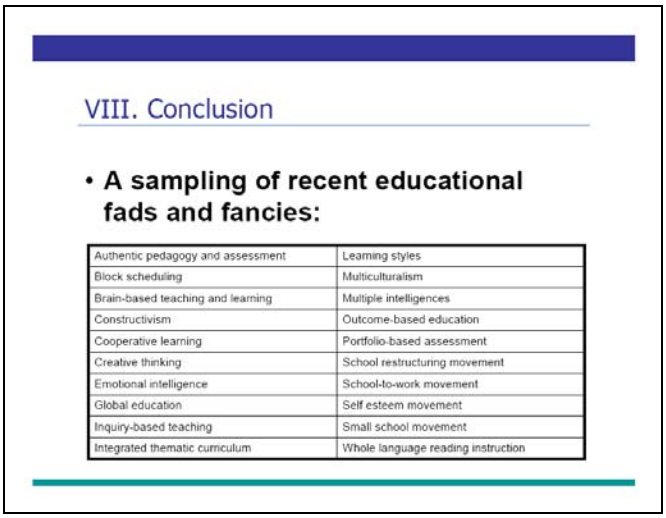
For high school graduates to be well prepared for college or the workplace, a significant percentage of students need a fast start in grades k-3. Children who have limped through grades 4-8 with inadequate mastery of tool skills are going to be difficult to remediate under the best of circumstances. Remediation at the high school level is inevitably less effective, not to mention more expensive.

Students who start kindergarten 1-3 years behind their peers require instruction that produces "catch-up" rates of academic growth. Ideally, all students need to reach grade-level proficiency in reading and math by the end of the 3rd grade. Without third grade proficiency, they cannot fully benefit from their subsequent years of schooling.

Schools in Tennessee and Kennewick, Washington have produced catch-up growth rates by using systematic teaching methodologies but teachers had to be convinced that the new approaches were necessary or desirable. Data-driven decision-making was critical to the implementation process.

Teachers are rightly skeptical of unfamiliar programs and methodologies. Public schooling is a $500 billion a year industry and over the decades it has been it has been beset by pedagogical snake oil salesmen. Teachers are so accustomed to being exhorted to adopt the fad of the month that they learn to duck when administrators and board members come back from workshops like this one.

Here is a sampling of fads from the last 25 or so years.

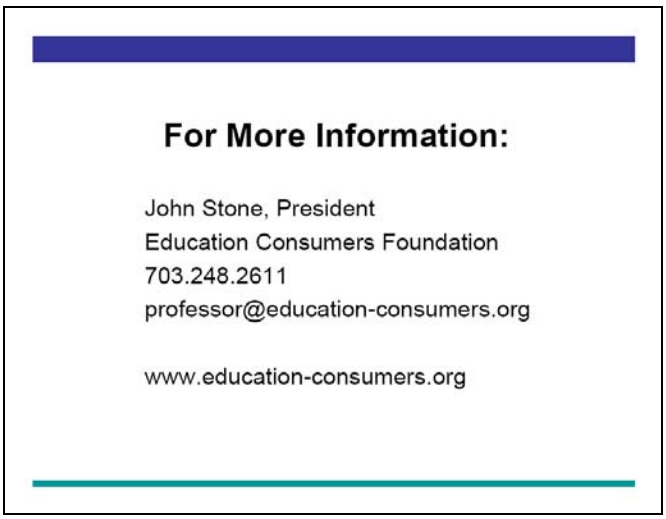


And this brings us to the bottom line:

Substantially improved college and workforce preparedness is possible but it will take more than quick fixes or standard-setting at the high school level. More than anything, it will take data-driven leadership at the board and system level.

If college and workforce preparedness is one of your school system's priorities, I hope your experience here today will lead you to examining this issue in your school district.

If the Education Consumers Foundation can be of assistance, please do not hesitate to contact us or visit our website.



Final handouts:

- Perils of the Pendulum Resisting Education's Fads - http://www.csmonitor.com/1998/0825/082598.feat.feat.2.html
- Learning-Free Zones: Five Reasons America's Schools Won't Improve - http://www.edexcellence.net/detail/news.cfm?news_id=183&id=