2007 K-12 Conference

Florida Department of Education
Orlando, FL
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Ted Hershberg
Director, Operation Public Education
Professor, Public Policy and History
University of Pennsylvania

Why do we need fundamental change in our schools?

- Respond to tectonic shifts in the plates of the global economy
- Respond to flat student achievement and to the need to graduate students with higher order thinking skills

The Global Economic Context

The World is Flat

Thomas Friedman

- Major technological changes – the growth of the Internet foremost among them – have leveled the playing field of global economic competition
- China, India and the former Soviet Union are now electronically connected with the rest of the developed world

A new convergence

"It is this convergence – of new players, on a new playing field, developing new processes for horizontal collaboration – that I believe is the most important force shaping global economics and politics in the 21st century."

Thomas Friedman

Dramatic change

- Thirty years ago, you'd rather be "B" student in Boston than a genius in Bangalore or Beijing because in the latter two cities a student could not take advantage of opportunities. This is no longer true
- Intellectual work from anywhere can be disaggregated, delivered, distributed, produced and put back together again

Craig Barnett, CEO, Intel

"You don't bring three billion people into the world economy overnight without huge consequences, especially from three societies" – like India, China and Russia – "with rich educational heritages."

Bill Gates

- I am terrified for our workforce of tomorrow
- American high school education is obsolete
- 2001: India graduated almost one million more students from college than we did
- China graduates twice as many students with bachelors degrees and they have six times as many graduates majoring in engineering
- In the international competition to have the biggest and best supply of knowledge workers, America is falling behind

Tom Friedman

- We need to get going immediately
- It takes 15 years to train an engineer . . . This really is rocket science
- So parents, throw away the Game Boy, turn off the television and get your kids to work
- There is no sugar-coating this: in a flat world, every individual is going to have to run faster
- It's no longer "finish your meal, Johnny, because people in China are starving . . .it's people in India and China are starving for your jobs"

Louis Gerstner
former Chair of IBM
and The Teaching Commission

- We must “adapt or perish”
- Unless we transform our schools and do it now . . . it will soon be too late
- The only way to ensure we remain a world economic power is by elevating our public schools - particularly the teachers who lead them - to the top tier of American society”

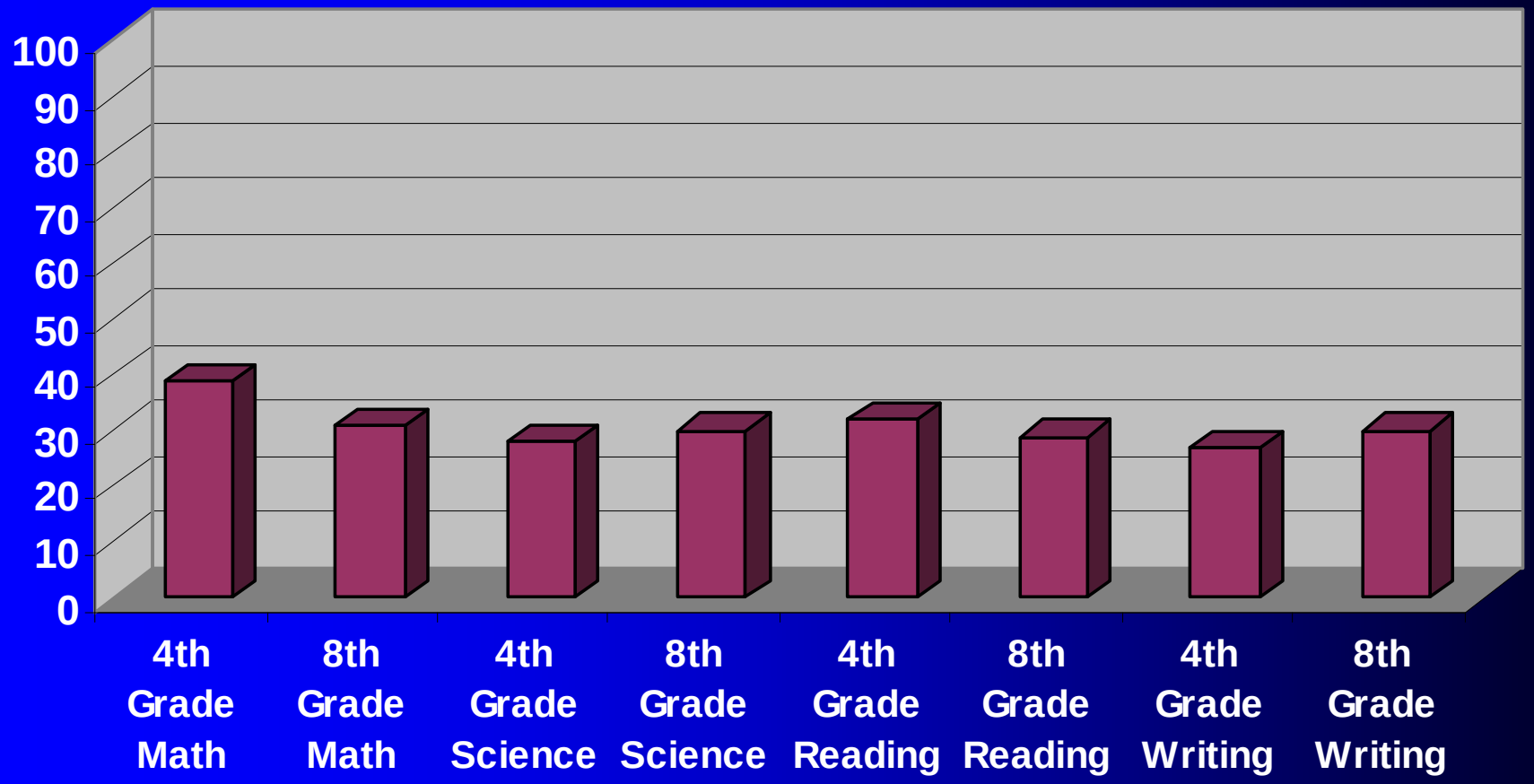
The State of our Schools

How are we doing?

NAEP Proficiency

National Assessment of Education Progress

Math and Reading 2007; Writing 2002; Science 2000



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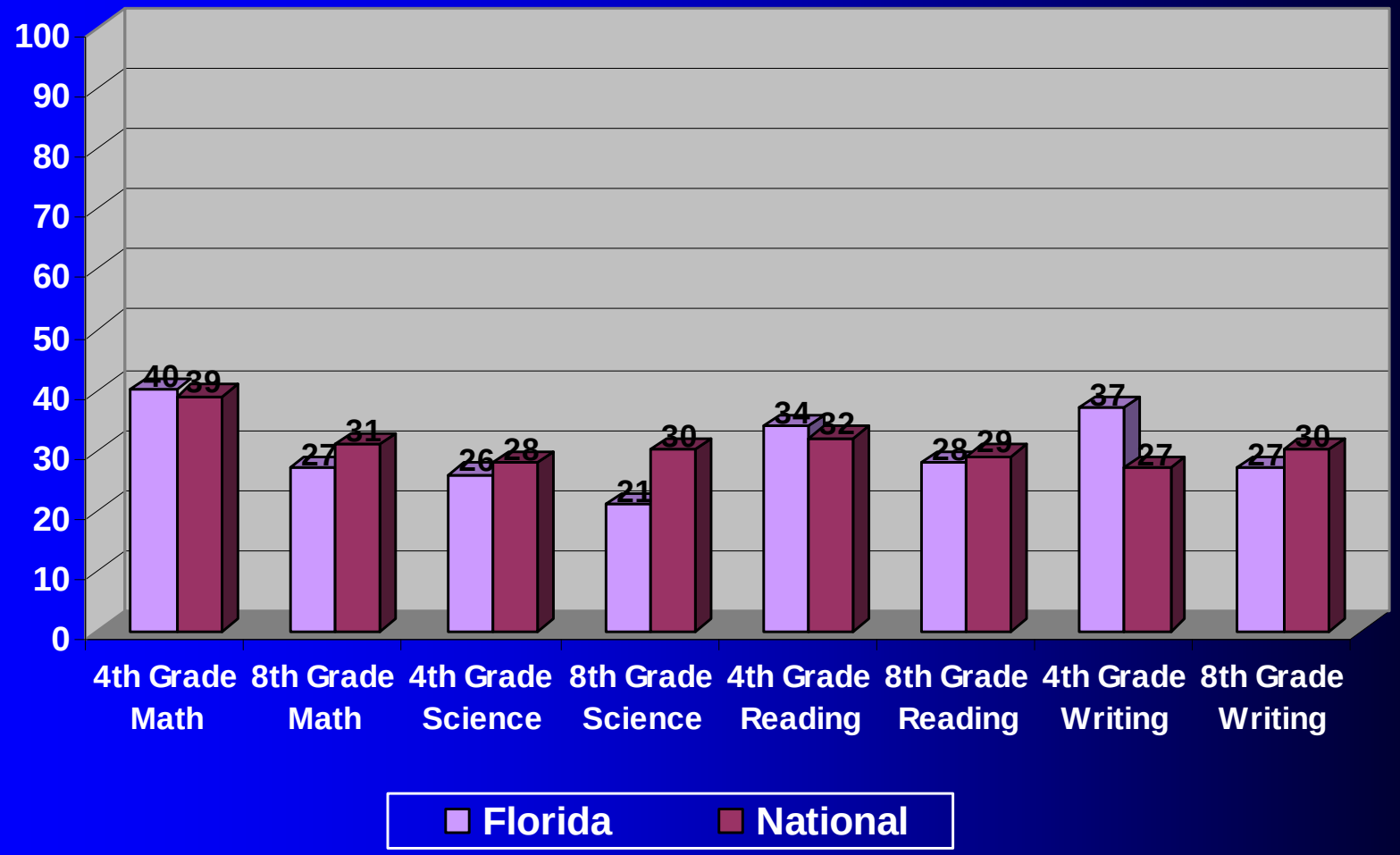
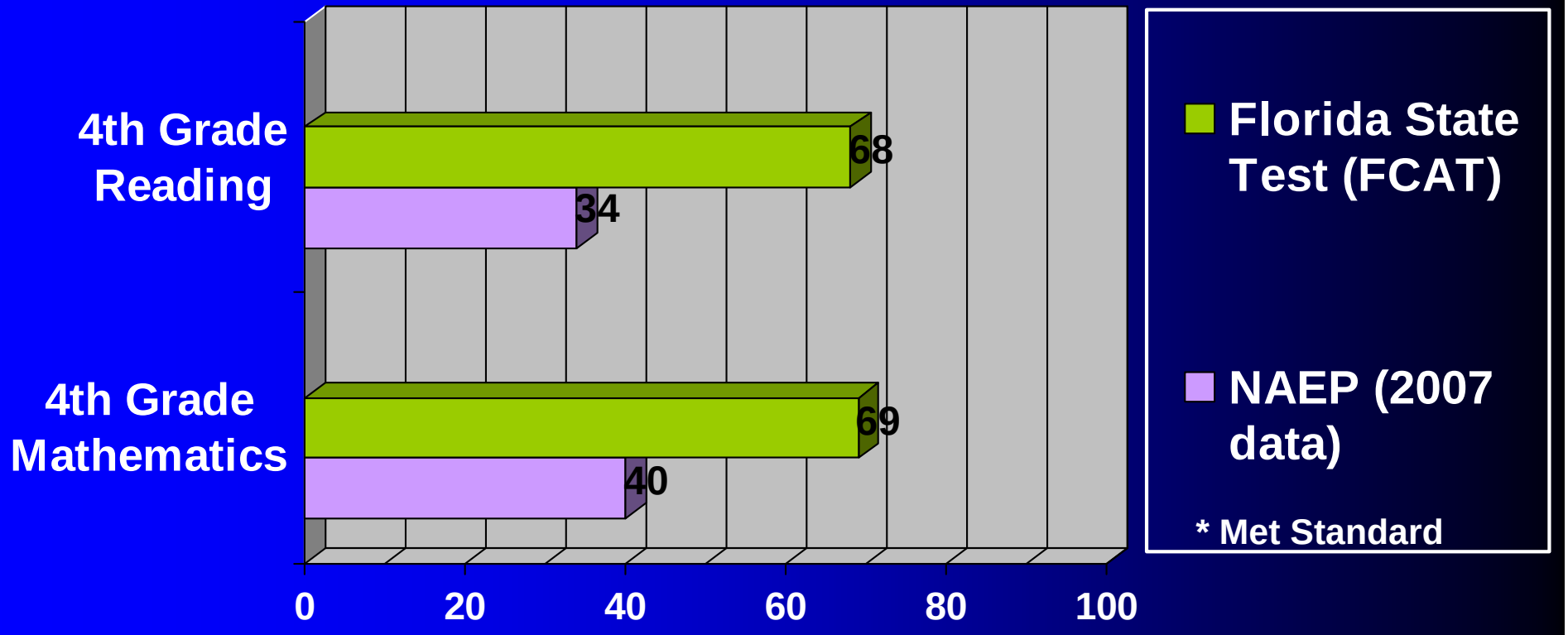


Florida State Tests (FCAT) and the NAEP

2006-2007 School Year



International Comparisons: TIMSS and PISA

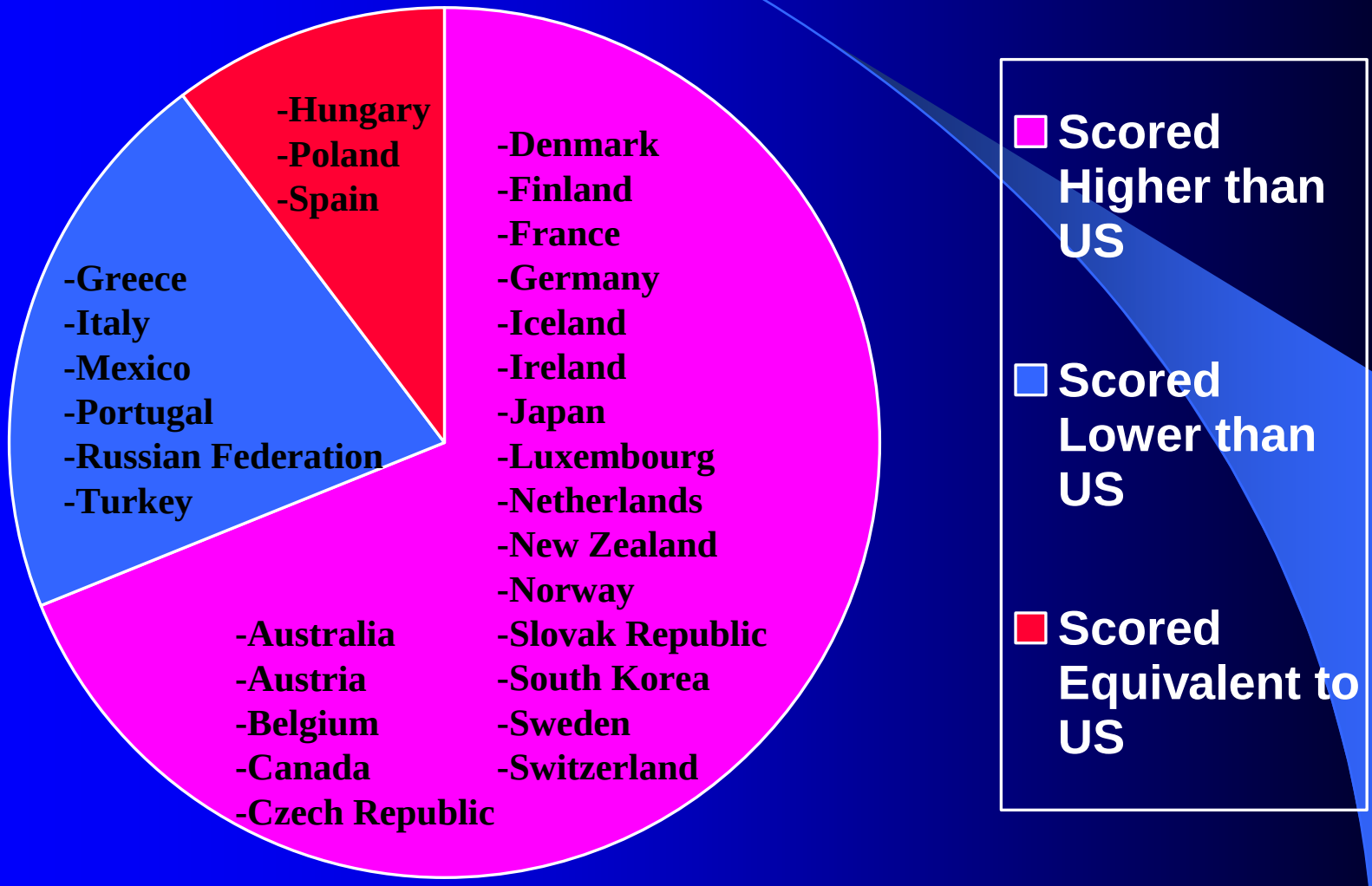
- **The Trends in International Mathematics and Science Study (TIMSS)** provides internationally comparative information on achievement in the primary and middle grades.
- **The Program for International Student Assessment (PISA)** provides internationally comparative information on the literacy (mathematical and scientific) of students in the upper grades at the age of 15.

TIMSS Rankings, 2003

4th Grade	8th Grade
1. Hong Kong	1. Hong Kong
2. Japan	2. Japan
3. Belgium	3. Belgium
4. Netherlands	4. Netherlands
5. Latvia	5. Hungary
6. Russia	6. Latvia*
7. Hungary	7. Russia*
8. USA	8. Australia
9. Italy	9. USA
10. Australia	10. New Zealand
11. New Zealand	11. Italy
12. Norway	12. Norway

*Latvia and Russia tied for 6th place.

Program for International Student Assessment (PISA)



In the 2003, U.S. came in 24th out of 29 OECD countries.

International Comparisons

"What's most important is that there is a fairly consistent pattern of mediocrity… among U.S. students." (American Institutes for Research)

National Research Council

Report on Advanced Placement in Math and Science

- Recommended that high school students only receive college credit for a score of 5
- Why? Too much memorization

Test scores don’t matter.

Isn’t the American economy the envy of the world?

Our schools must be doing a heck of a lot of things right!

Growing Income Inequality

- Don’t confuse the performance of the economy as a whole with the experience of all American families
- Since 1975, nearly all of the nation’s **income gains** have gone to the top fifth
- Why? According to economists, the reason is **“new technologies that favor the better-educated”**
- The choice for the other 80 percent of the population is clear: **high skill or low wage**

Economic Context

- The last year the typical blue-collar worker earned enough for mom to stay home and raise the kids was 1964
- Real wages have been declining for 30 years
- Yet standard-of-living didn’t fall because women entered the labor force in record numbers creating two-income families
- That strategy can’t be sustained . . .

The goals of public education through most of our history

- Teach basic literacy
- Socialize Americans for the manufacturing workforce
- Identify and sort out the top fifth who would go on to higher education

New Goals for 21st Century Schools

- Educate all our children, not just the top fifth
- Educate them to higher levels than ever before

The new goals are unprecedented and require a new school system

- Our current system was designed for a different economy and different century
- We have an agricultural calendar and an industrial model for a high-tech world

Student achievement has been largely flat despite major investments

Over the last thirty years nationwide:

- Increase of 130 percent in real terms per student
- 28 percent decrease in the student-to-teacher ratio
- More than a doubling in the number of teachers with masters degrees

We must build a new and different system for success in the 21st century.

Understanding Reward Structures

- America's elite research universities: "publish or perish"
- Goals and rewards are perfectly aligned
- Switch to paying professors based on years of service
- What do you think would happen to the productivity of the faculty?

K-12's new goals require new reward structures

- End a compensation system driven largely by years of service
- Create a new human capital development system to:
  - Evaluate
  - Compensate
  - Remediate
  - Provide professional development for teachers and administrators

Best Practice as a case study

- NSF developed a multi-media module for teaching science at the cost of $17.5 million
- Research shows that students are 3-4 times as likely to master the curriculum if used
- But it's not being used
- Can we call this "malpractice"?

From *Quantity* to *Quality*

- Old System
  - Focus on cohorts, volume and throughput
  - Hold constant the time and let the results vary
- New System
  - Focus on individual students
  - Hold constant the results and let the time and resources vary

Skills and knowledge for the 21st century classroom

The Old

- Ability
- Bell-Shaped Curve
- Memorization*
- One-Size-Fits-All
- Anecdotal
- Teacher-Centered

The New

- Effort
- Standards
- Problem Solving*
- Differentiated Instruction
- Data-Driven Decisions
- Student-Centered

Teaching Career Issues

- 33% of teachers drop out in first three years
- 46% of teachers drop out in first five years
- 50% higher drop out rate in urban districts
- “Leavers” have a stronger profile than “stayers”
- Burnout often characterizes last third of career
- 2 million of the 3.4 million teachers will need to be replaced over the next decade – three times as many through attrition as retirement

Recruiting new teachers for the existing system

- Quality likely to diminish without changing the nature of the teaching profession
- Career options for women and men: 1977 and 2007

Changes in Career Options for Women

Percent of all professional women whose occupation was teaching	1972	2004
	30.3	13.8

Percent of women in field who were:	1972	2004
Architects and Engineers	4.3	13.8
Lawyers	4.0	13.8
Physicians	10.1	29.4
Dentists	1.9	22.2
Pharmacists	12.7	47.2
Computer Programmers and System Analysts	17.3	28.2
Accountants and Auditors	21.7	60.5

Source: Bureau of Labor Statistics

Attract and retain the "best and the brightest"

To attract new educators of "Teach for America" quality and retain the best of our current teacher corps:

- We need an empirical basis for human capital development
- We must tie rewards in K-12 to our new goals

How can this be done?

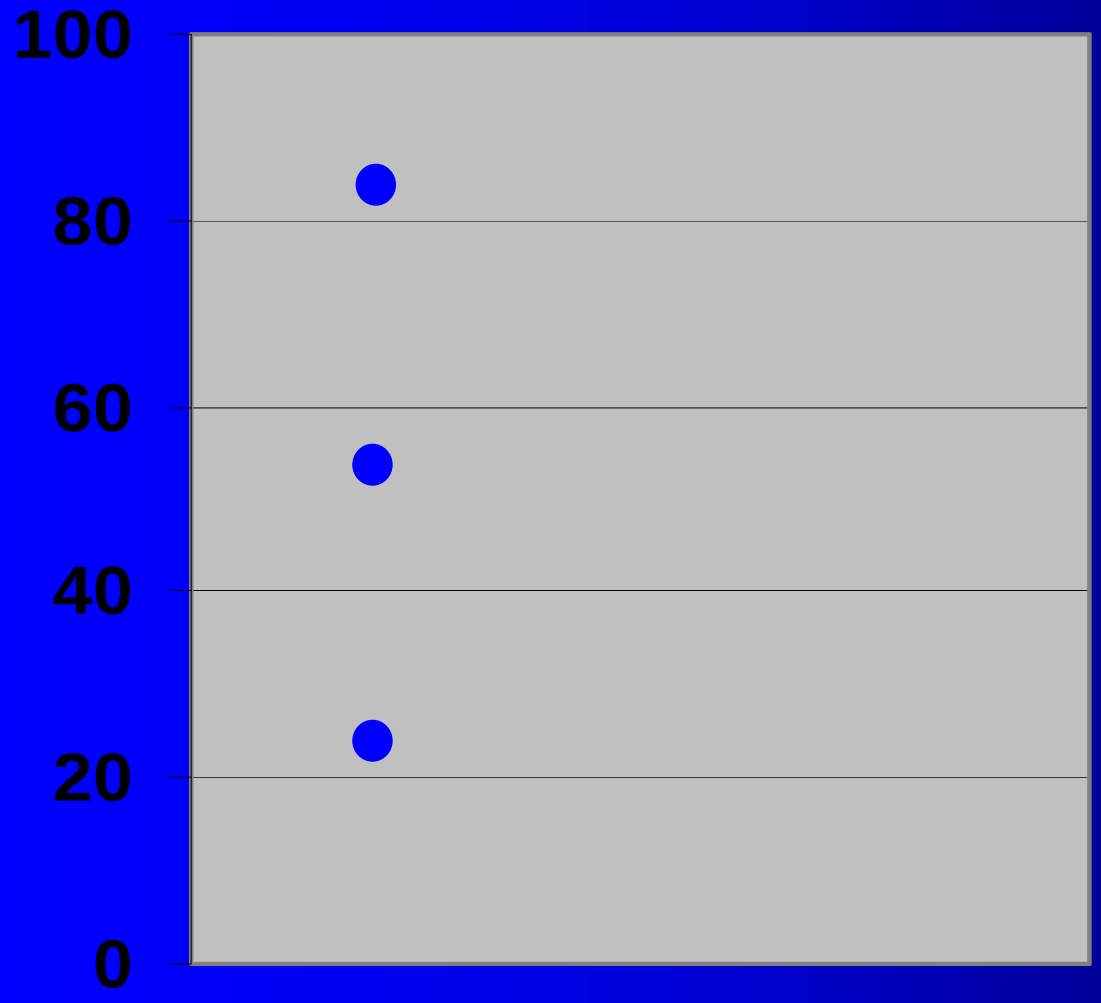
The Breakthrough

Understanding the difference between

a*chievement* and *growth*

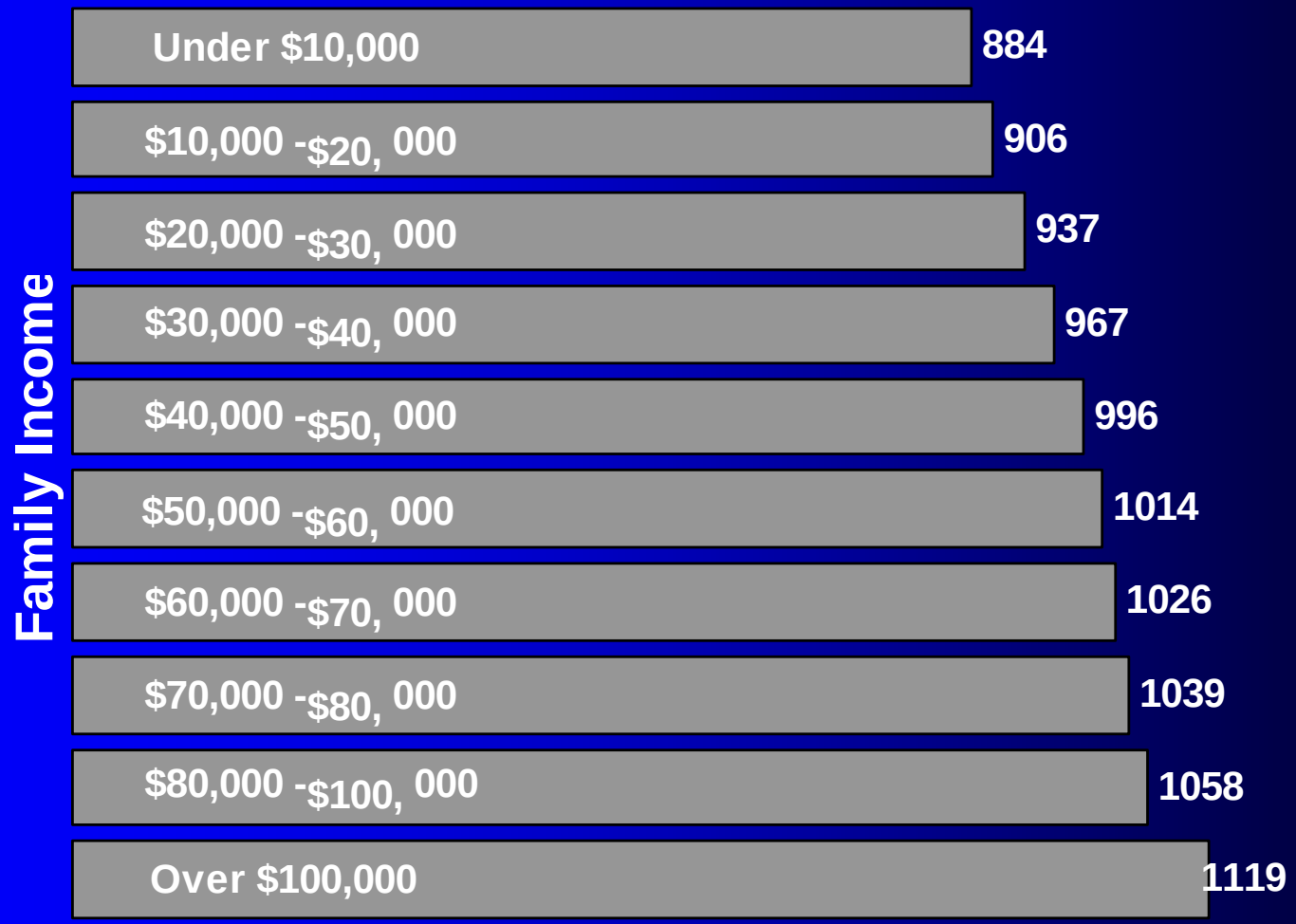
as measures of student learning

Achievement



Achievement -- a score on a vertical scale at a single moment in time (absolute or raw score, status, proficiency) -- is best predicted by family income.

Family Income and SAT Scores

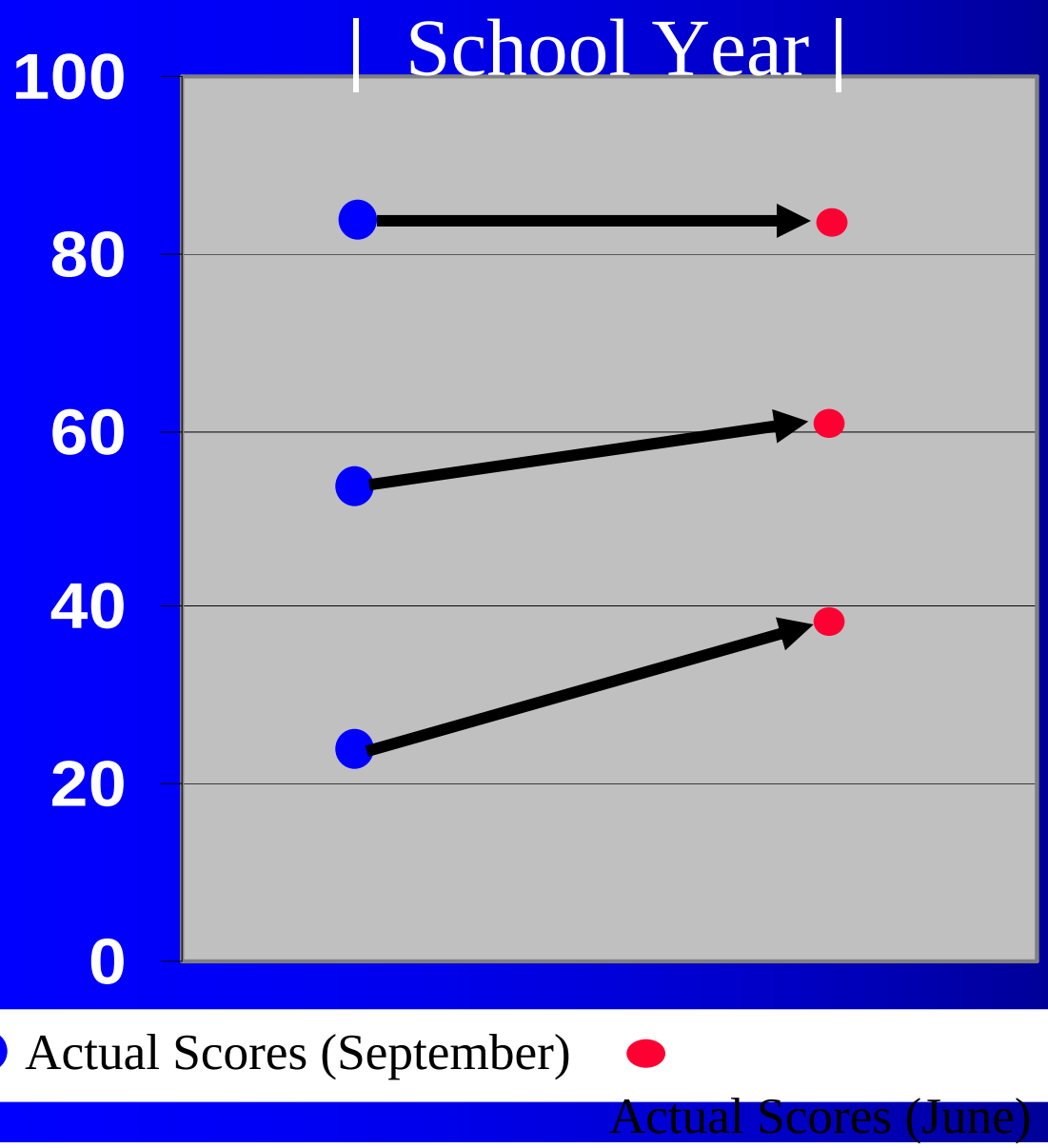


*"2005 College-Bound Seniors: Total Group Profile Report" published by CollegeBoard SAT

New technologies and data sets make new research possible

- James Coleman (1966) and Christopher Jencks (1972) concluded that family background was more important than schooling in explaining achievement
- They did not have the technology to trace individual students over time (not cohorts)
- Nor did they have data sets that link the teacher for every subject and grade to an individual student's record

Growth



Growth (the progress students make over the course of the school year) is best predicted by the quality of instruction.

No Child Left Behind

- A powerful catalyst for change
- Admirable goal, but with serious design flaws
- Growth models can improve AYP, strengthen instruction and increase student achievement
- Federal DOE has approved growth models in 10 states including Florida
- NCLB will be re-authorized
- Standards and accountability are not “fads,” and they are not “going away”

Identifying AYP's shortcomings

Predicting Student Learning Results

Achievement	Growth
Best predicted by family income	Best predicted by the quality of instruction

Teacher effectiveness is the single most powerful predictor of student progress – many times stronger than income, class size, race or family educational background.

Growth provides the basis for a new system of evaluation, compensation, remediation, and professional development.

Philosophy Behind Growth

- Focus is on **all** students, not primarily on "bubble" students
- All students should have at least one year's growth in a year
- This is true whether the student comes in above grade, at grade or below grade

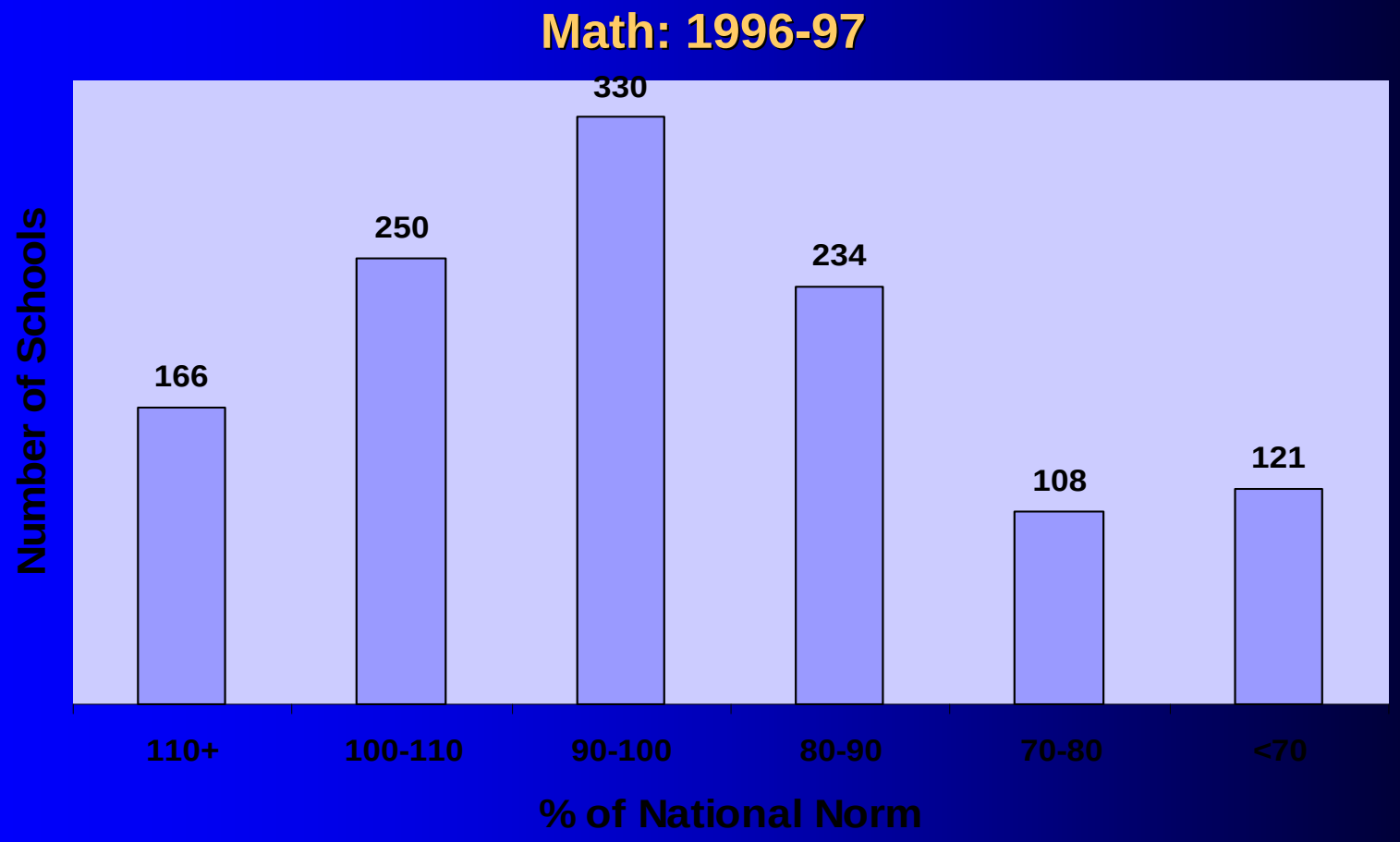
Patterns from the Data

Value-Added Assessment

- First developed for Tennessee by William Sanders
- Since 1992, tracks each of the state's 885,000 students
- Many millions of records, grades 2-12, with test scores in every subject, every grade, every teacher
- Largest data base ever assembled
- Mandatory in Pennsylvania and Ohio as well as in over 300 districts and consortia across the U.S

Tennessee Schools and their Value-Added Scores

It is **impossible** to determine where a school falls just by knowing its location or the make-up of its student body

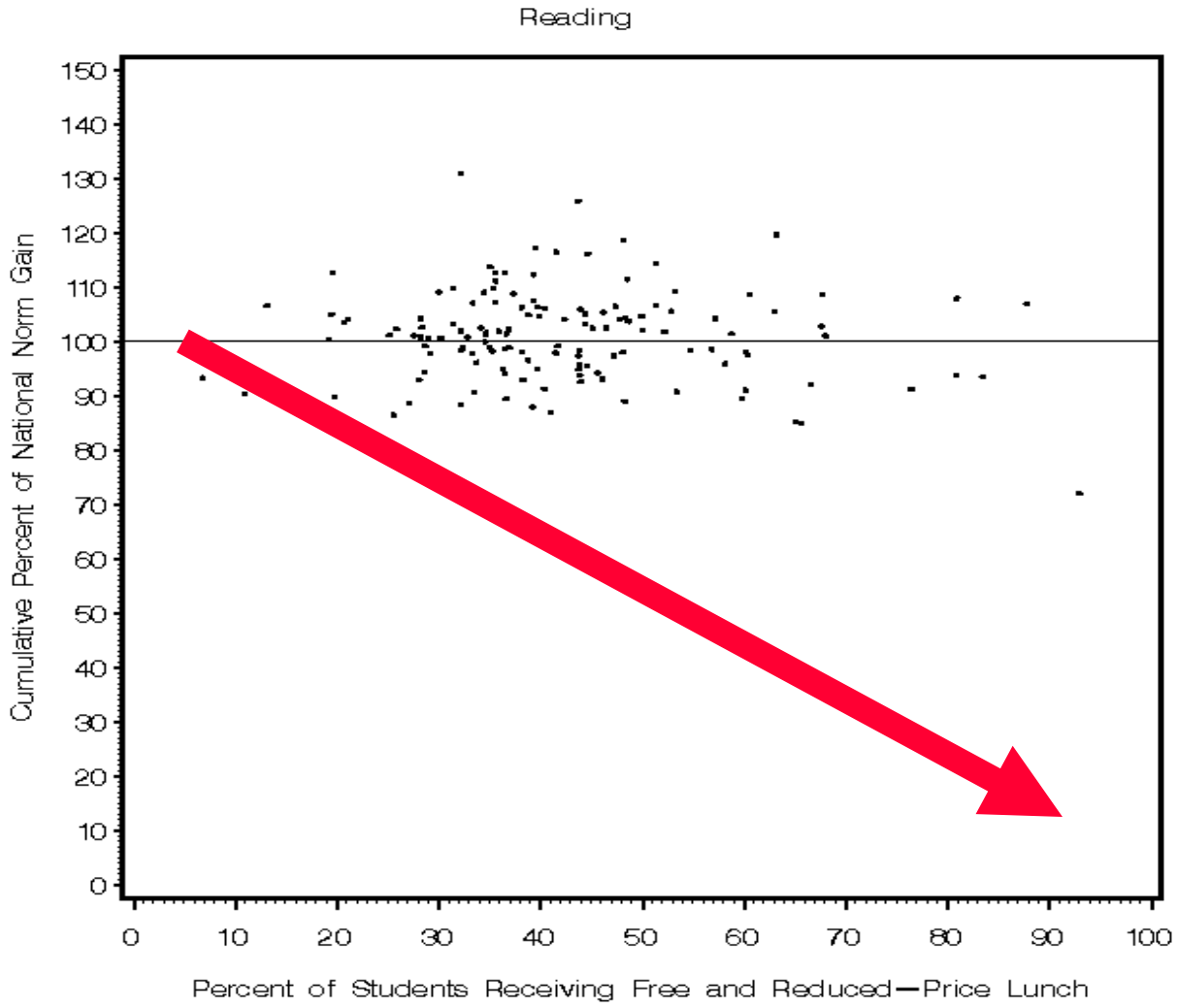


100 (on the horizontal axis) means a year's worth of growth in a year.

Income has no effect on value-added

- Each dot represents one school
- 100 (on the vertical axis) means a years' worth of growth in a year

Cumulative Gain of a Large East Coast County's Schools Compared with the Percentage of Students Receiving Free and Reduced-Priced Lunches



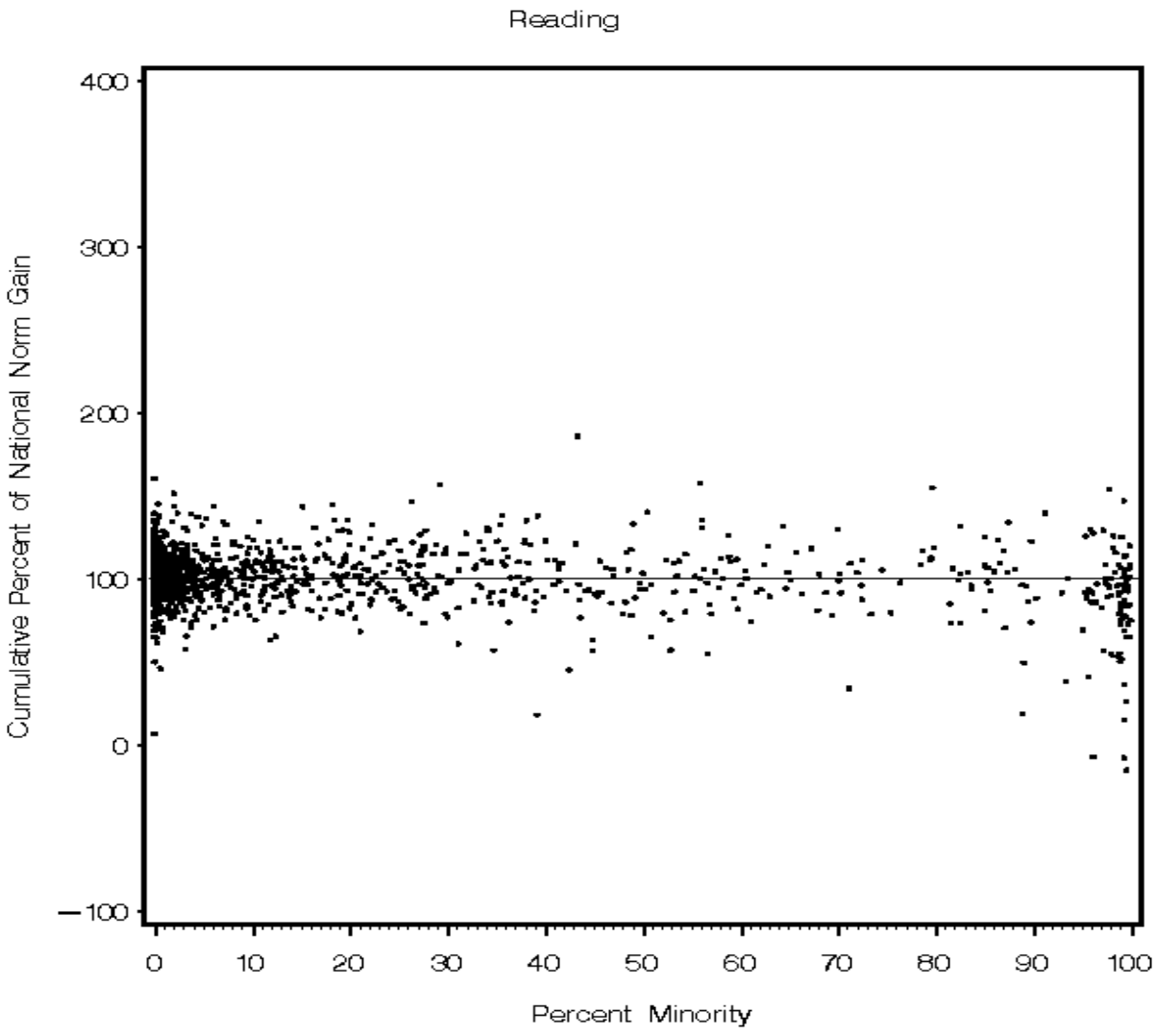
Each dot represents 1 school system
Horizontal line at 100% represents gain equal to national norm gain

3 Year Average Gain
July, 1997

Minority status has no effect on value-added

- Each dot represents one school
- 100 (on the vertical axis) means a years' worth of growth in a year

Cumulative Gain of Tennessee Schools Compared with the Percent of Minority Students in the School



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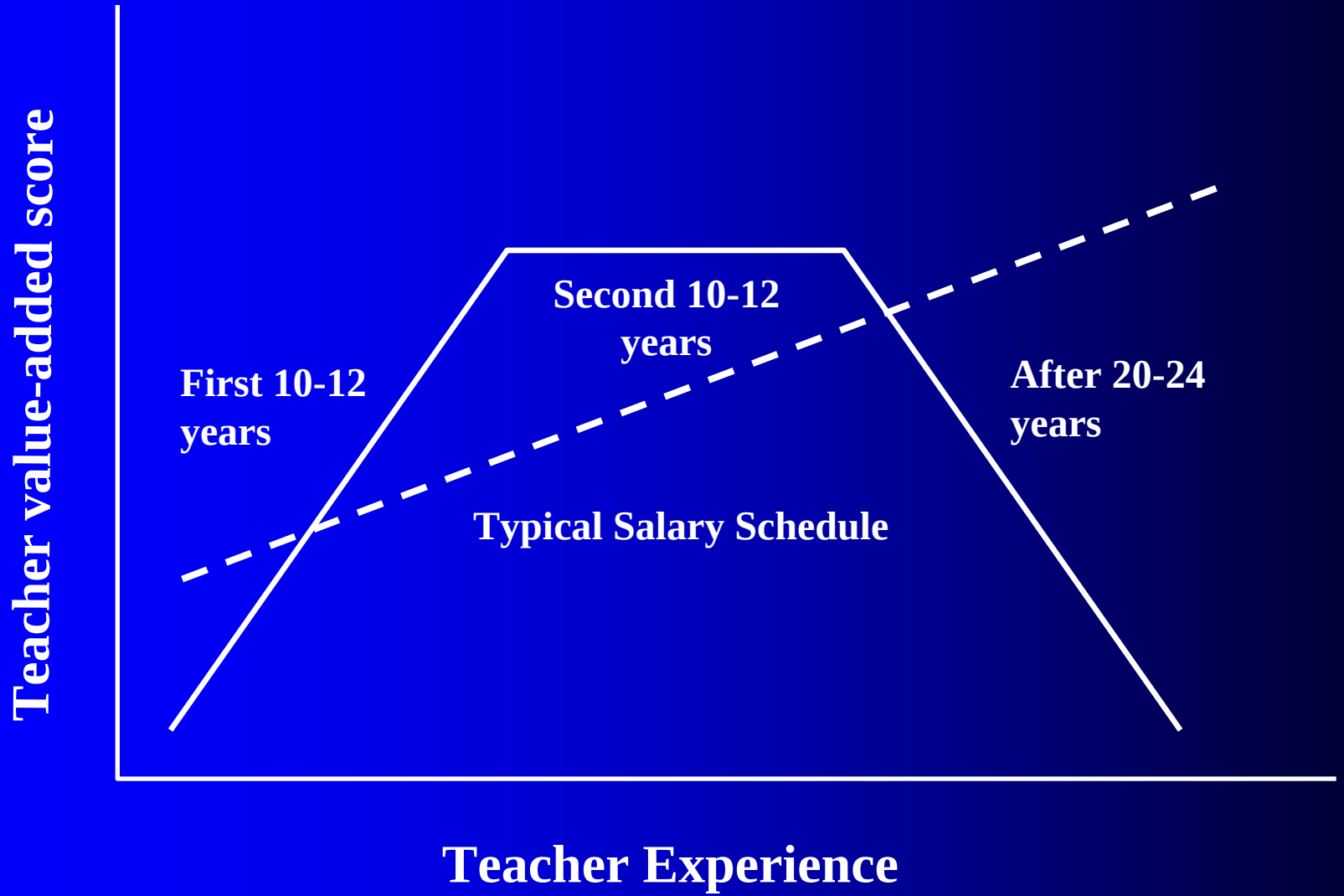
3 Year Average Gain
July 1997

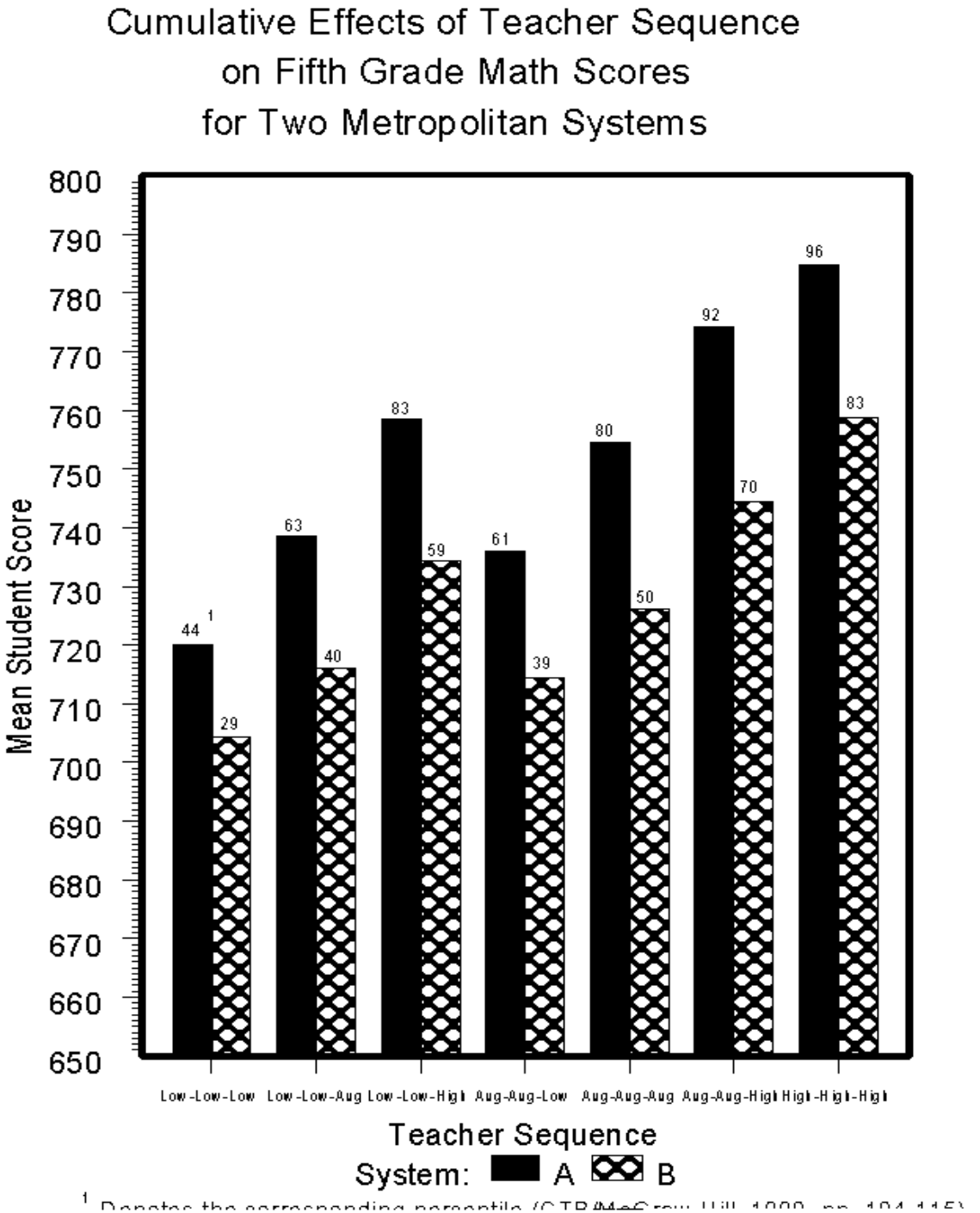
Teacher Effectiveness



Value-Added Findings From Tennessee

The Teacher Effect

Importance of Teacher Sequence



[1] Denotes the corresponding percentile (CTB/McGraw-Hill, 1990, pp. 104-115)

Probability that a bottom-quartile 4th grade student will pass the high-stakes graduation exam in 9th grade

Poor teacher sequence: <15%

Average teacher sequence: 38%

Good teacher sequence: 60%

Top quarter v. bottom quarter value-added teachers in NYC

The advantage for a student with a top quarter teacher is:

- Three times that of having an experienced rather than a novice teacher, and
- Ten times that of having a certified teacher

T. Kane, J. Rockoff, D. Staiger, "Photo Finish: Teacher Certification Doesn't Guarantee a Winner," *Education Next* (2007, No. 1)

Cumulative Effects of Value-Added

TVAAS Scores	75%	100%	140%
Grade			
2	2	2	2
3	2.75	3	3.4
4	3.5	4	4.8
5	4.25	5	6.2
6	5	6	7.6
7	5.75	7	9
8	6.5	8	10.4
GRADE LEVEL IMPACT	-1.5	0	

+2.4

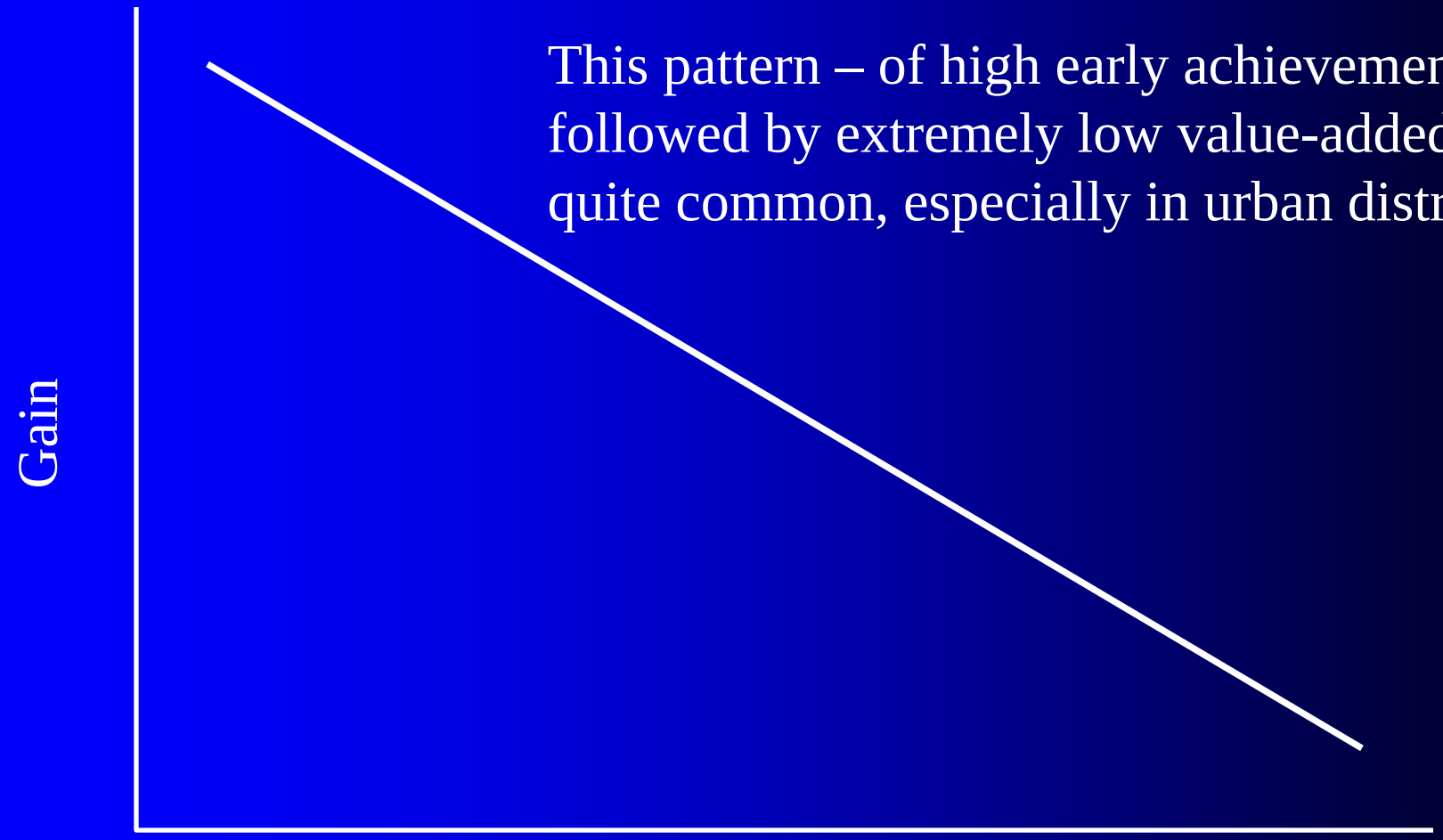
This means a difference of almost 4 grade levels by the end of middle school.

Using Value-Added to Inform Instruction

Diagnostics 1

The Focus of Instruction

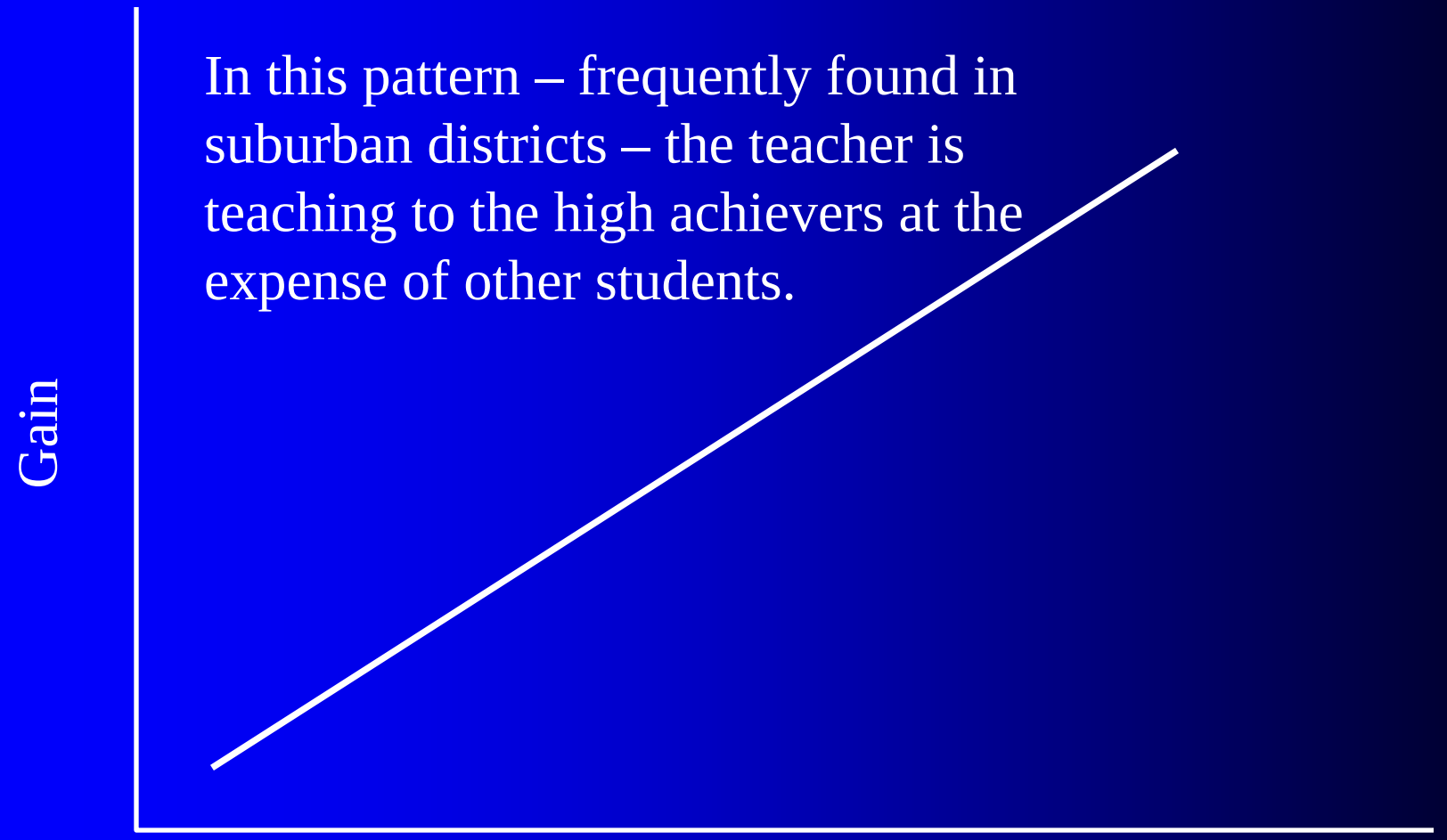
Shed Pattern



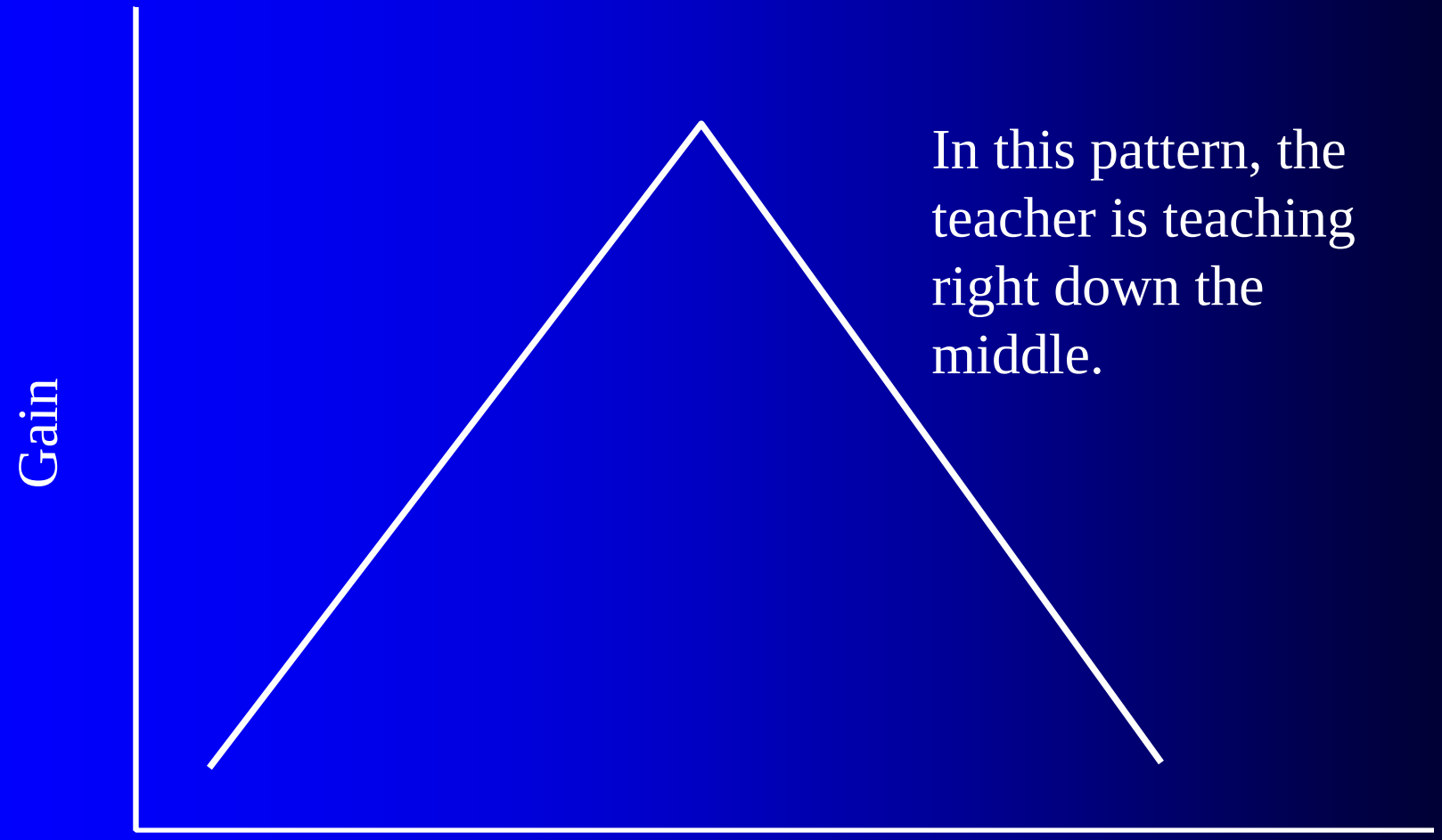
This pattern – of high early achievement followed by extremely low value-added – is quite common, especially in urban districts.

Reverse Shed

In this pattern – frequently found in suburban districts – the teacher is teaching to the high achievers at the expense of other students.



Tepee

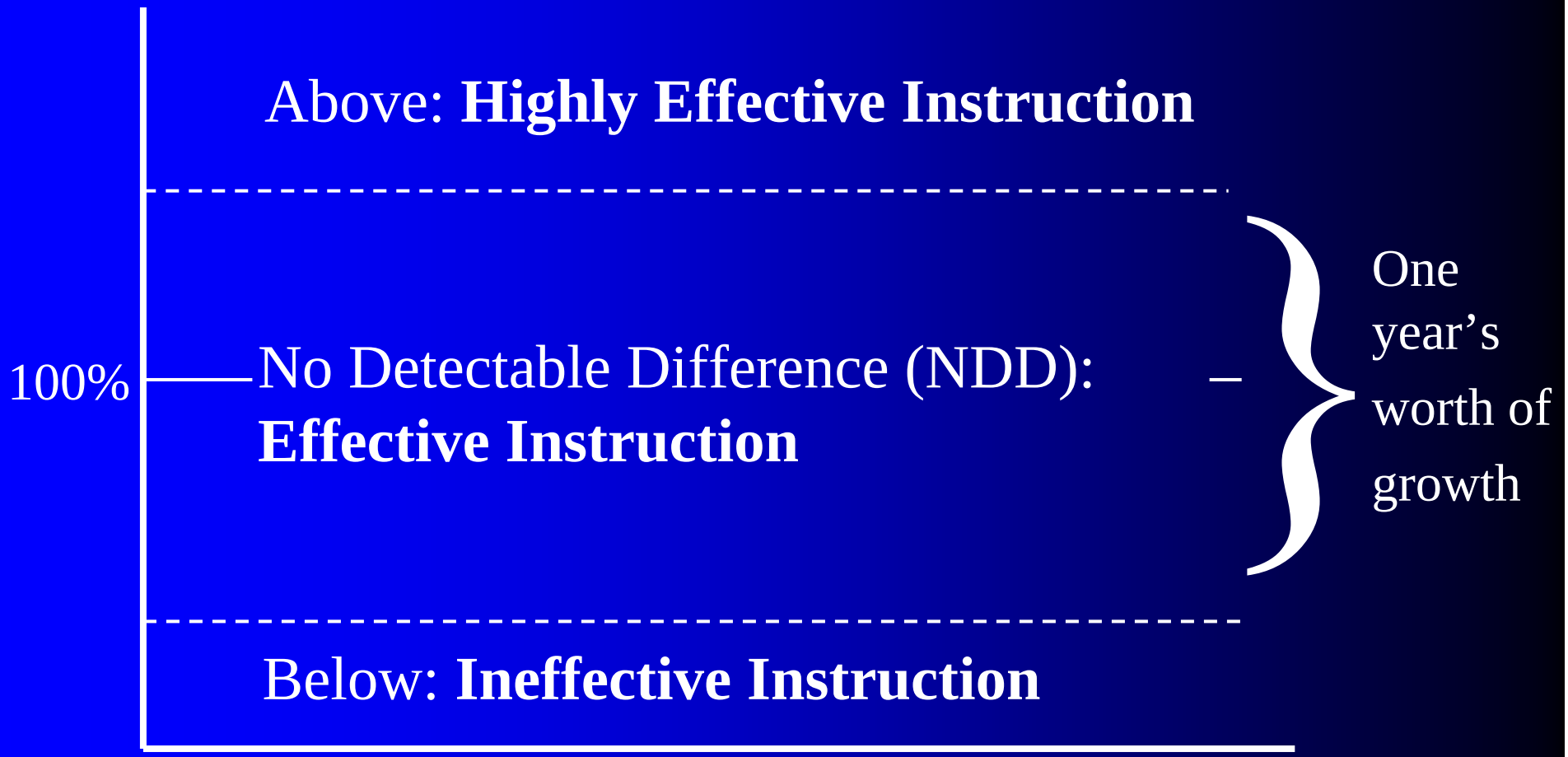


In this pattern, the teacher is teaching right down the middle.

Diagnostics 2

The Impact of Instruction

Value-Added: Three Results



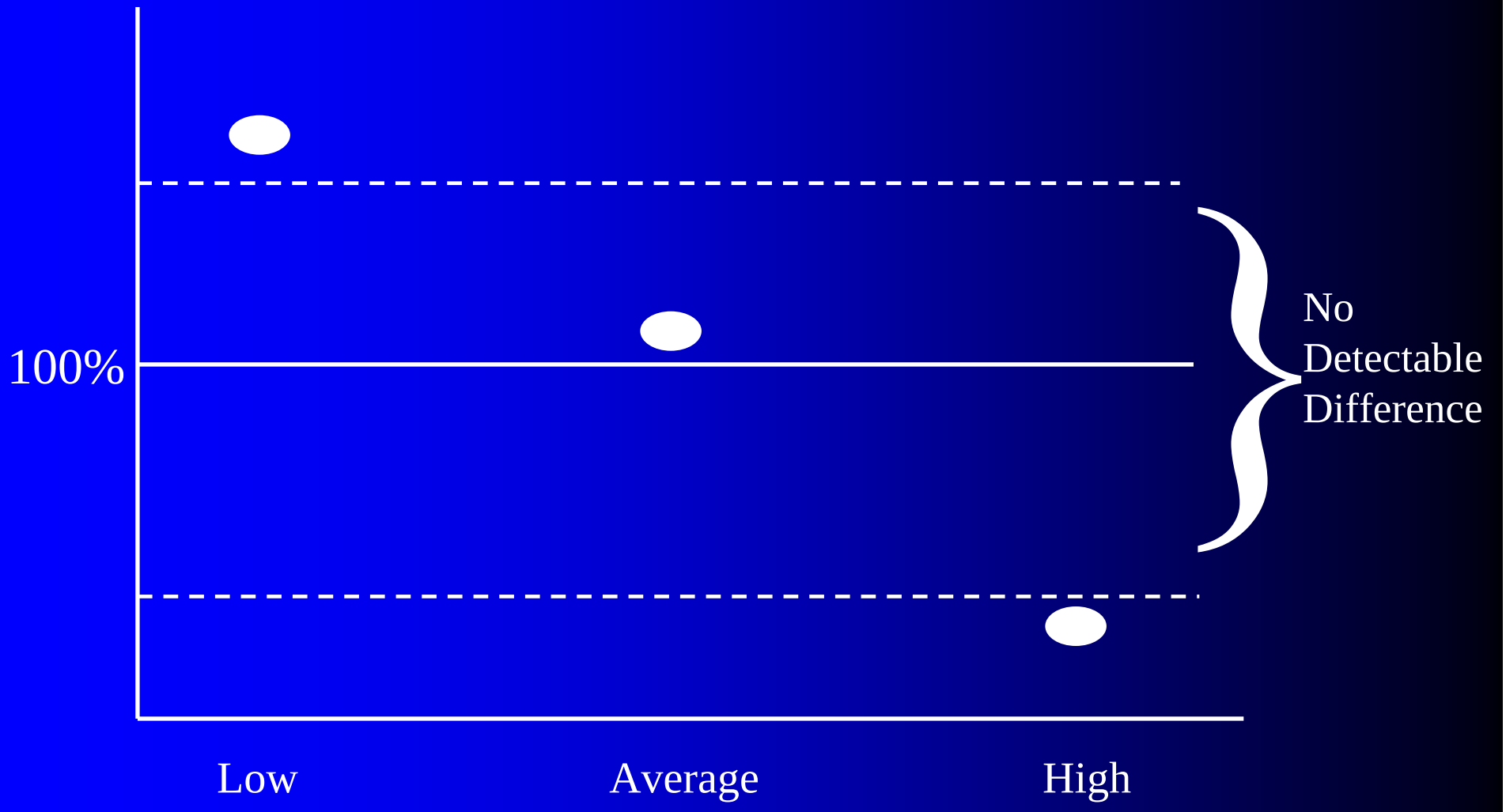
(using 3-year running averages)

Diagnostics 3

Combining the Focus and Impact of Instruction

Shed Pattern

Using Previous Academic Achievement Levels
Example



Value-added provides powerful diagnostic data

- Identify and improve the *focus* and *impact* of instruction
- End the isolation of teachers
- Build learning communities
- Improve data-driven decision making
- Differentiate instruction
- Create student growth trajectories to targets and develop intervention strategies
- Measure the success of schools through growth, not simply achievement

How value-added is used in Tennessee's most successful school

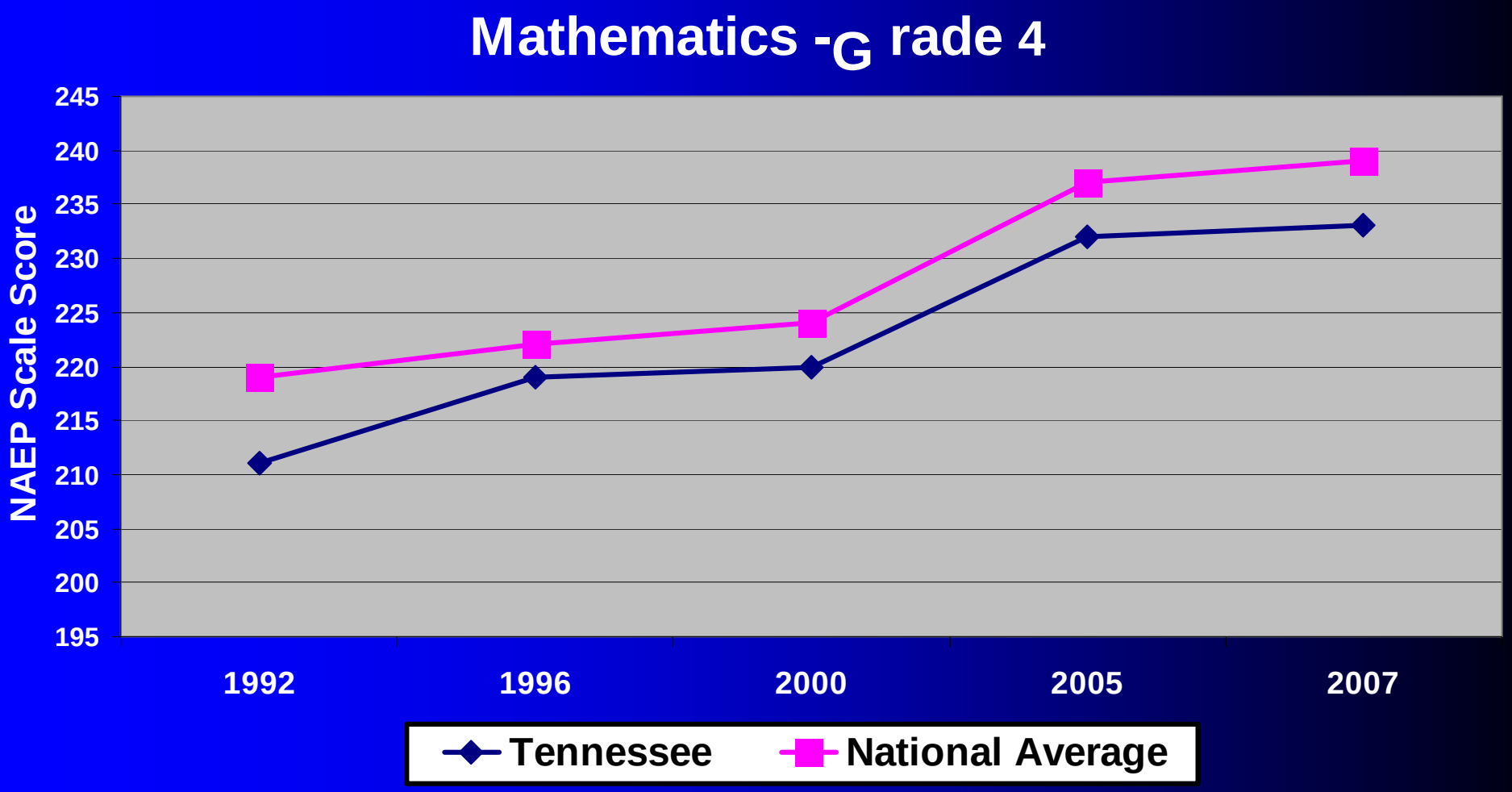
- Students are grouped homogeneously – but the groupings are fluid – and students can be moved up or down at any time in the year
- Teachers are matched with the student grouping – previous high, average or low achievers – with whom they are most successful

Maryville Middle School's (MMS) TVAAS Test Scores

Subject (Grades 6,7,8)	**National** (Benchmark) Norm	**MMS Scores** 3 yr. Average 1997-99	**MMS Scores** 10 yr. Average 1993-2002
Math	100%	143.2%	156.0%
Reading	100%	154.7%	135.6%
Language Arts	100%	230.0%	183.6%
Social Studies	100%	108.3%	107.5%
Science	100%	143.4%	137.0%
School Average	**100%**	**155.9%**	**143.9%**

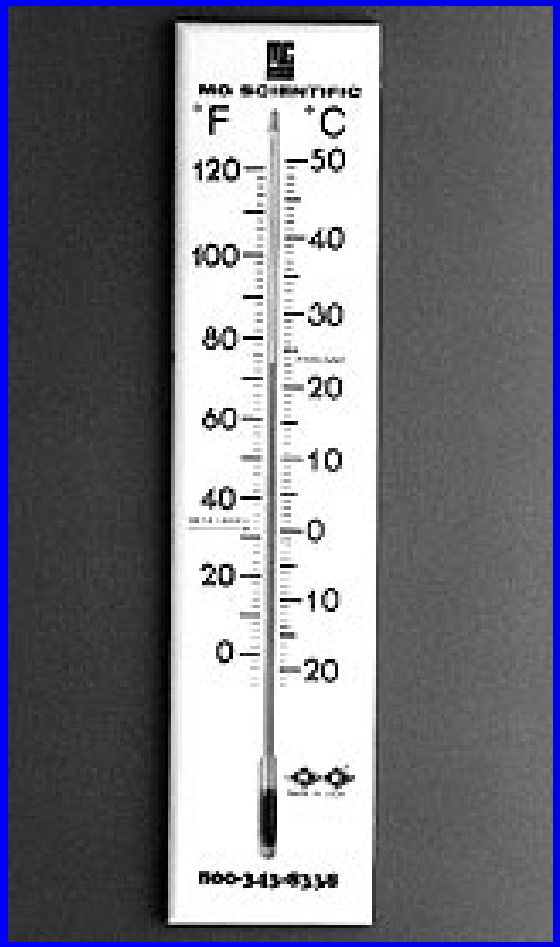
Lessons from Tennessee

Tennessee NAEP Scores



The limits of value-added in Tennessee

- May be used in individual teacher evaluations, but may not exceed 8%
- Lack of professional development to accompany statewide rollout



Value-added assessment is only a thermometer; if we don't analyze the information and use it, **nothing happens**.

Why collect classroom level data?

- The variation in the quality of instruction is much greater within schools than between schools
- Struggling students are not randomly distributed in classrooms – they are found disproportionately in classrooms where they receive poor instruction
- It allows you to deal with underlying causes not symptoms

Operation Public Education's

Comprehensive School Reform Model

Guiding Principle

“Always do what’s best for children as long as it’s fair for educators.”

Units of Accountability

- *No Child Left Behind*: A K-12 Watershed
  - Holds schools accountable for student performance
- *Operation Public Education* complements NCLB by helping schools reach AYP
  - Holds individual students accountable
  - Holds individual teachers and administrators accountable

Student Accountability

- Gateway Standards
  - Lower to Middle School
  - Middle to High School
  - Graduation
- To avoid "gaming the system"
  - "Importing" principal makes the decision on the quality of alternate assessments

Areas of Focus

- Assessment
- Evaluation
- Compensation
- Professional Development

An Integrated Assessment Regime

- **Summative** exams: higher-order thinking skills through student-constructed responses linked to
- **Formative** exams throughout the school year
  - "Benchmark" exams that monitor progress to summative exams
  - "Feedback" exams that provide richer and broader detail

This new system will provide teachers with rich diagnostic data and suggested pedagogical interventions to improve instruction

Evaluation

A system that considers student learning results – *outputs* – along with multiple *input* measures through an improved observation process

- *50% empirical*: using value-added data
- *50% observation*: using Charlotte Danielson's "Framework for Teaching"

Danielson's Framework for Teaching
(published in 1996 by Association for Supervision & Curriculum Development)

Observation protocols in four domains:

- Planning and preparation
- Classroom environment
- Instruction
- Professional responsibilities

Peer Review

All observations in these domains are conducted by expert peers

A Growth Model Should Identify Three Categories of Instruction

- Highly effective
- Effective
- Ineffective

Districts must choose

- Which growth or value-added model to isolate the impact of instruction on student learning
- There are trade-offs between “simple and transparent” approaches and more complex ones
- The more complex the model, the greater the need for trust among teachers
- In the OPE model, the role of teachers is significantly expanded to ensure their trust

How to use value-added for the empirical component in evaluation and compensation

- Never use it as the sole or principal component
- Part of a balanced system: inputs and outputs
- One among multiple measures
- With appropriate safeguards

"One can envision VAM results serving as a component of a multidimensional system of evaluation; however, this possibility would have to be evaluated in light of the specifics of such a system and the context of use."

Henry Braun and Howard Wainer, "Value-Added Modeling," *Handbook of Statistics*, Vol. 26, 2007.

District employees for which value-added can be used as one of the measures in evaluation

District Employees	VA scores available	
	Yes	No
Administrators	x	
Teachers		
3 through 8 (in tested subjects)	x	
Grades 9 through 12 (with end-of-course exams)	x	
Grades K-2		x
Grades K-8 – core academic		
Art		x
Foreign Languages		x
Music		x
Physical Education		x
Vocational Education		x
Specialists – Guidance Counselors		x
Librarians		x
Nurses		x
Social Workers		x

Developing new evaluation systems for educators and specialists outside tested subjects

- Standards developed by their national associations
- Evaluation procedures already in place in "pioneering" states and/or districts (TN, Denver)
- Empirical measures of a "value-added" nature agreed to by educators and specialists being evaluated: is there something we do that can be measured from September to June?
- Overall growth scores for the students in their school and district

Compensation

Career ladders that allow educators to advance based on their knowledge and skills and on the learning gains of their students

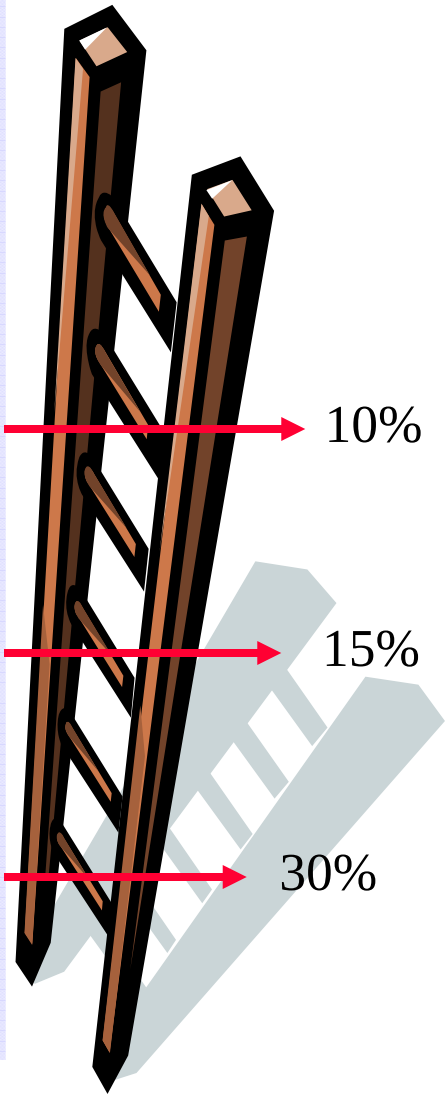
- Stages for apprentice, career, advanced and distinguished teachers
- Not merit pay

Teacher Career Ladder

Observations

Student Outcomes

ACSD Framework for Teaching *		Value-Added		Career Ladder Rung
Distinguished & NBPTS	+	Highly Effective	→	Distinguished
Distinguished	+	Highly Effective	→	Advanced
Proficient	+	Effective	→	Career
				Apprentice



Teachers start here →

* Developed by Charlotte Danielson

Two Compensation Scenarios

No new funds required

- Grandfather option for current teachers
- All new teachers on ladder
- Cap salaries of career teachers
- Funds freed up for top two rungs of ladder

New funds required

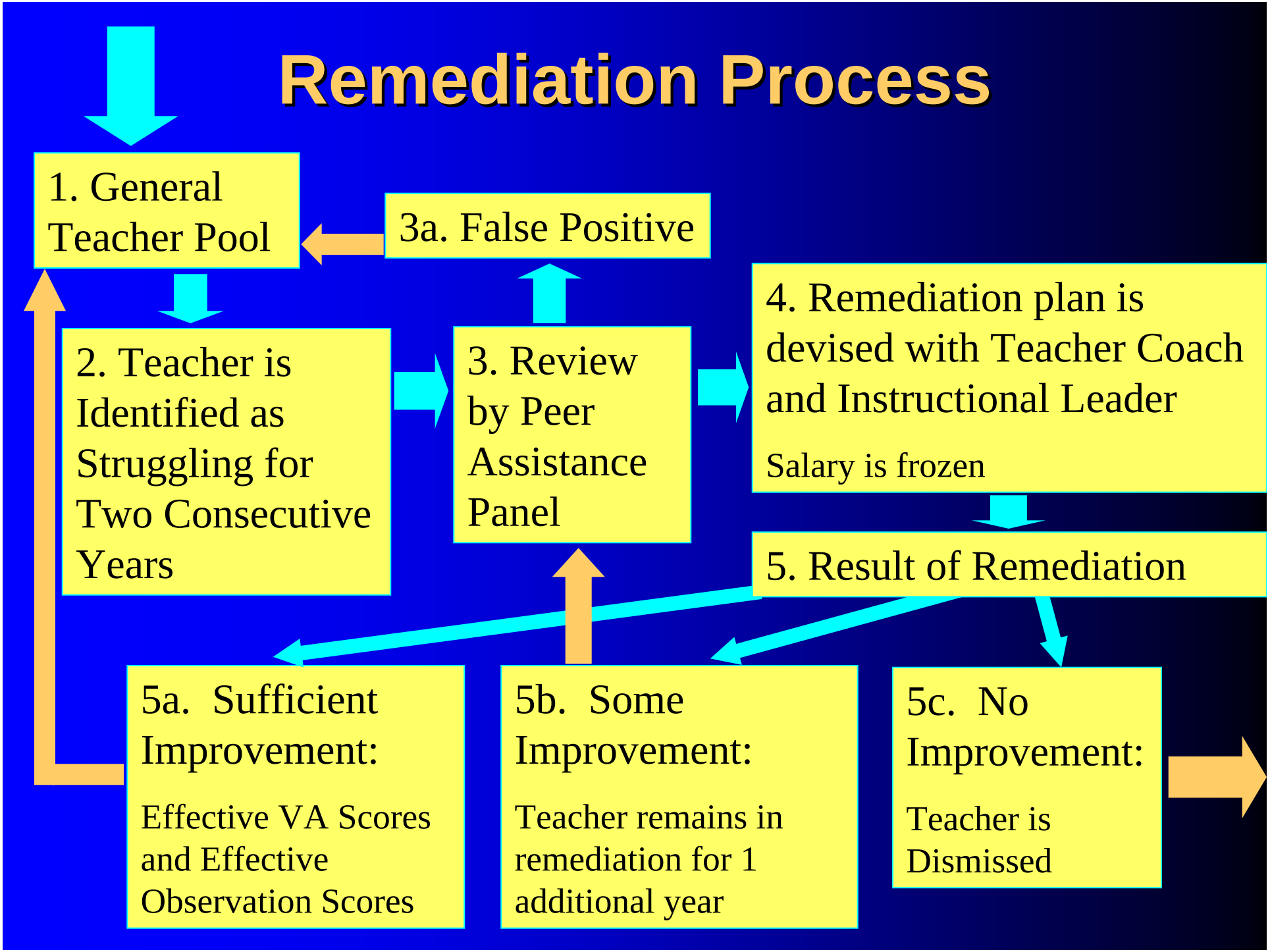
- 17% increase for higher salaries of Advanced and Distinguished teachers
- Local taxpayers (as in Denver) support increases
- State legislature provides additional funds as incentive for individual-level accountability

Additional Incentives

- Districts may differentiate compensation and/or offer bonuses for hard-to-staff positions such as math and science or for work in hard-to-serve schools
- Additional compensation must be significant
- Amounts are negotiated through collective bargaining

Mandatory Remediation

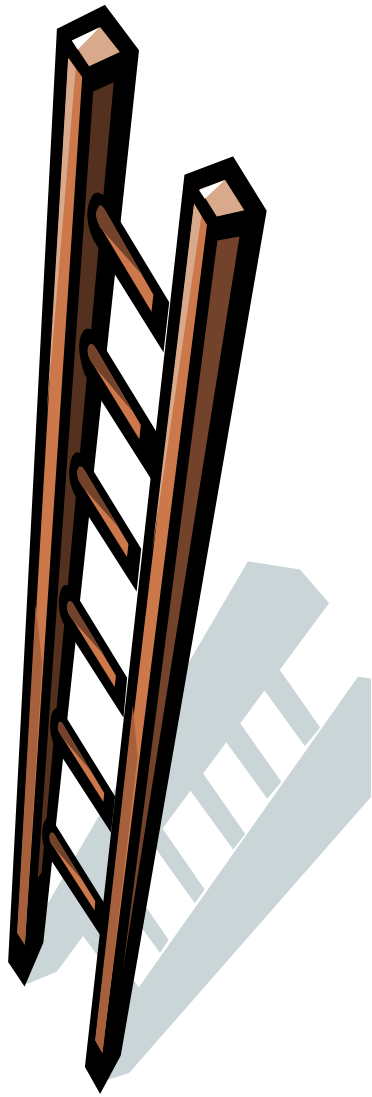
- Mandatory remediation for struggling teachers
- Peer Assistance and Review (PAR) panel consisting of teachers and administrators design interventions
- Teachers have simple majority on the PAR panel, with a 2/3's vote required for decisions
- Unions relinquish their right to challenge results in a due process hearing in return for their key role in the PAR panel


Remediation Process
1. General Teacher Pool
2. Teacher is Identified as Struggling for Two Consecutive Years
3. Review by Peer Assistance Panel
3a. False Positive
4. Remediation plan is devised with Teacher Coach and Instructional Leader
Salary is frozen
5. Result of Remediation
5a. Sufficient Improvement:
Effective VA Scores and Effective Observation Scores
5b. Some Improvement:
Teacher remains in remediation for 1 additional year
5c. No Improvement:
Teacher is Dismissed

Administrator Career Ladder

Observations 50%	Student Outcomes 25%	Value-Added 25%	Career Ladder Rung
ACSD APEP *	Value-Added	AYP's	Career Ladder Rung
Distinguished & NBPTS Advanced	Highly Effective	+ Exceeding AYPs	→ Distinguished
Distinguished Proficient	Highly Effective	+ Meeting AYPs	→ Advanced Career
Proficient	Effective		Career Associate
			Apprentice

Administrators start here →



* Administrators Portfolio and Evaluation Process

Professional Development

School-based and focused on increasing student achievement:

- System-wide strategic review to determine quality and focus of current spending
- Multi-year mentoring for new teachers
- Teacher coaches in all schools
- School calendar is changed to permit an increase in collaborative professional development days/hours to support the acquisition of new knowledge and skills

From Industrial to Professional Unionism

- Issues expand from “bread and butter” to helping teachers improve instruction and increase student learning
- Venues expand from the bargaining table or the state legislature to encompass the classroom

The Current System Divides Educators

- Teachers are treated as “labor” and given a say in “bread and butter” issues
- Administrators and school boards are seen as “management” and given complete control over education policy
- Success for students requires all educators working together

Greatly Expanded Role for Teachers
in return for individual-level accountability

- Peer review in evaluations
- Four votes on the seven-member remediation panel
- Equal share of decision-making authority on key issues that affect classrooms

The OPE system transforms the teaching profession

- New compensation system and career ladder will attract and retain more of the “best and brightest”
- New forms of professional development end the isolation of teachers and teaching
- Schools become “learning communities” -- exciting places in which to work
- Teaching becomes more intellectually stimulating through focus on effective classroom instruction

21st Century is the Knowledge Century

- Teachers are the knowledge workers
- Eradicate from our culture: “those who can, do, and those who can’t, teach”
- Transform the profession and become “United Mind Workers”
- Now is the time for union leaders to lead – to move to the vanguard of change
- Shape the future rather than be shaped by it

Breakout Session

Today:

- 2:15-3:15 p.m.
- Caribbean III ballroom

For additional information on our package of reforms, please contact:

cgpinfo@pobox.upenn.edu

or (215) 746-6478

Or see our website at http://operationpubliced.org