



Practical Growth Modeling

Using Student Growth in the Context of WA

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Outcomes

- Understand & Apply
 - Ideas and design considerations for using student growth data to enhance improvement conversations
 - Differentiating the presentation of data for differentiated needs
 - Practical applications— how are districts using this type of data in monitoring their improvement plans
 - Conversation and dialogue

CEE: Supporting Your Work

- Field-based research, service, and tools to support School & District Improvement
- Active engagements with over 850 schools in 200 districts in Western US
- Active research work with AWSP, WSSDA, OSPI, WSU, UW, Boise State U., U of Idaho, and Idaho State U.
 - Serve all schools in Washington's Summit and MERIT improvement initiatives
 - Serve all schools in Idaho's statewide system of support (Idaho Capacity Building Program)



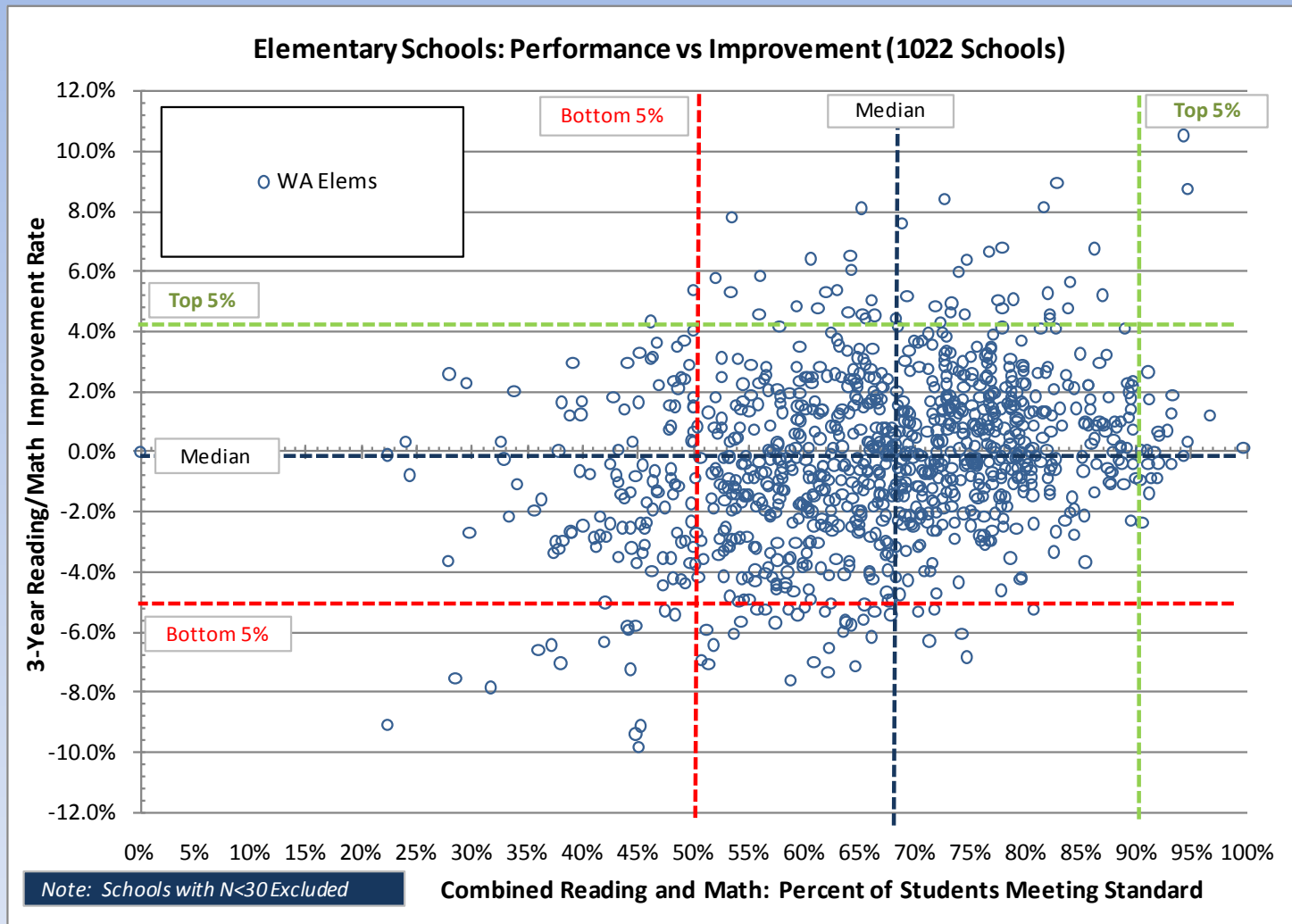
CEE: Using Data to Support Your Work

- The largest “Educational Growth” repository in the state (MSP/HSPE/WASL student-level growth data for over 2.5MM students)
- The largest repository of Educational Effectiveness information in the Western U.S. (over 525,000 stakeholders)
 - 103,200 Staff
 - 284,500 Students (30% from homes where English is not primary language)
 - 138,800 Parents (30% from homes where English is not primary language)

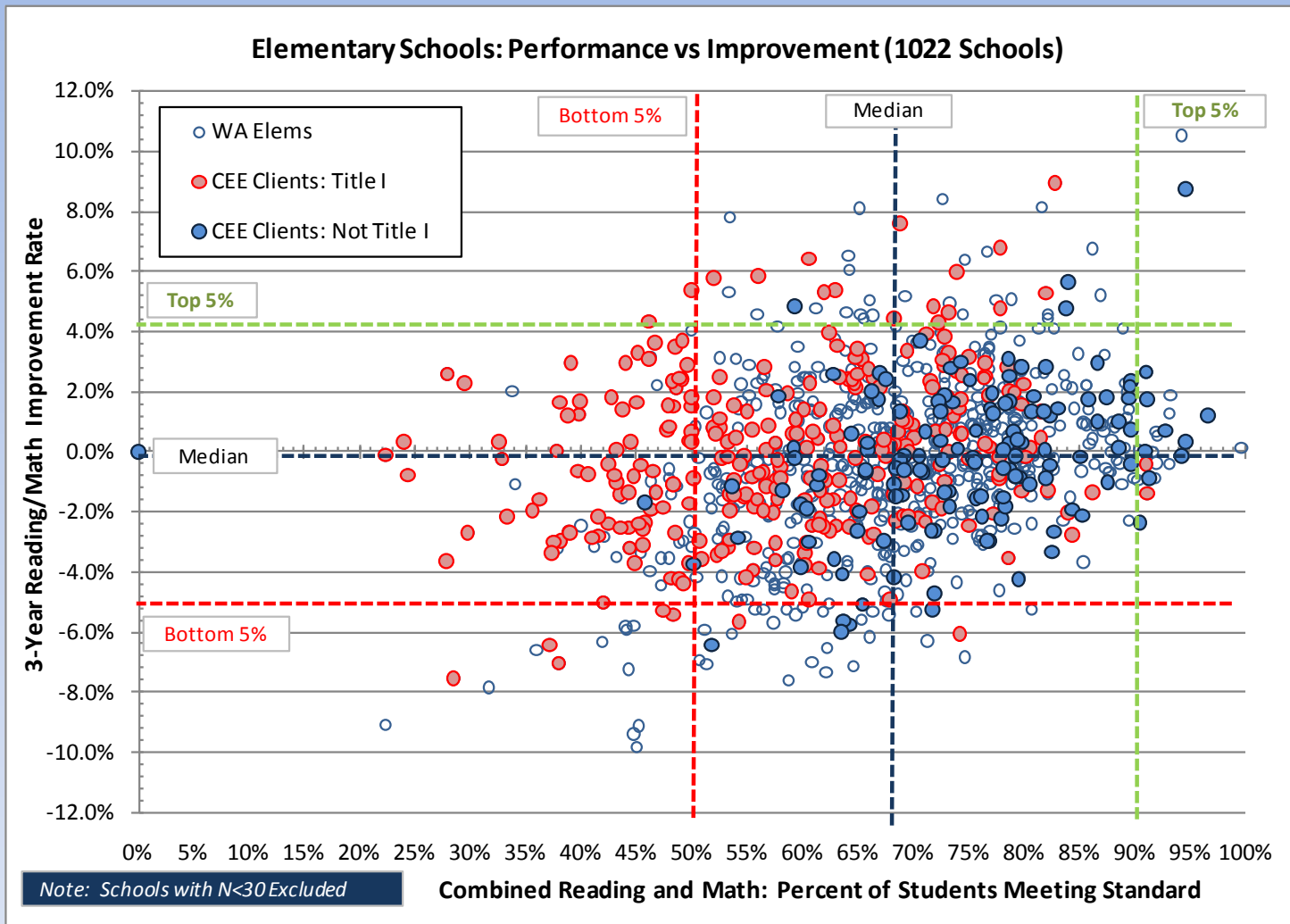
Who Do We Serve in WA?



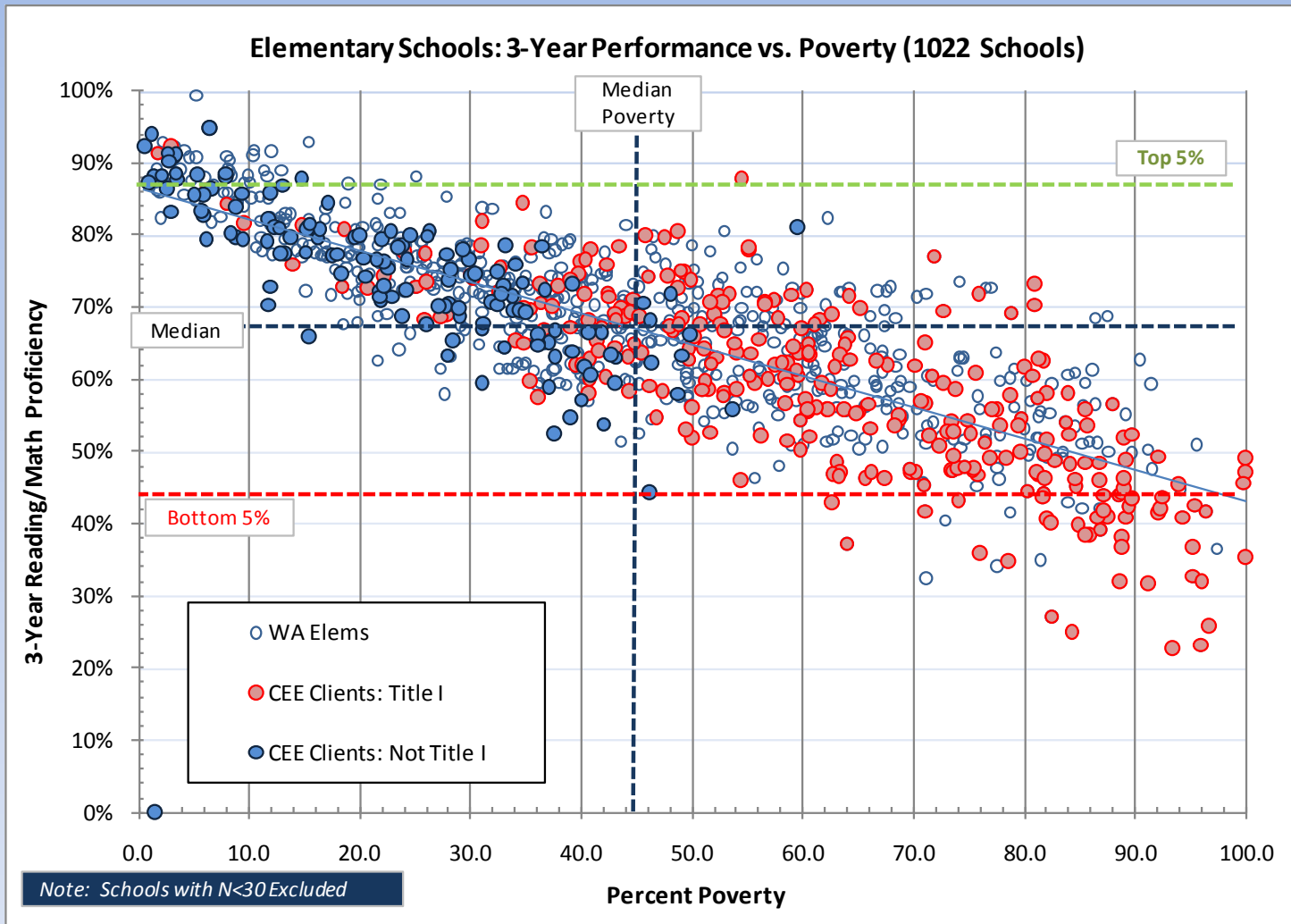
State of WA (Elem View)



CEE's View in WA (N=442)



By Poverty

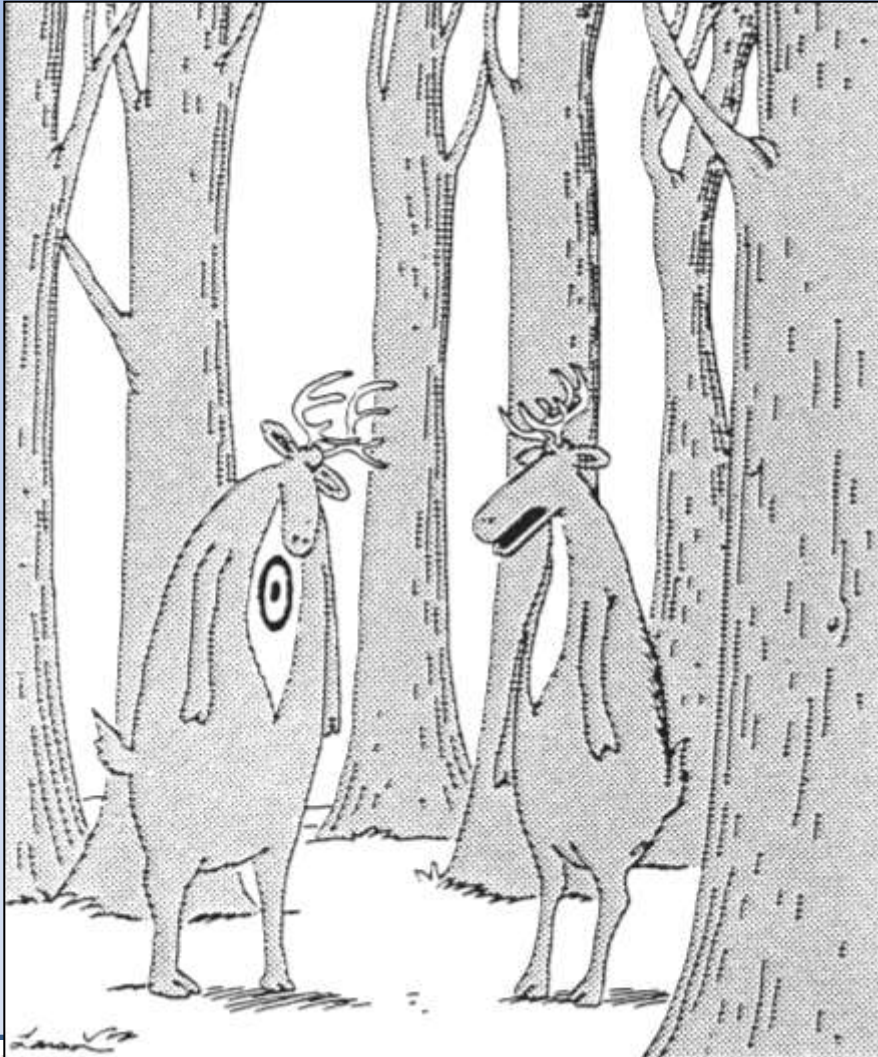


CEE's Role

- Expand and extend capacity of local team
- Add value to local expertise and resources
 - Comparative & statewide data that would be extremely expensive to develop locally
 - Differentiated analysis based on need
 - Third-party data perspective
- Bring promising practices from all our partnerships into the conversations



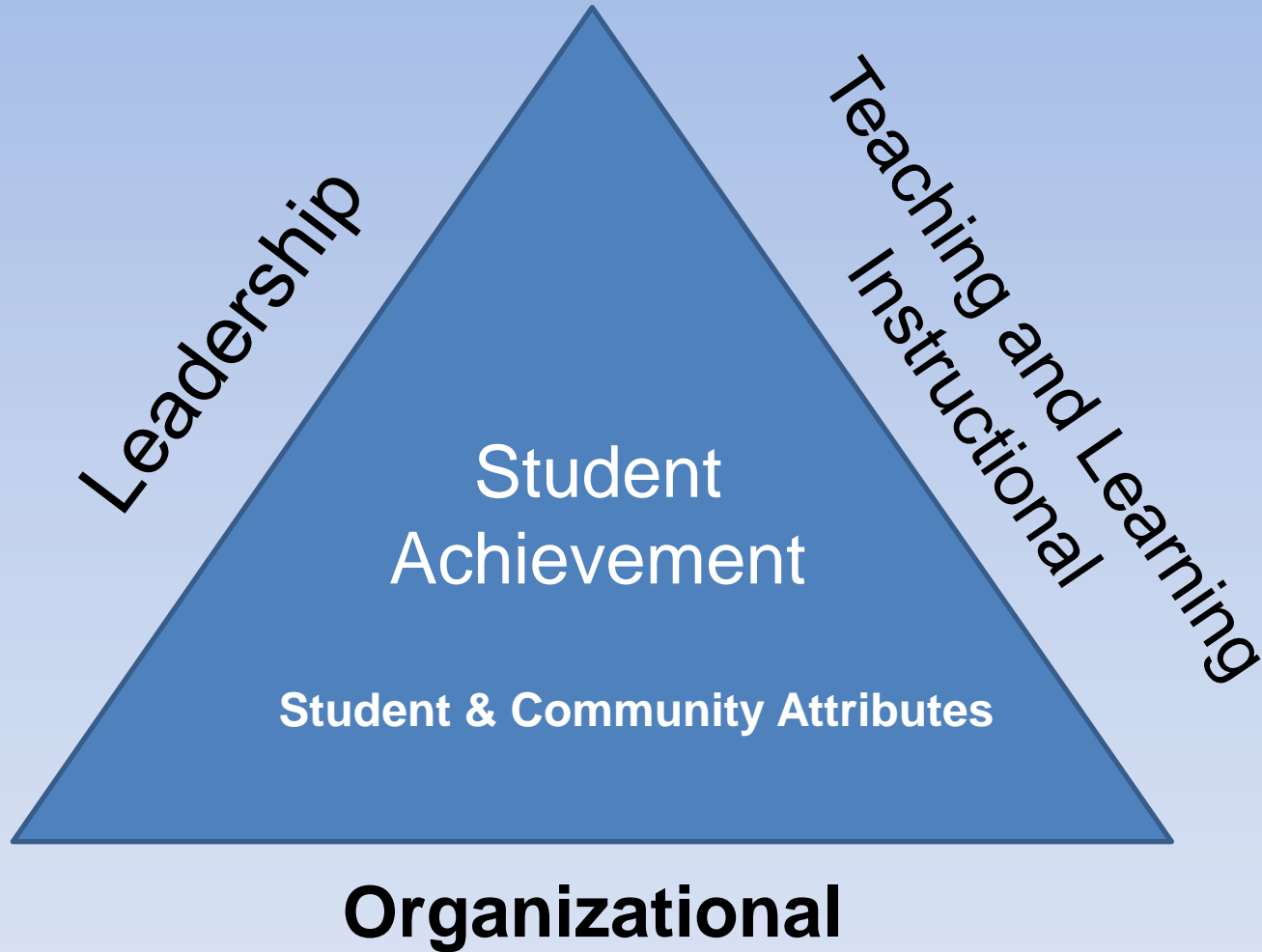
CEE's Focus: Professional Learning Through Formative Use of Data...



“Bummer
of a
birthmark”

Using data to change
what happens in the
classroom- For Each
Student

Systems Perspective



Approach: Multiple Measures

- Best practice encourages the use of multiple measures for systems data acquisition:
 - Multiple measures of the same construct
 - Multiple constructs
- Educational significance
 - Conclusive Validity: Are the conclusions (and actions initiated) valid given the data?

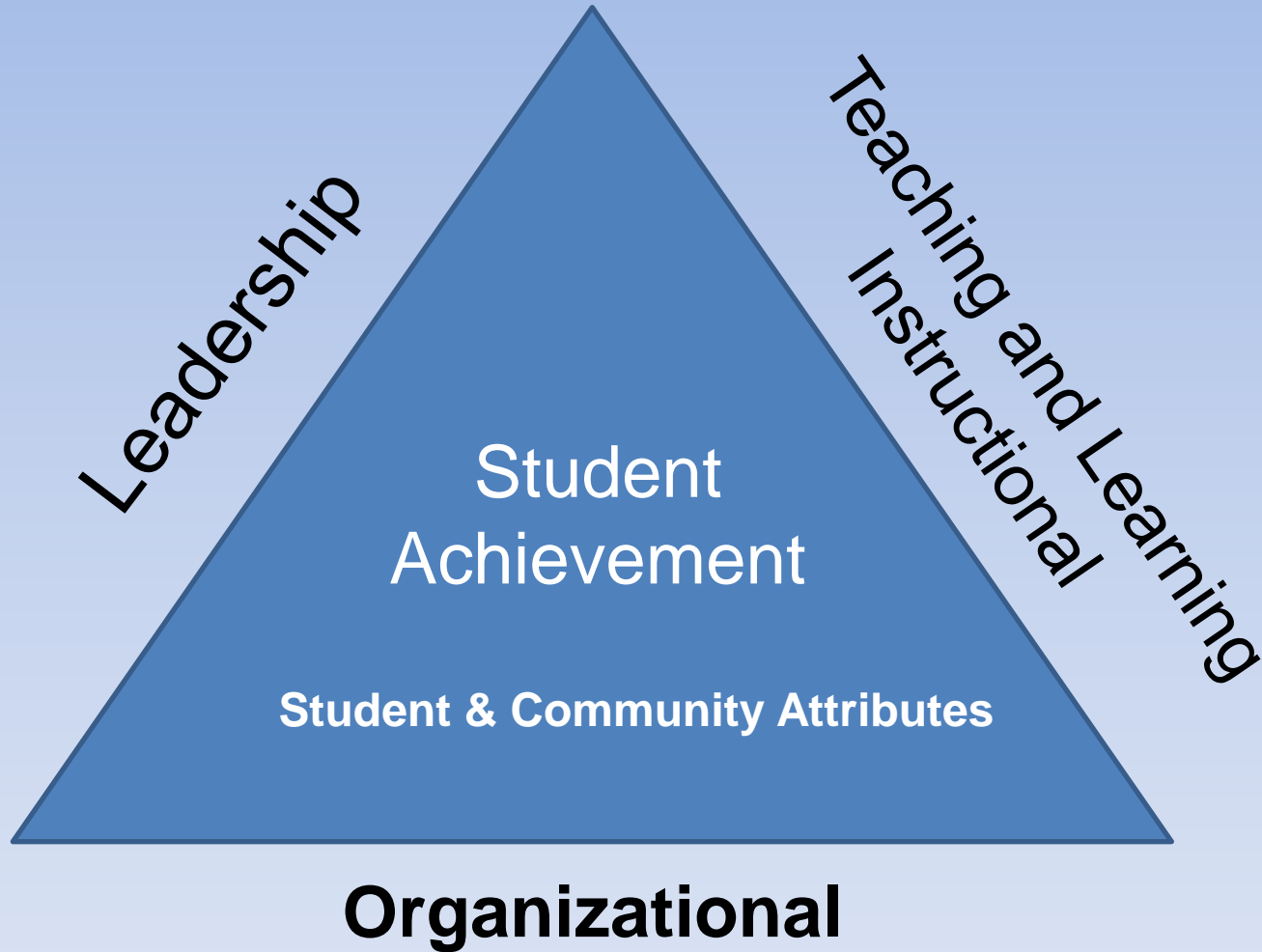
The Three Critical Questions

- Where are we?
 - Comparison points provide context
- Where do we want to be?
 - The movement (improvement) from Good to Great
- Are we “improving” and “growing”? Are we on a path to get where we want to be?

*Multiple ways to “measure” are Critical
Build Common Language, Consistent Practice*



Systems Perspective



Data Analysis Prompts

(Building Common Language, Consistent Practice)

- Strengths / Challenges
- Summarizing Trends in the data
- Triangulation
- Identify the area of need
- Instructional Core:
 - Curriculum & Pacing Guide
 - Instructional Practices
 - Assessment
- Plan for Improvement
- Change In Practice
 - Improvement Strategies (Steps)
 - Implementation (Evidence of change in practice)
 - Evaluation (Evidence of impact)



3 Dimensions of Data Analysis

- Status
- Improvement
- Growth



Status

- Where are we?
 - Typically viewed relative to a target or desired state
 - Does not require historical data
 - Can be viewed system wide or with any unit of analysis – down to student-by-student

Improvement (Change)

- Are we getting better?
- Requires historical data
 - Common tools (tests, surveys, etc)
- Requires Wellpinit to define “Better”

Growth

- Most often applied to student achievement when viewing student-by-student achievement

Growth Models

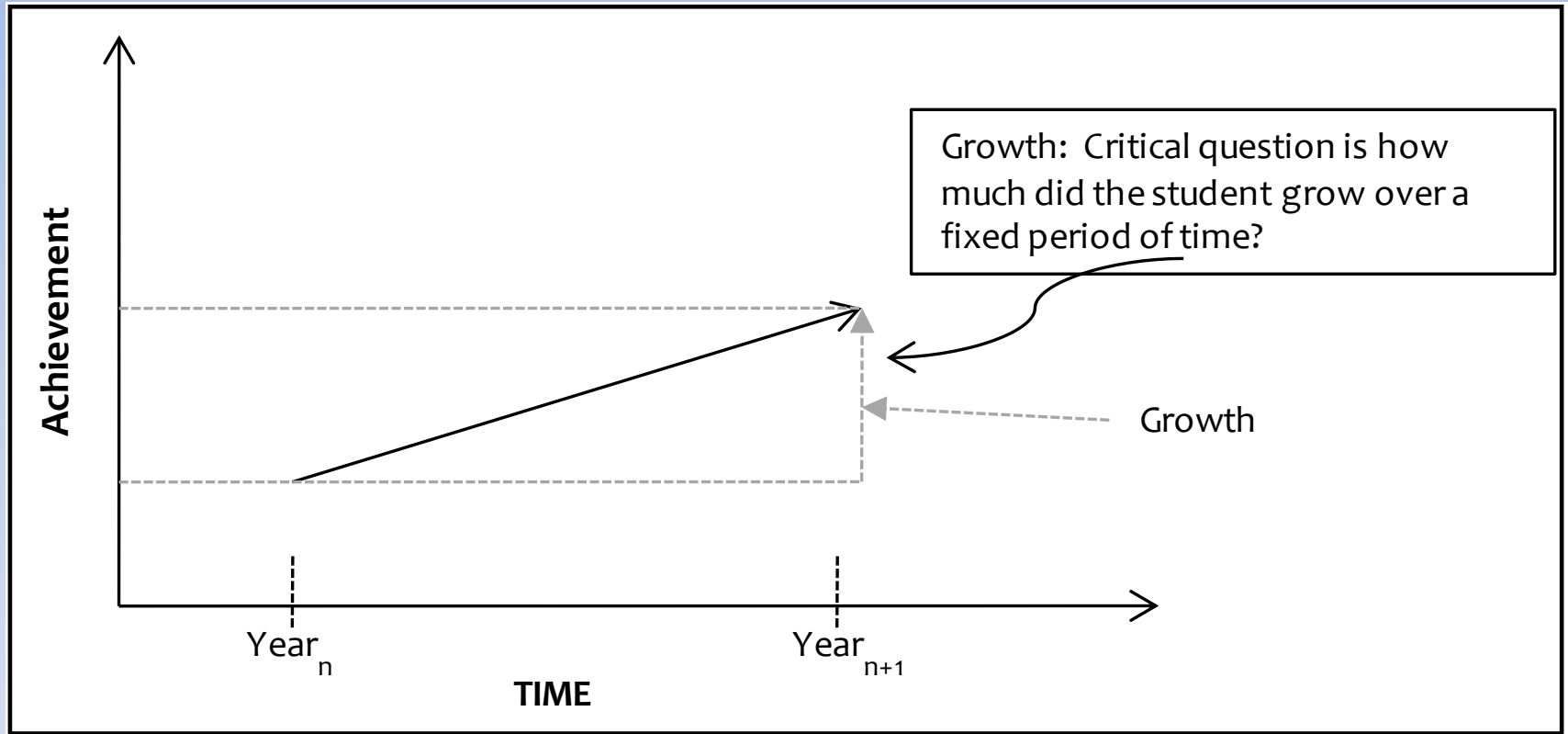
- Models of accountability which measure progress by tracking the achievement of the same students from year to year with the intent of determining whether the students made progress (growth)

An excellent guide to interpreting different models:

http://www.ccsso.org/Documents/2005/Policy_makers_Guide_To_Growth_2005.pdf



Measuring Student Growth



**GUIDANCE
ON
FISCAL YEAR 2010 SCHOOL IMPROVEMENT GRANTS
UNDER SECTION 1003(g) OF THE ELEMENTARY AND SECONDARY EDUCATION
ACT OF 1965**

Student growth

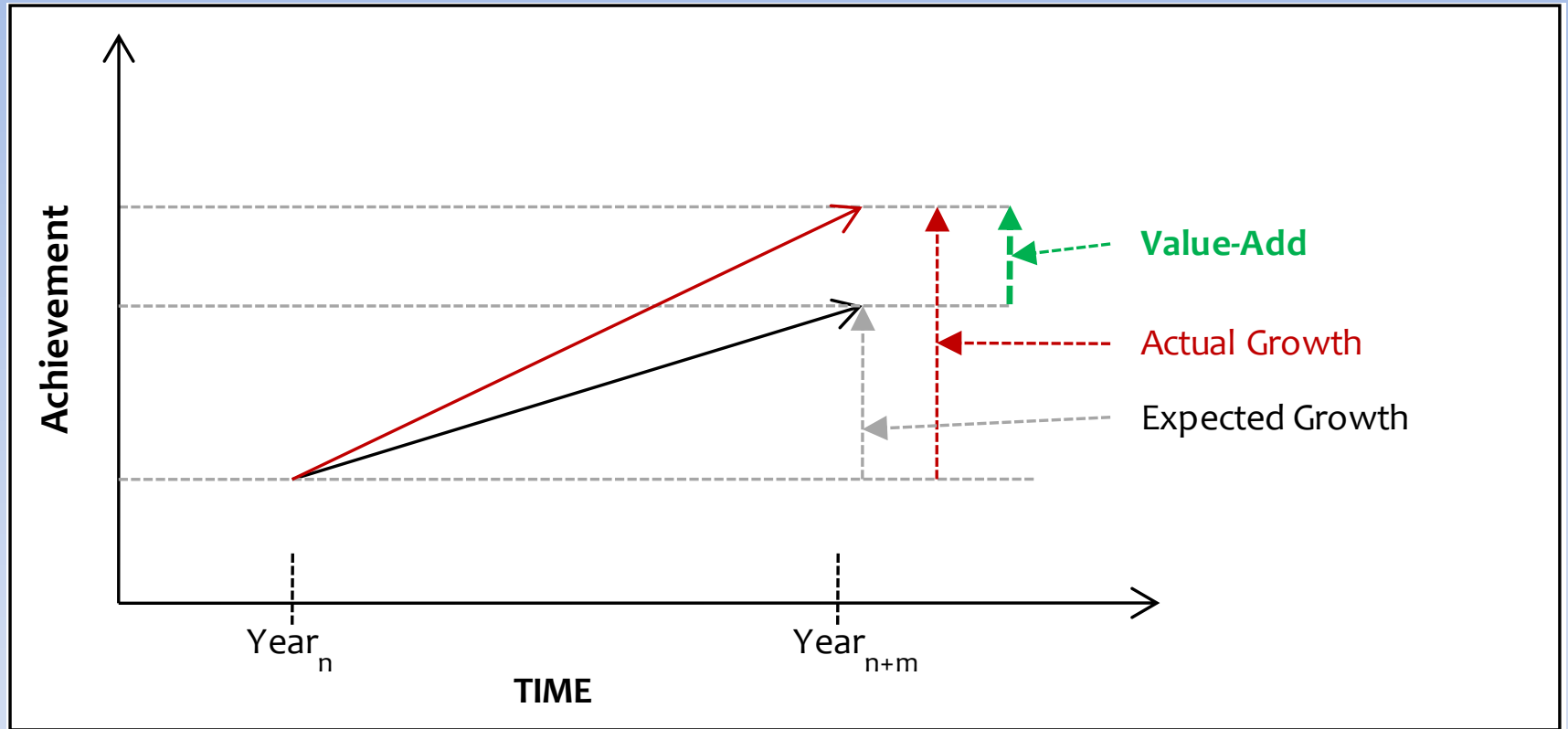
A-33. What is the definition of —student growth?

—Student “growth” means the change in achievement for an individual student between two or more points in time.

For grades in which the State administers summative assessments in reading/language arts and mathematics, student growth data must be based on a student’s score on the State’s assessment under section 1111(b)(3) of the ESEA. A State may also include other measures that are rigorous and comparable across classrooms.



Value-Add



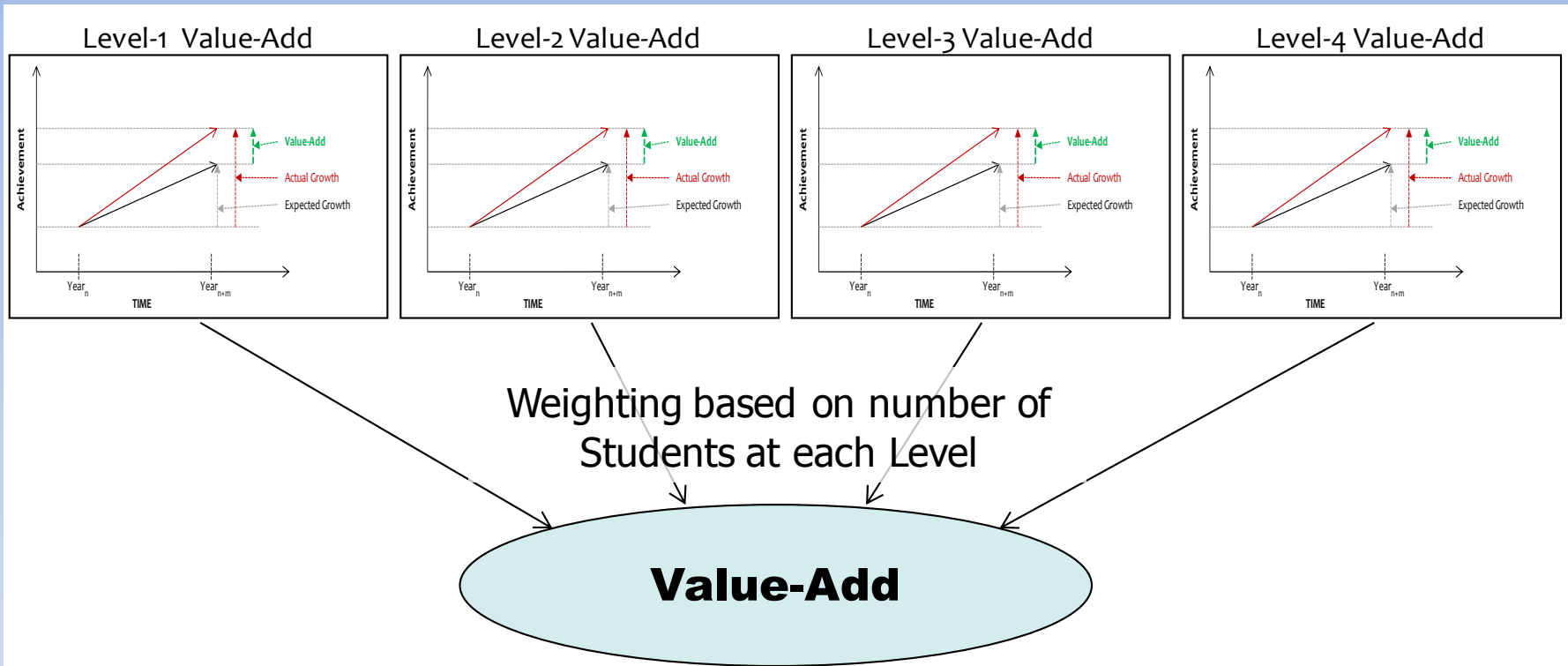
Design Considerations

- Cohort definition
 - By District, Building, or ALL
 - Span: 1-year or multiple years
- Educationally significant definitions of growth and “expected growth”
- Differentiating presentation for differentiated needs
 - stimulating the right conversation

CEE Growth Model

- Growth is based on Level to level movement
 - Students at Level 1 have different growth characteristics than students at Level-3
- With the right comparison set to establish “expected growth”, Value-add is straightforward to calculate

Level-based Growth



The Idea...

<u>TWO YEAR GROWTH (current 6th gr.):</u> Number of Students & Percent <u>within</u> Level	
READING (2008 - 2010)	
ABC Elem Grade 3 Results (in 2008)	
Level 1 (100 students) % of students at this level	
Level 2 (0 students) % of students at this level	
Level 3 (0 students) % of students at this level	
Level 4 (0 students) % of students at this level	
Level 4 (0 students) % of students at this level	

After 2 years of growth

<u>TWO YEAR GROWTH (current 6th gr.):</u> Number of Students & Percent <u>within</u> Level				
READING (2008 - 2010)	Same Students-- 2 Years Later			
	Grade 5 Results in 2010			
ABC Elem Grade 3 Results (in 2008)	Level 1	Level 2	Level 3	Level 4
Level 1 (100 students)	50	30	20	0
% of students at this level	50.0%	30.0%	20.0%	0.0%
Level 2 (0 students)				
% of students at this level				
Level 3 (0 students)				
% of students at this level				
Level 4 (0 students)				
% of students at this level				

Practical Value-Add

TWO YEAR GROWTH (current 6th gr.):

Number of Students & Percent within Level

READING (2008 - 2010)	Same Students-- 2 Years Later			
	Grade 5 Results in 2010			
ABC Elem Grade 3 Results (in 2008)	Level 1	Level 2	Level 3	Level 4
Level 1 (100 students) % of students at this level	50 50.0%	30 30.0%	20 20.0%	0 0.0%
Level 2 (0 students) % of students at this level				
Level 3 (0 students) % of students at this level				
Level 4 (0 students) % of students at this level				

State Results:

READING (2008 - 2010)	Same Students-- 2 Years Later			
	Grade 5 Results in 2010			
State-2010 Grade 3 Results (in 2008)	Level 1	Level 2	Level 3	Level 4
Level 1 (10000 students)	50.0%	50.0%	0.0%	0.0%
Level 2 (0 students)				
Level 3 (0 students)				
Level 4 (0 students)				



Better than "expected"?

TWO YEAR GROWTH (current 6th gr.): Number of Students & Percent within Level

READING (2008 - 2010)	Same Students-- 2 Years Later			
	Grade 5 Results in 2010			
ABC Elem Grade 3 Results (in 2008)	Level 1	Level 2	Level 3	Level 4
Level 1 (100 students) % of students at this level	50	30	20	0
	50.0%	30.0%	20.0%	0.0%
Level 2 (0 students) % of students at this level				
Level 3 (0 students) % of students at this level				
Level 4 (0 students) % of students at this level				

State Results:

READING (2008 - 2010)	Same Students-- 2 Years Later			
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State-2010 Grade 3 Results (in 2008)	Level 1	Level 2	Level 3	Level 4
Level 1 (10000 students)	50.0%	50.0%	0.0%	0.0%
Level 2 (0 students)				
Level 3 (0 students)				
Level 4 (0 students)				

Another Example

<u>TWO YEAR GROWTH (current 6th gr.):</u> Number of Students & Percent <u>within</u> Level				
READING (2008 - 2010)	Same Students-- 2 Years Later			
	Grade 5 Results in 2010			
ABC SD Grade 3 Results (in 2008)	Level 1	Level 2	Level 3	Level 4
Level 1 (100 students) % of students at this level	20 20.0%	30 30.0%	50 50.0%	0 0.0%
Level 2 (0 students) % of students at this level				
Level 3 (0 students) % of students at this level				
Level 4 (0 students) % of students at this level				

State Results:

READING (2008 - 2010)	Grade 5 Results in 2010			
	Level 1	Level 2	Level 3	Level 4
State-2010 Grade 3 Results (in 2008)				
Level 1 (10000 students)	50.0%	30.0%	20.0%	0.0%
Level 2 (0 students)				
Level 3 (0 students)				
Level 4 (0 students)				

Quantifying Growth: Level Index

- Based on the 4 Levels of WASL/MSP Performance
- Can be applied to any of the WASL/MSP Sub-tests

$$\begin{array}{r} 1 \times \% \text{ at Level-1} \\ 2 \times \% \text{ at Level-2} \\ 3 \times \% \text{ at Level-3} \\ + \quad 4 \times \% \text{ at Level-4} \\ \hline \end{array}$$

= Level Index

Applied to the Growth Model

READING (2008 - 2010)	Same Students-- 2 Years Later				Level Index
	Grade 5 Results in 2010				
ABC SD Grade 3 Results (in 2008)	Level 1	Level 2	Level 3	Level 4	
Level 1 (100 students) % of students at this level	50 50.0%	30 30.0%	20 20.0%	0 0.0%	1.70
Level 2 (0 students) % of students at this level					
Level 3 (0 students) % of students at this level					
Level 4 (0 students) % of students at this level					

Value-Add in this example is the difference between ACTUAL and expected growth:

$$1.70 - 1.50 = 0.20$$

Value-Add=20%

I.e. 20% of the students perform 1 Level higher after 2 years in this district

READING (2008 - 2010)	Same Students-- 2 Years Later				Level Index
	Grade 5 Results in 2010				
State-2010 Grade 3 Results (in 2008)	Level 1	Level 2	Level 3	Level 4	
Level 1 (10000 students) % of students at this level	50.0%	50.0%	0.0%	0.0%	1.50
Level 2 (0 students)					
Level 3 (0 students)					
Level 4 (0 students)					



The Colors have Meaning

MATH (2008 - 2010)	Same Students-- 2 Years Later			
	Grade 5 Results in 2010			
White River Grade 3 Results (in 2008)	Level 1	Level 2	Level 3	Level 4
Level 1 (21 students) % of students at this level	Staying below standard		Improving to meeting Standard	
Level 2 (32 students) % of students at this level				
Level 3 (109 students) % of students at this level	Declining to not meeting standard		Maintaining above standard	
Level 4 (98 students) % of students at this level				

Making Sense of It All...

- Building & District views represent a lot of data
- We have:
 - 6 grade spans: 3-4th, 4-5th, 5-6th, 6-7th, 7-8th, 8-10th
 - 3 cohorts (or more): 2006-2007, 2007-2008, 2008-2009, 2009-2010, and 2010-2011
 - 8-10th: 2006-2008, 2007-2009, 2008-2010, and 2009-2011
 - 2 content areas: Reading and Math
 - Can be expanded for longer spans
 - Can be used for Writing and Science

Differentiated Presentation for Differentiated Need

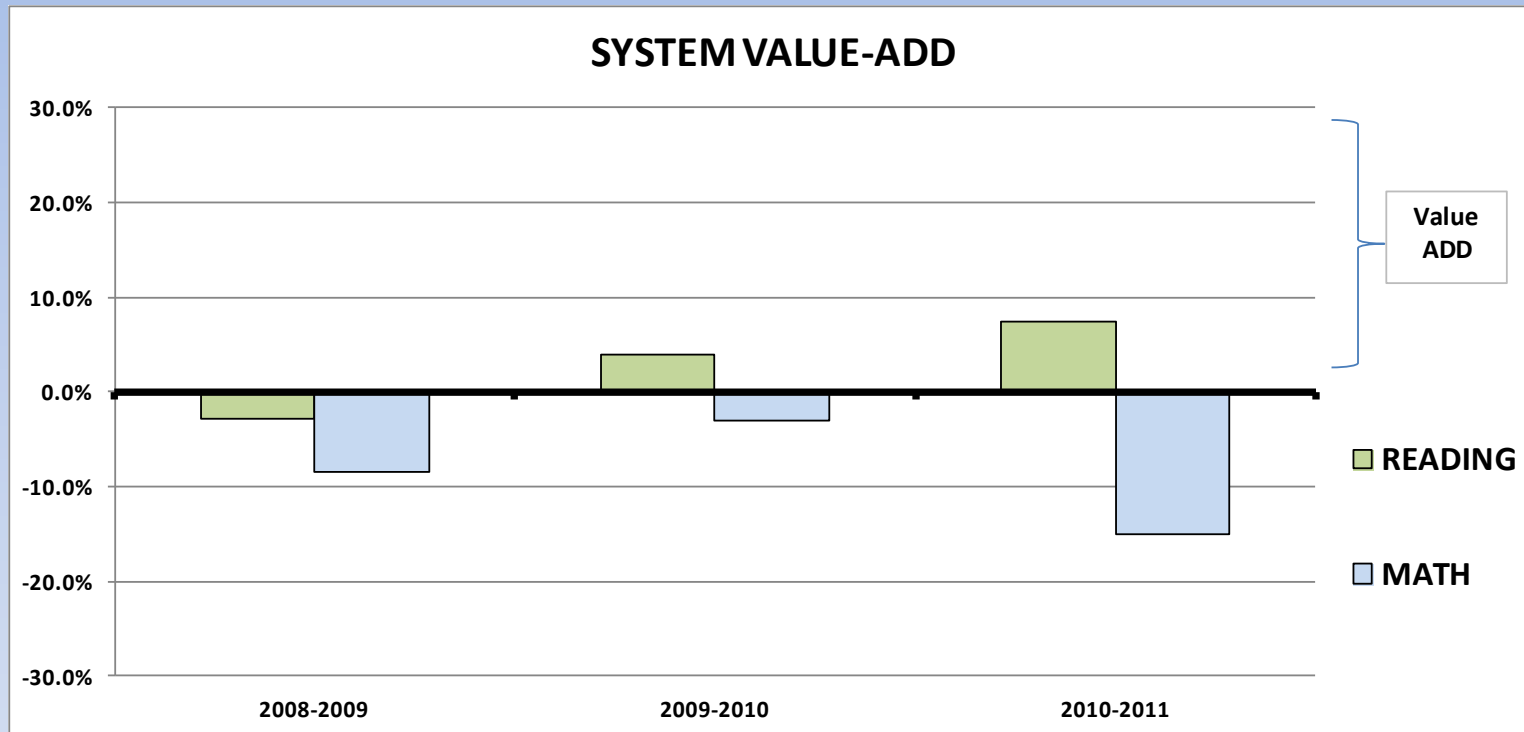
- 3 Analysis Needs
 - Executive Summary: Do we add value?: Summary of value-add in the context of district / building
 - Growth Summary: Summary of the 4 quadrants (e.g. Improving, Declining, etc.)
 - Evidence of Impact: Detailed level-by-level tables

Making Sense of It All...

- Summarization is a useful technique
 - Overall in Reading and Math
 - By Grade band
 - For only “struggling students”
 - (MSP Level 1 & 2 Only)

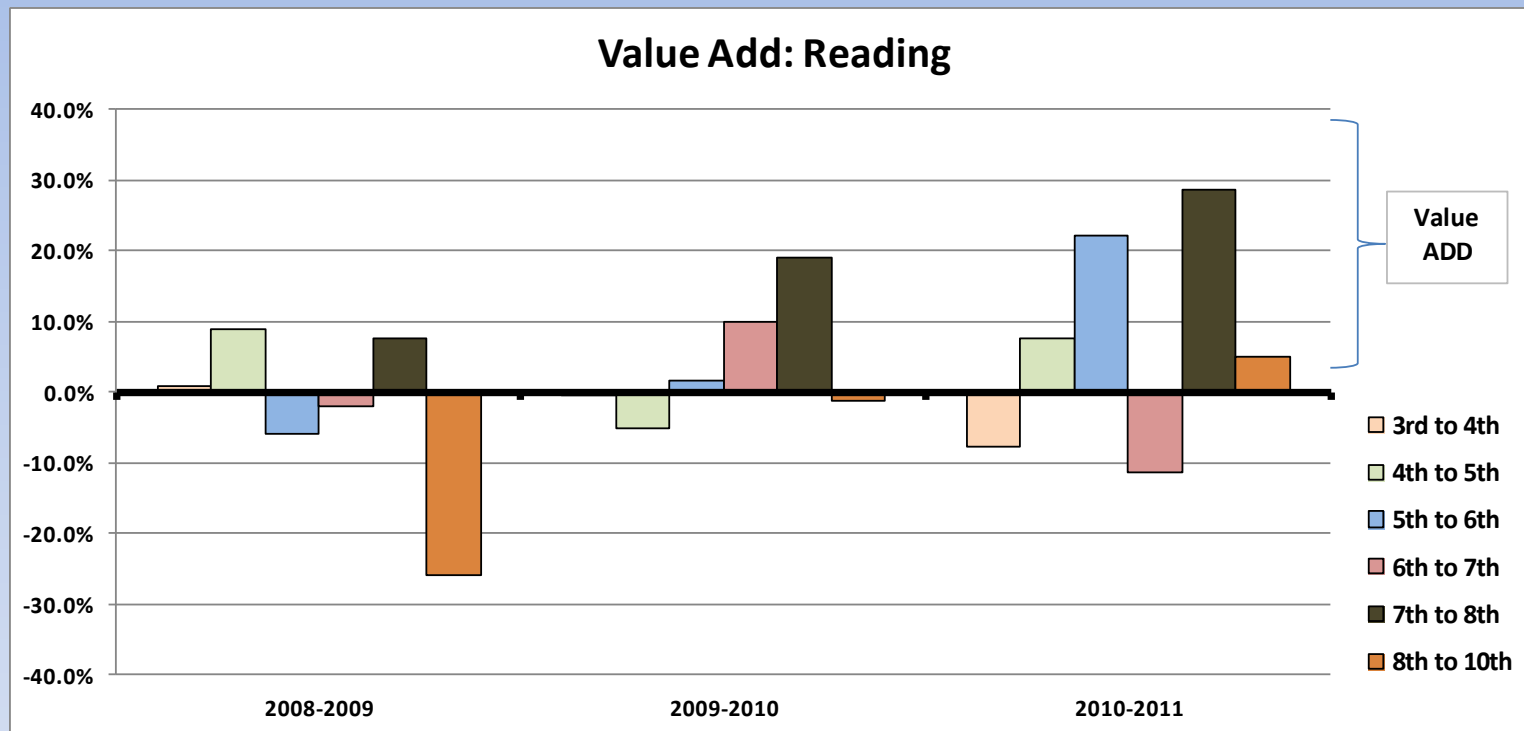
Value-add Growth – Sample SD

Comparison: State of WA Sample

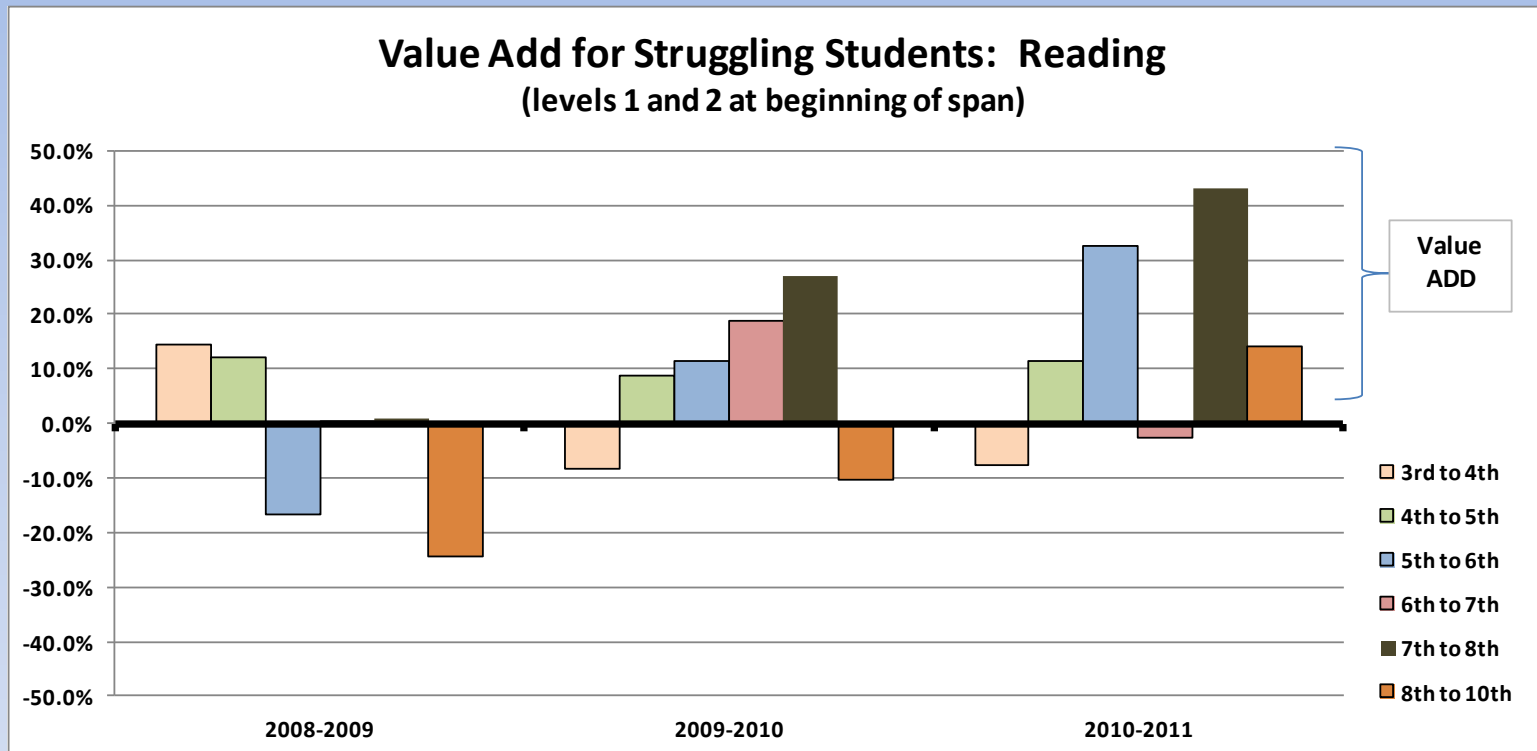


Value-add Growth – Sample SD

Grade Band Summary- Reading Only



“Peeling the Onion” in Reading Struggling Students Only



Struggling Students = those at levels 1 & 2 at beginning of Cohort

Growth Summary

3 Most Recent Cohorts

Are we getting better
Over time?



Most
Recent

Reading 5th to 6th Grade

READING Growth Grades 5 - 6 (2008 to 2009 Cohort)				
	Sample SD		State Sample	
IMPACT at END of Cohort	5 th to 6 th Grade		5 th to 6 th Grade	
% Maintaining Level 3 or 4	67.4%	184	63.6%	26924
% Staying at Levels 1 or 2	14.7%	40	19.4%	8220
% Improved: Level 1 or 2 TO Level 3 or 4	4.4%	12	7.1%	2998
% Declined: Level 3 or 4 TO Level 1 or 2	13.6%	37	9.9%	4197
Number of Students in Cohort	273		42339	
Total Met	71.8%		70.7%	
Growth since end of 5 th Grade (% Met)	-9.16%		-2.83%	

READING Growth Grades 5 - 6 (2009 to 2010 Cohort)				
	Sample SD		State Sample	
IMPACT at END of Cohort	5 th to 6 th Grade		5 th to 6 th Grade	
% Maintaining Level 3 or 4	65.3%	181	57.5%	24259
% Staying at Levels 1 or 2	14.4%	40	23.1%	9735
% Improved: Level 1 or 2 TO Level 3 or 4	5.4%	15	5.0%	2122
% Declined: Level 3 or 4 TO Level 1 or 2	14.8%	41	14.4%	6067
Number of Students in Cohort	277		42183	
Total Met	70.8%		62.5%	
Growth since end of 5 th Grade (% Met)	-9.39%		-9.35%	

READING Growth Grades 5 - 6 (2010 to 2011 Cohort)				
	Sample SD		State Sample	
IMPACT at END of Cohort	Current 7 th Grade		Current 7 th Grade	
% Maintaining Level 3 or 4	69.5%	180	58.4%	13873
% Staying at Levels 1 or 2	11.2%	29	24.4%	5716
% Improved: Level 1 or 2 TO Level 3 or 4	13.5%	35	9.4%	2212
% Declined: Level 3 or 4 TO Level 1 or 2	5.8%	15	7.7%	1811
Number of Students in Cohort	259		23412	
Total Met	83.0%		67.8%	
Growth since end of 5 th Grade (% Met)	7.72%		1.71%	

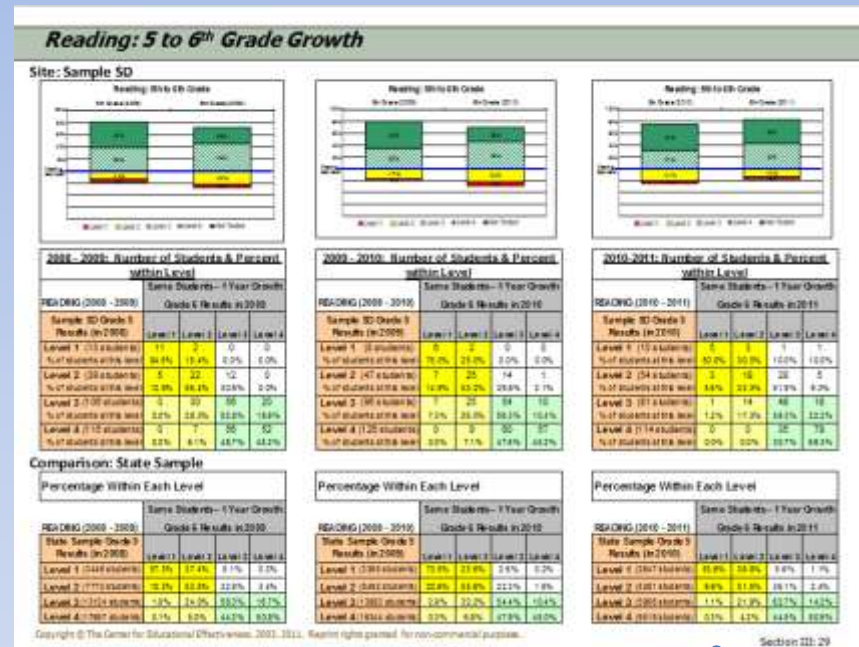
Growth Summary

READING Growth Grades 5 - 6 (2010 to 2011 Cohort)				
	Sample SD		State Sample	
IMPACT at END of Cohort	Current 7th Grade		Current 7th Grade	
% Maintaining Level 3 or 4	69.5%	180	58.4%	13673
% Staying at Levels 1 or 2	11.2%	29	24.4%	5716
% Improved: Level 1 or 2 TO Level 3 or 4	13.5%	35	9.4%	2212
% Declined: Level 3 or 4 TO Level 1 or 2	5.8%	15	7.7%	1811
Number of Students in Cohort		259		23412
Total Met	83.0%		67.8%	
Growth since end of 5th Grade (% Met)	7.72%		1.71%	

- Maintaining: Are we higher than the state?
- Staying: Are we lower than the state?
- Improved: Are we higher than the state?
- Declined: Are we lower than the state?
- % Change: Are more students at standard?

Details: Evidence of Impact

- Do we have programs designed to impact students at a specific level?



Most Recent

Details: Evidence of Impact

- Do we have programs designed to impact students at a specific level?
 - Impact of interventions
 - Useful in conversations for the PLC Prompts
 - How will we know if each student is learning it?
 - How will we respond when a student is experiencing difficulty learning?
 - How will we respond if the student already knows it?

2010-2011: Number of Students & Percent within Level				
READING (2010 - 2011)	Same Students-- 1 Year Growth			
	Grade 6 Results in 2011			
Sample SD Grade 5 Results (in 2010)	Level 1	Level 2	Level 3	Level 4
Level 1 (10 students)	5	3	1	1
% of students at this level	50.0%	30.0%	10.0%	10.0%
Level 2 (54 students)	3	18	28	5
% of students at this level	5.6%	33.3%	51.9%	9.3%
Level 3 (81 students)	1	14	48	18
% of students at this level	1.2%	17.3%	59.3%	22.2%
Level 4 (114 students)	0	0	35	79
% of students at this level	0.0%	0.0%	30.7%	69.3%

Percentage Within Each Level				
READING (2010 - 2011)	Same Students-- 1 Year Growth			
	Grade 6 Results in 2011			
State Sample Grade 5 Results (in 2010)	Level 1	Level 2	Level 3	Level 4
Level 1 (2647 students)	53.6%	39.8%	5.6%	1.1%
Level 2 (5281 students)	9.9%	51.5%	36.1%	2.4%
Level 3 (5966 students)	1.1%	21.9%	62.7%	14.2%
Level 4 (9518 students)	0.3%	4.2%	44.5%	50.9%



Structuring the Conversation

Strengths <i>Is there a grade/course or grade band that is an area of strength?</i>	Challenges <i>Is there a grade/course or grade band that is a challenge area?</i>
Summary of Trends in Data <i>Is there a content area trend across grades, grade bands, or courses? (For buildings- do you follow the district trends?)</i>	
Triangulating Data <i>What other district level data provides information related to the identified trends?</i>	
Area of Need <i>Which content area(s), grade level(s) and/or subgroups does the data indicate as the greatest area of need?</i>	

- Think about taking this back to your building– if each PLC completed the worksheet
 - Would they highlight the same issues?
 - Would there be common language?



Applying...

Plan for Improvement

How will the Area of Need be addressed?



Change in Practice:

Which district & building practice(s) need to be changed in order to address the area of need? How does the change in practice align with the current district/building action plan?

Improvement Strategies

What steps can the district/building take to support modifications of curriculum, pacing, instruction, and/or assessment to address the area of need?

Implementation

What evidence will show that the steps were accomplished?

Evaluation

What evidence will show that student achievement improved as a result?



Application & Use

- *Growth Summarization* and *Evidence of Impact* analysis are particularly useful for goal setting and monitoring impact

A MERIT Example

- *Starting with a baseline on the 2010 MSP, Grandview Middle School will improve by leveling up a net increase of 15 % more students in Reading and Math from Level 1 to Level 2 and Level 2 to Level 3 on the 2011 MSP. That inclusive number will grow to 33% on the 2012 MSP and will again increase to 53% by the 2013 MSP.*
 - *Year to year growth. Matched cohort. Grades 6, 7, 8*

Reading:

- Baseline (2009 to 2010 growth):
 - 99 Level 1 or 2 students moved up a level or more
 - A 15% increase (from 99) would require an additional 14.85 students to move up

Reading: **MADE Goal**

- Baseline (2009 to 2010 growth):
 - 99 Level 1 or 2 students moved up a level or more
 - A 15% increase (from 99) would require an additional 14.85 students to move up
- 2010 – 2011 Growth:
 - 139 Level 1 or 2 student moved up a level or more
 - This is an increase in 40 students – Well above the 14.85 students to meet the goal.

Math:

- Baseline (2009 to 2010 growth):
 - 88 Level 1 or 2 students moved up a level or more
 - A 15% increase (from 88) would require an additional 13.2 students to move up

Math: **MADE Goal**

- Baseline (2009 to 2010 growth):
 - 88 Level 1 or 2 students moved up a level or more
 - A 15% increase (from 88) would require an additional 13.2 students to move up
- 2010 – 2011 Growth:
 - 166 Level 1 or 2 student moved up a level or more
 - This is an increase in 78 students – well above the 13.2 students to meet the goal.

Application with ELLs

- State calculates expected growth (in WLPT-II scale points) based on current grade and previous level
- Used in AMAO-2
- Analyze 3 most recent 1-year cohorts to assist teams in understanding impact of ELD programs for a given grade
- Unlike AMAO calculations- uses matched-cohort inside your district
- Includes all spans from K-1 to 11-12

WLPT Growth Modeling

Number of Students & Percent <u>within</u> Level				
WLPT (2010 - 2011)	Same Students-- 1 Year Later			
	Grade 2 - 2011			
Grade 1- 2010	Level 1	Level 2	Level 3	Level 4
WLPT Level 1 (4 students) % of students at this level	0 0.0%	2 50.0%	1 25.0%	1 25.0%
WLPT Level 2 (51 students) % of students at this level	0 0.0%	7 13.7%	36 70.6%	8 15.7%
WLPT Level 3 (151 students) % of students at this level	0 0.0%	4 2.6%	73 48.3%	74 49.0%
WLPT Level 4	Level 4 Students Exit Program			

Gr 1 to 2: Points growth over 1 year			
	Median Growth	Average Growth	% of Students Exceeding Growth Target
Count	22.0	25.7	83.6%
207			

Stimulating Deeper Conversations: WLPT-II to MSP/HSPE Reading

- Matched-cohort view: February WLPT-II results to May MSP/HSPE
- 3 latest years: 2009, 2010, and 2011

Grade 3: 2011				
WLPT (Feb 2011)	MSP Grade 3 (April 2011)			
	MSP Level 1	MSP Level 2	MSP Level 3	MSP Level 4
Grade 3 WLPT				
WLPT Level 1 (2 students) % of students at this level	0	0	1 50.0%	1 50.0%
WLPT Level 2 (32 students) % of students at this level	16 50.0%	14 43.8%	2 6.3%	0
WLPT Level 3 (129 students) % of students at this level	34 26.4%	61 47.3%	30 23.3%	4 3.1%
WLPT Level 4 (20 students) % of students at this level	0	5 25.0%	9 45.0%	6 30.0%

And further...

MSP/HSPE Reading 1-year after Exiting ELL status

- For students at grade N who score at Level-4 on WLPT-II, how do they perform at grade N+1 on MSP/HSPE

Exiting Students: Grade 3 Exit, Grade 4 MSP				
WLPT (Feb 2008)	1 Year After Exiting ELL: MSP Grade 4 (April 2009)			
Grade 3 WLPT	MSP Level 1	MSP Level 2	MSP Level 3	MSP Level 4
WLPT Level 4 (42 students)	0	10	22	10
% of students at this level		23.8%	52.4%	23.8%

Pause & Reflect



Better Data. Better Decisions. Better Schools.

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Strategies for Going Deeper

- The student-level data (SPSS format) has extensive program and demographic attributes attached
 - Mobility (years in district or years in school)
 - Program: e.g. LAP, SpEd, etc.
 - Demographic
 - Expanded ethnic subgroup data in 2011
 - Language at home
 - Etc.

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- Understand & Apply
 - Ideas and design considerations for using student growth data to enhance improvement conversations
 - Differentiating the presentation of data for differentiated needs
 - Practical applications— how are districts using this type of data in monitoring their improvement plans
 - Conversation and dialogue

Courage...



The Center for Educational Effectiveness



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