The Transformation of U.S. Education:
from a low to a high(er)-reliability system

Presented to

Connecticut Vision Taskforce
September 14, 2010

By

Tim Waters, Ed.D.

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Mid-continent Research for Education and Learning

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McREL's mission

Making a difference in the quality of education & learning for all through excellence in applied research, product development, & service.

www.mcrel.org

Presentation Objectives

- Challenge current **beliefs** and **practices**
- Make the case that **district reliability** can increase with existing resources
- Promote the idea that superior execution of existing know-how would be <u>**the**</u> innovation with the biggest impact on student learning and achievement
- Motivate Connecticut commitment to **high-reliability** as a key construct in your vision of the future

Presentation Overview

- Premises about school districts and HROs
- McREL conclusions from our research
- Examples of HROs & HRO-like organizations
- Characteristics of HROs
- McREL research findings
- **Pithy and highly inspirational closing**

4 Premises for this presentation

1. The <u>primary reason</u> for adopting content & performance standards, quality assessment and data systems, human capital strategies, and all other improvement initiatives is to increase **system reliability**.

2. We know enough to transform U.S. education from a low to a higher-reliability system.

3. Schools and districts become higher-reliability organizations through superior execution of existing know-how.

4. Transforming U.S. education from a low to a higher-reliabili system will change the odds for children everywhere.

What will it take to increase system reliability and change the odds for our children?

To change the odds for our children, we must examine our practices and the beliefs in which they are grounded.
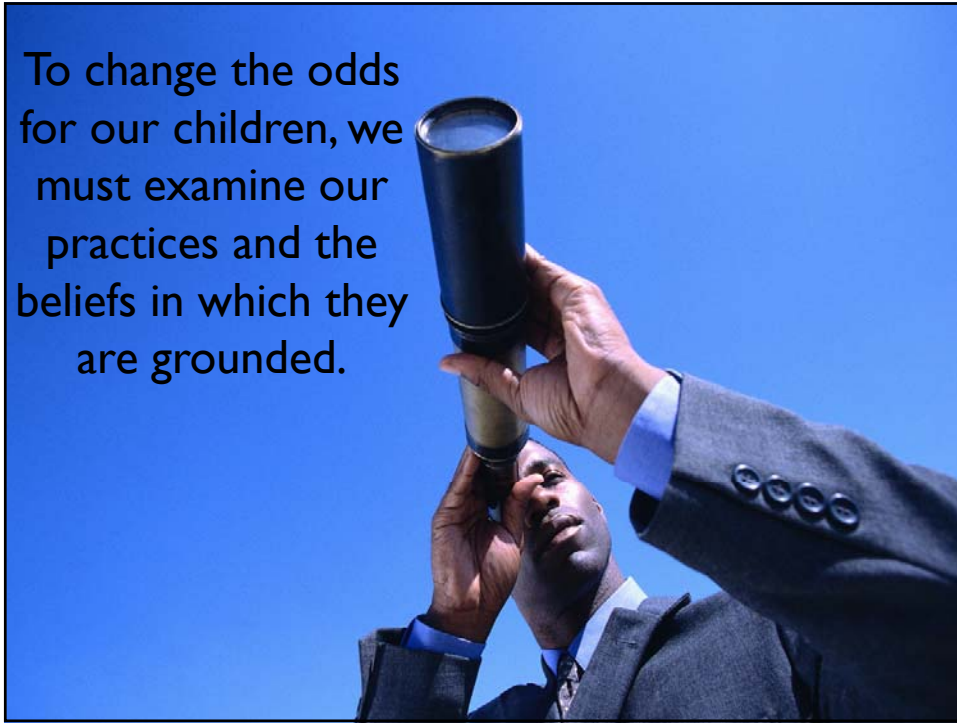
This may require suspending disbelief long enough to consider new possibilities.

Even when routine ways don't work, they (educators) simply do more of the same in the belief that more is the key to fixing the problem.

The trouble begins when individuals fail to notice that *they only see what is consistent with their beliefs* and is only acerbated by the belief that "seeing is believing."

Theoretical and Empirical Foundations of Mindful Schools. Hoy, Gage, and Tarter, 2004

Think – pair – share

Which policies and practices in Connecticut (and perhaps beliefs or values in which they are grounded) need to be most critically and thoughtfully examined?

High Reliability Organizations
Vs
Tightly Coupled Organizations

There is much we can learn from High Reliability Organizations

High-Reliability Organizations (HROs)

High reliability organizations operate in a context where failures are simply too significant to be tolerated, where failures make headlines.

The Failsafe Schools Challenge: Leadership Possibilities From High Reliability Organizations. Educational Administration Quarterly. Bellamy, Crawford, Marshall, & Coulter. August, 2005

HROs operate under high-risk conditions and take a variety of steps in pursuit of error free performance.

Weick, Sutcliffe, & Obstfeld. 1999

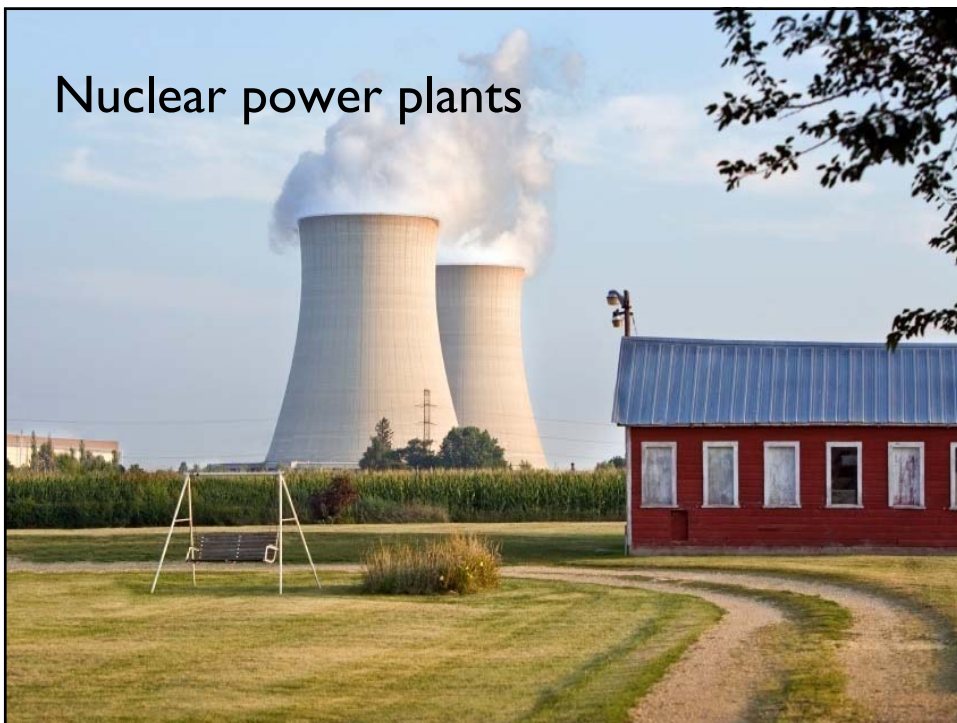## Examples of high-reliability organizations

Air traffic control centers

NASA Shuttle Command Center

Nuclear power plants

Chemical processing plants

The electric power grid

The consequences of failure in these organizations (or systems)?

Catastrophic!

Superior execution of existing know-how is the difference between life and death

Characteristics high-reliability organizations (HROs) share that might inform the transformation of U.S. education from a low to a high-reliability system.

They look for and correct errors & mistakes to prevent failure.

HROs celebrate their successes but are not seduced by them.

They do not take success for granted and assume that success last time means success the next time.
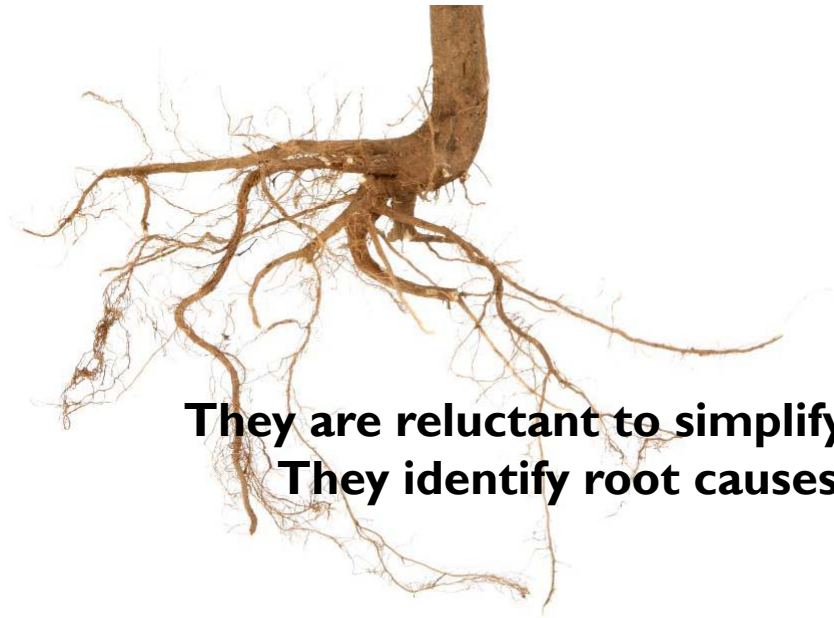
They are reluctant to simplify. They identify root causes.

Root cause analysis of failure to master reading

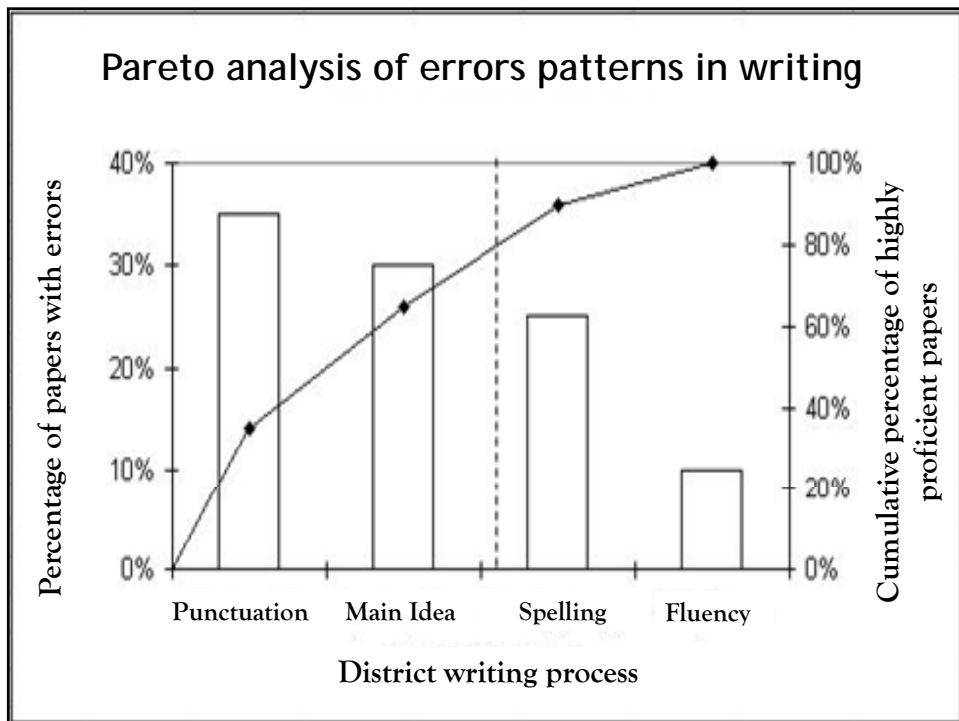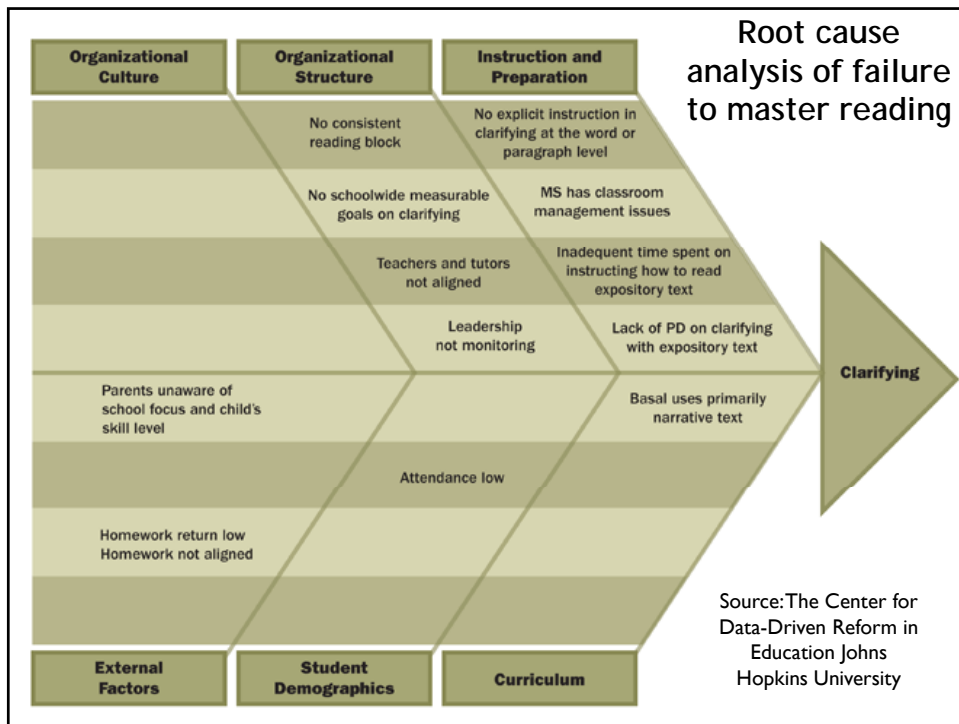| Organizational Culture	Organizational Structure	Instruction and Preparation
	No consistent reading block	No explicit instruction in clarifying at the word or paragraph level
	No schoolwide measurable goals on clarifying	MS has classroom management issues
	Teachers and tutors not aligned	Inadequent time spent on instructing how to read expository text
	Leadership not monitoring	Lack of PD on clarifying with expository text
Parents unaware of school focus and child's skill level		Basal uses primarily narrative text
	Attendance low	
Homework return low Homework not aligned		

Clarifying

Source: The Center for Data-Driven Reform in Education Johns Hopkins University

External Factors	Student Demographics	Curriculum

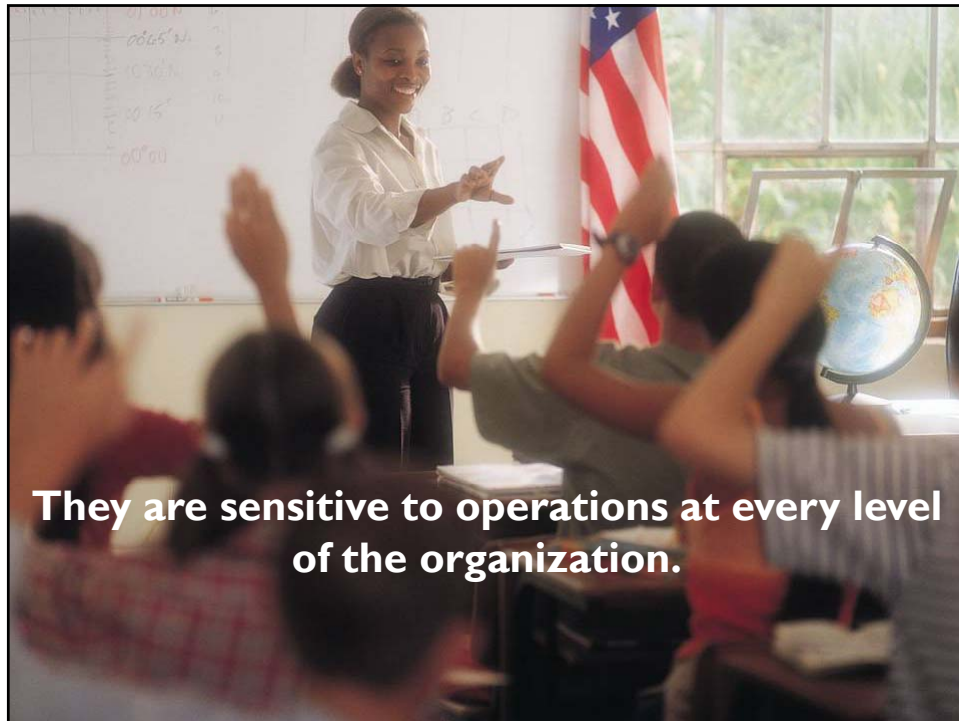Pareto analysis of errors patterns in writing

They are resilient, refusing to be discouraged by errors & mistakes.

HROs seek an ideal of perfection but never expect to achieve it…They deliver reliability but never take it for granted

New Challenges To Understanding Organizations. 1993. Roberts

They live by the book but are unwilling to die by it.

They defer to those people in the organization with the greatest *expertise…* rather than title or authority.

They are sensitive to operations at every level of the organization.

They are committed to extensive & effective staff training

Is *High-Reliability* performance only found in highly regulated settings like Air Traffic Control, chemical processing plants, aircraft carriers, and NASA Space Command?

Medicine…

New laboratory science is not the key to saving lives. The infant science of improving performance—of implementing our existing know-how —is.
Better: A Surgeon's Notes on Performance Gawande, 2007, p. 242

Using existing know-how about data-based decisions...better than ever.

$48 million in payroll $209 million in payroll
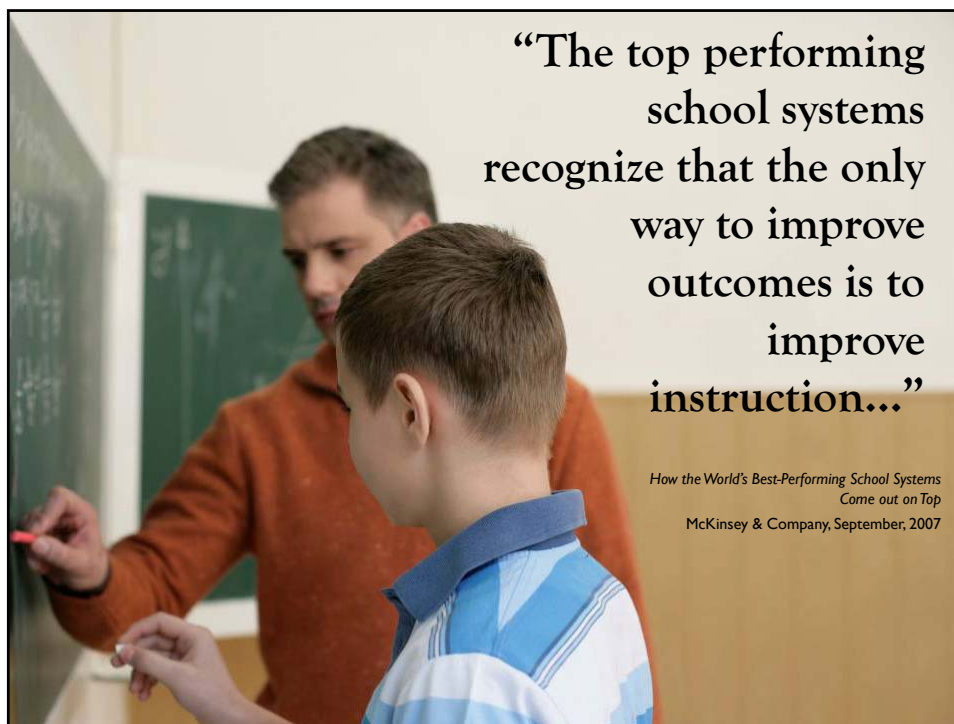
$640,000 per win $2.3 million per win

Maintaining high-reliability while lowering costs...

An example of reducing costs while maintaining reliability

UPS

$12 million saved

"The top performing school systems recognize that the only way to improve outcomes is to improve instruction..."

How the World's Best-Performing School Systems Come out on Top
McKinsey & Company, September, 2007

High(er) reliability education systems

What these high performing systems do is focus relentlessly on ensuring high instructional quality while reducing variability in the quality of instruction for every student.
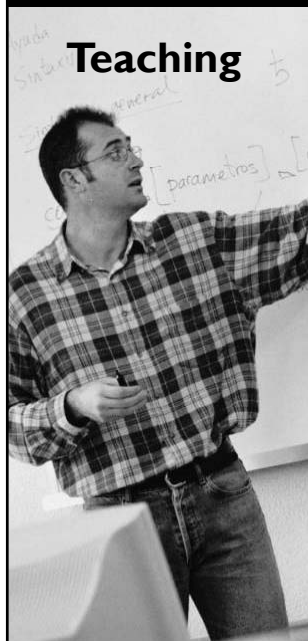

Andreas Schleicher, Head of Indicators Division
Directorate for Education, OECD
June 24, 2008 presentation in Dover, DE

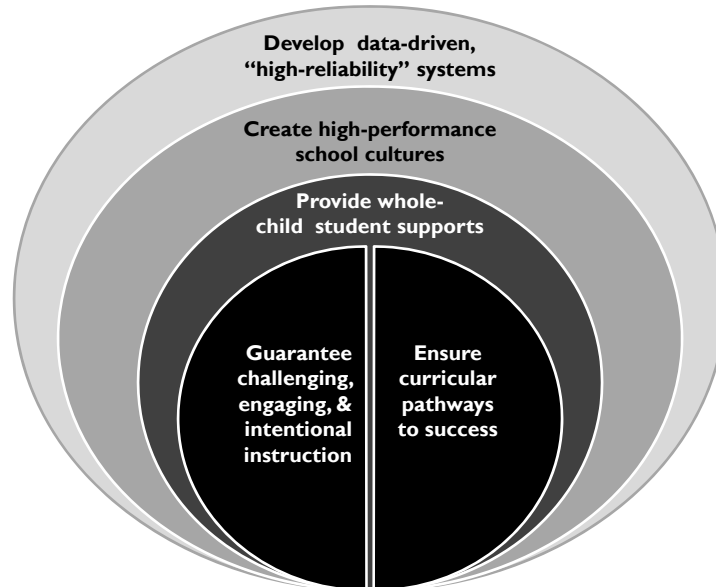**To improve system reliability we have examined**

Quantitative Research

Teaching

Schooling

Leadership

ChangingtheOdds
for Student Success: What Matters Most

WHAT MATTERS MOST
Research & guidance that focuses on what makes the most difference for students

Develop data-driven, "high-reliability" systems

Create high-performance school cultures

Provide whole-child student supports

Guarantee challenging, engaging, & intentional instruction

Ensure curricular pathways to success

Guarantee challenging, engaging, & intentional instruction

The touchstones

- **Setting high expectations and delivering challenging instruction**

- **Fostering engaging learning environments and meaningful relationships with students**

- **Intentionally matching instructional strategies to learning goals**

Powerful teacher-student relationship variables

- **Non-directivity**
- **Empathy**
- **Warmth**
- **Encouraging critical thinking**
- **Encouraging learning**
- **Adapting to differences**

Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement* (p. 118-119). New York: Routledge.
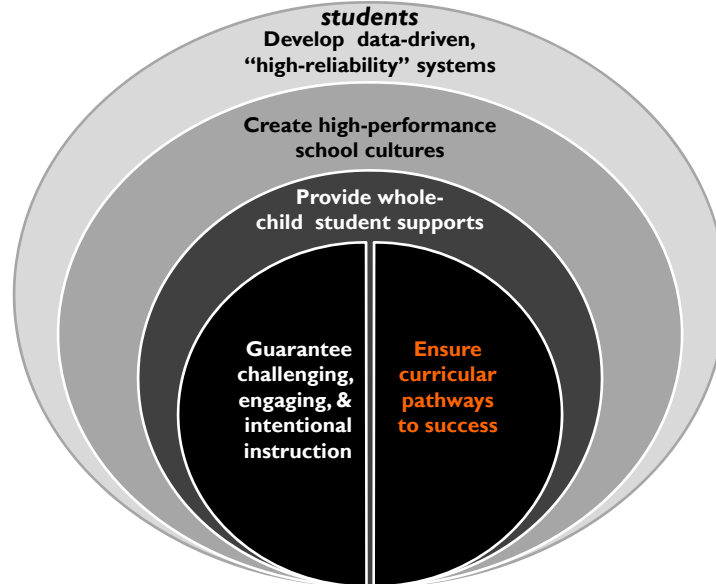
Kleinfeld, J. (1972). *Effective teachers of Indian and Eskimo high school students.*
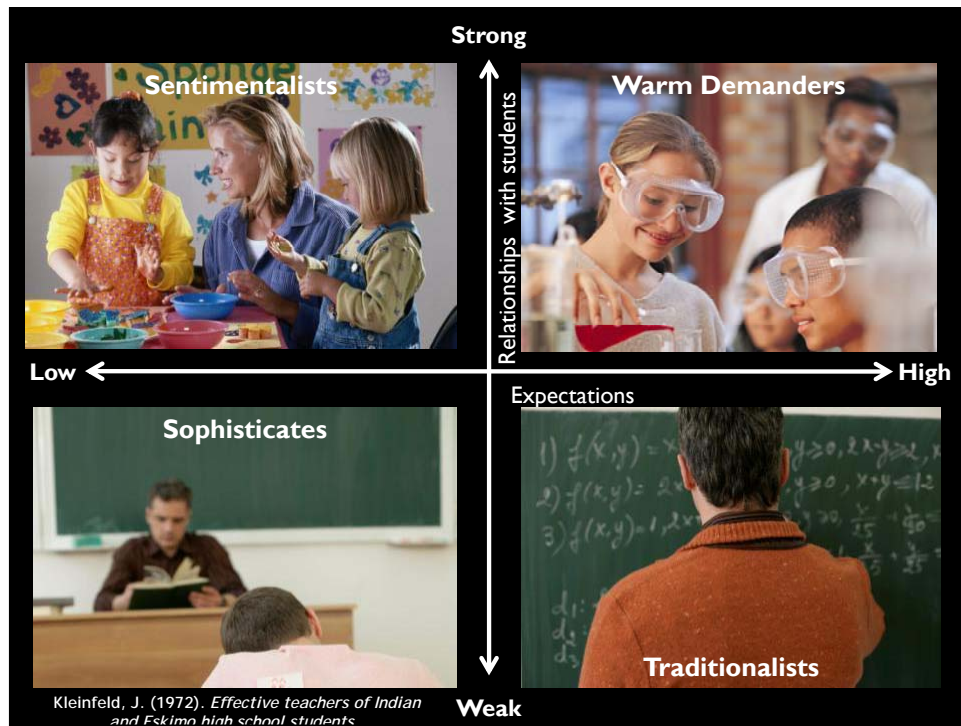
Classroom Instruction that Works	Why It Works
Identifying similarities & differences	Helps students access prior knowledge Develops critical thinking skills (analysis) Deepens understanding of new information
Summarizing & note taking	Supports acquisition of new knowledge Supports critical thinking (analysis, synthesis) Deepens knowledge through review and revision Identifies misconceptions
Reinforcing effort & providing recognition	Motivates learning through positive reinforcement Helps students understand importance of effort
Homework & practice	Develops good work habits Develops automaticity with new skills & knowledge Develops critical thinking (application) Demonstrates understanding &identifies misconceptions
Nonlinguistic representations	Accesses imagery mode of learning Supports memorization / recall of acquired knowledge Elaborates on and deepens knowledge
Cooperative learning	Develops interpersonal skills Motivate learning through "positive interdependence"
Setting objectives & providing feedback	Focuses learning on important content Motivates by personalizing learning Helps to identify & correct misconceptions
Generating & testing hypotheses	Develops critical thinking skills (evaluating, creating) Motivates by accessing "mental set" for problem-solving
Questions, cues, and advance organizers	Activates prior knowledge Supports critical thinking (analyzing, evaluating) Increases curiosity, interest in topic Focuses learning

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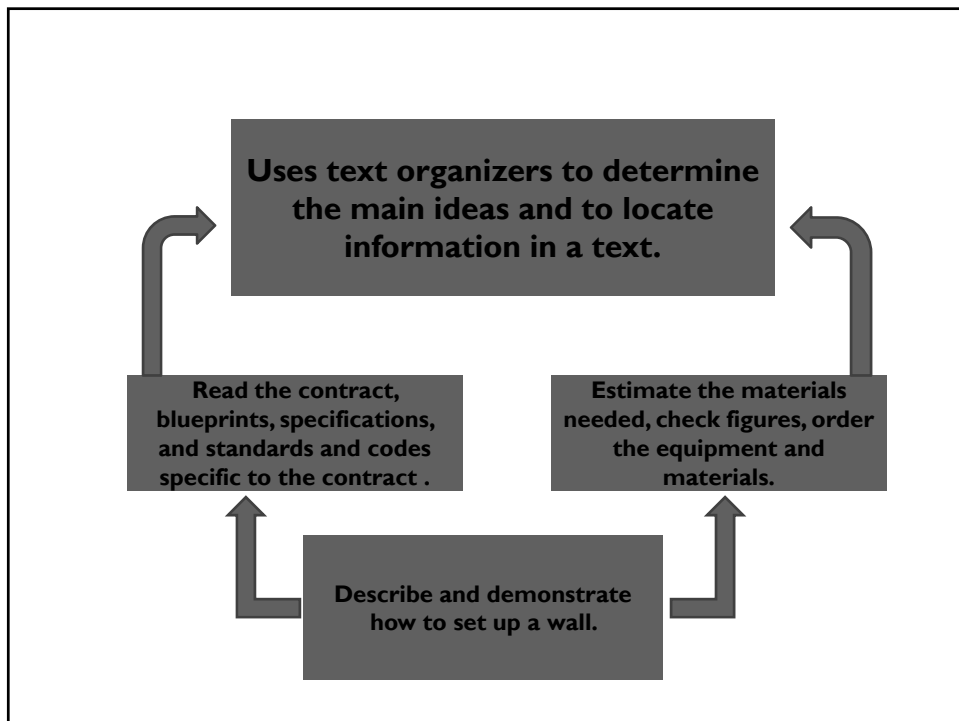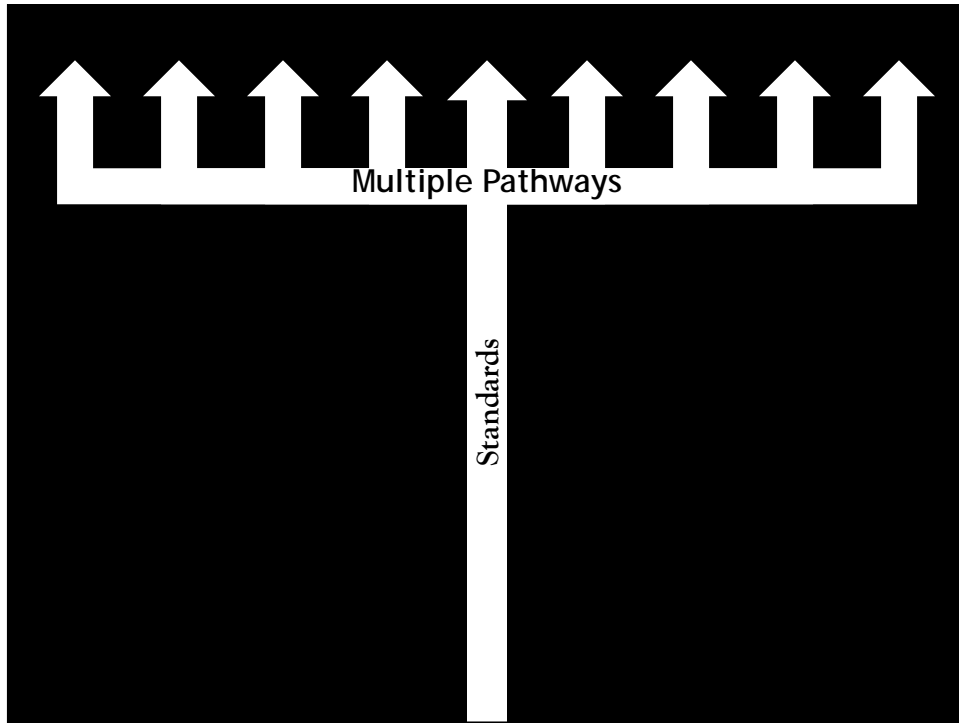
Ensure curricular pathways to success

Ensure curricular pathways to success

The touchstones
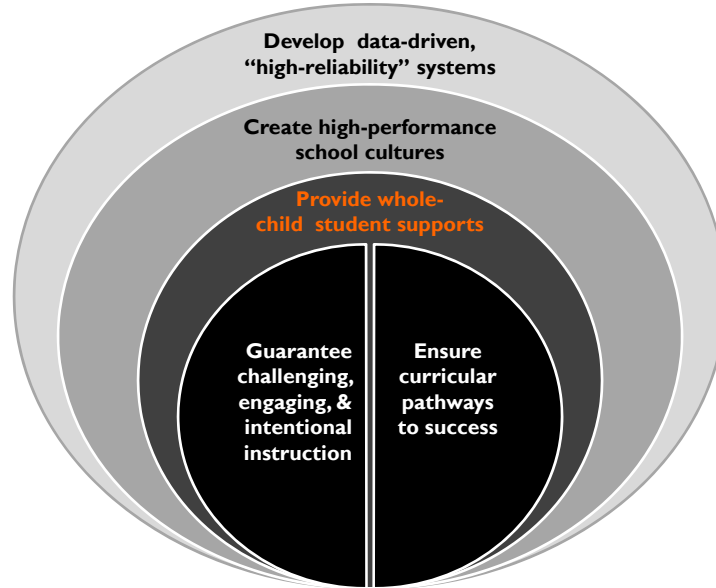
• Providing all students with high-expectations curricula.

• Providing all students with personalized learning opportunities.

Multiple Pathways

Standards

Uses text organizers to determine the main ideas and to locate information in a text.

Read the contract, blueprints, specifications, and standards and codes specific to the contract .

Estimate the materials needed, check figures, order the equipment and materials.

Describe and demonstrate how to set up a wall.

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## Provide whole-child student supports

The touchstones

- **Providing real-time supports in keeping with the ounce-of-prevention principle.**

- **Addressing the deep causes of student performance: home environment, prior knowledge, interest, and motivation.**

Factors Related to Student Success
(% variance in achievement)

Teachers
13%

Schools
7%

Prior achievement
& knowledge
33%

Home
environment
33%

Student interest &
motivation
14%
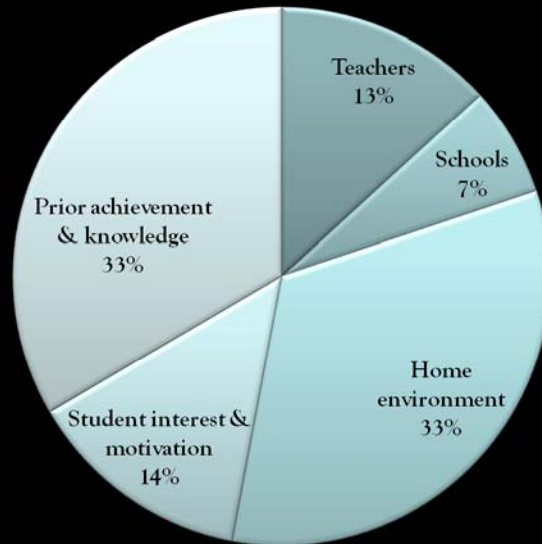
Beginning kindergarteners' school-readiness skills by socioeconomic status (SES)		
School-readiness skill	Lowest SES	Highest SES
Recognizes letters of alphabet	39%	85%
Identifies beginning sounds of words	10%	51%
Counts to twenty	48%	68%
Identifies primary colors	69%	90%
Writes own name	54%	76%
Amount of time read to prior to kindergarten	25 hours	1,000 hours
Accumulated experience with words	13 million	45 million

Source: Neuman, 2003

The good news: Early reading intervention
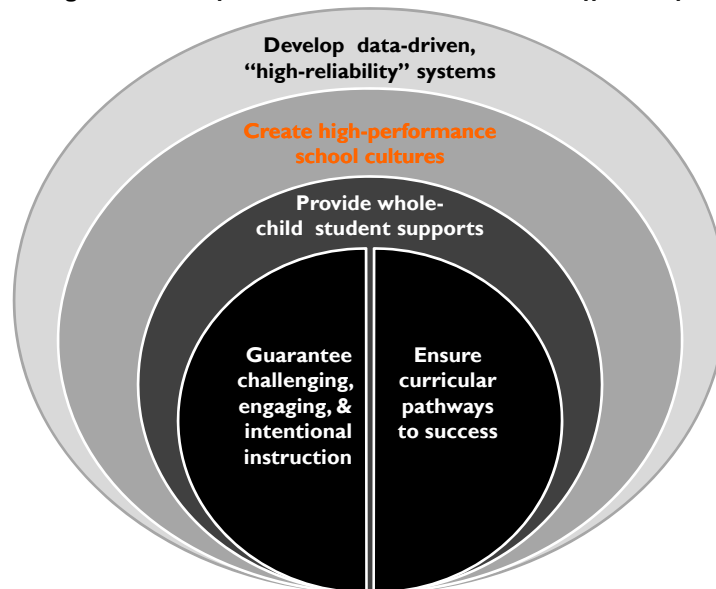
The power of imaginative play

What works in afterschool?

- One-to-one tutoring in reading

- Combining recreation with learning (e.g., field trips, cultural activities, sports)

- Developing student motivation (e.g., students attending classes on a college campus)
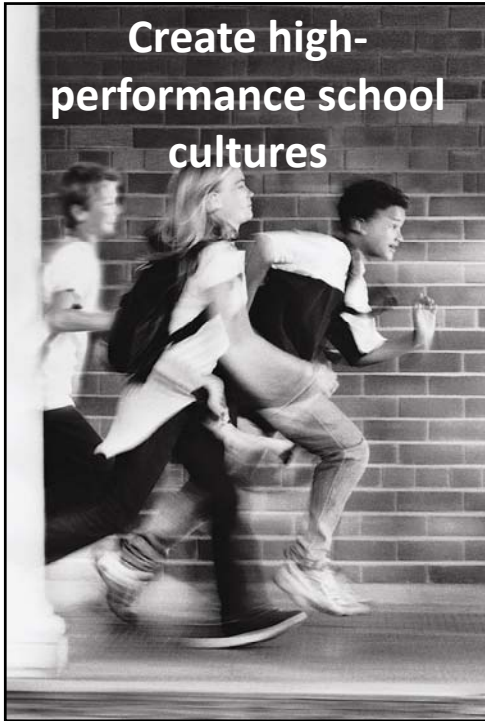

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Create high-performance school cultures

The touchstones

- **Raising instructional quality and reducing variability in the quality of instruction within the school.**

- **Creating a culture of high expectations for academics and behavior.**

Key job of school leaders:
Reduce variability of instructional quality within their schools

Selected school-level influences on student achievement

Strong influence		Moderate influence		Weak influence	
Effect sizes above d = .40		*Effect sizes between d = .20 and .40*		*Effect sizes below d = .20*	
Influence	ES	Influence	ES	Influence	ES
Opportunity to learn (*aligning curriculum to assessments and monitoring its use in classrooms*)[1]	.88	Optimizing instruction time (*maximizing time spent teaching, minimizing distractions*)[1]	.39	Class size (*reducing classes from 25 to 15 students*)[2]	.13
Decreasing disruptive behavior (*programs to address behavior issues*)[2]	.85	Clear and monitored achievement goals[1] (*articulating & monitoring school-wide achievement goals*)	.30	Ability grouping (*tracking students into different classes by ability*)[2]	.12
Leadership (*schools with leaders that receive high teacher ratings on key leadership behaviors*)[3]	.52	Pressure to achieve (*communicating academic success as a primary school goal*)[1]	.27	After-school programs (*out-of-school-time learning experiences, on average*)[4]	.09
School size (*high school size between 600 and 900 students*)[2]	.43	Parental involvement (*involving parents in setting & enforcing policies*)[1]	.26	Cooperation (*encouraging professionalism among teachers*)[1]	.06
		School climate (*clearly articulating and enforcing rules of behavior*)[1]	.22	Multi-age classrooms (*placing students of different ages/grade-levels in the same classroom*)[2]	.04
				Open classrooms (*open classroom architecture and individualized instruction*)[2]	.01

[1] Marzano,(2000). *A New Era of School Reform.* [2] Hattie (2009). *Visible learning:.* [3] Waters, Marzano, McNulty, B.A. (2003). *Balanced leadership.* [4] Lauer, et al. (2004). *The effectiveness of out-of-school-time strategies :A research synthesis*

What's the "secret sauce" of improvement?
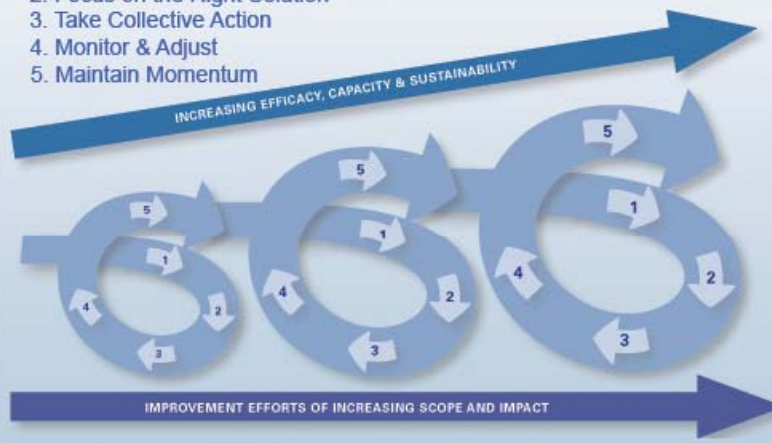
School Culture

We have to think about demoralized schools as if they were **clinically depressed individuals**, people whose emotional state makes every task, even the smallest, seem overwhelmingly difficult ...

Charles Payne
So Much Reform, So Little Change
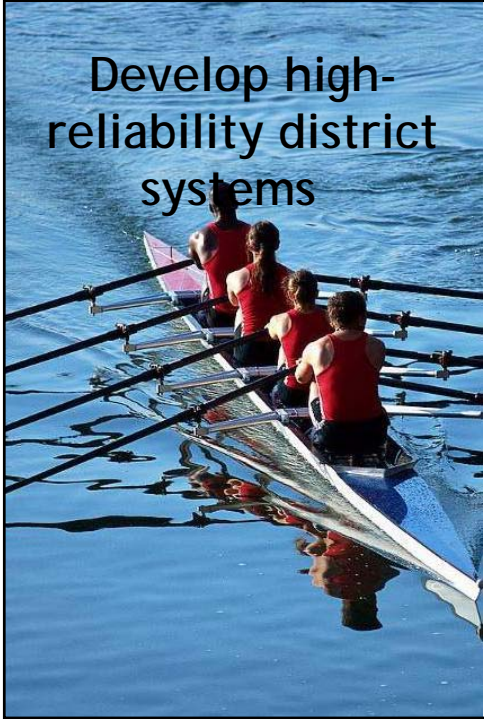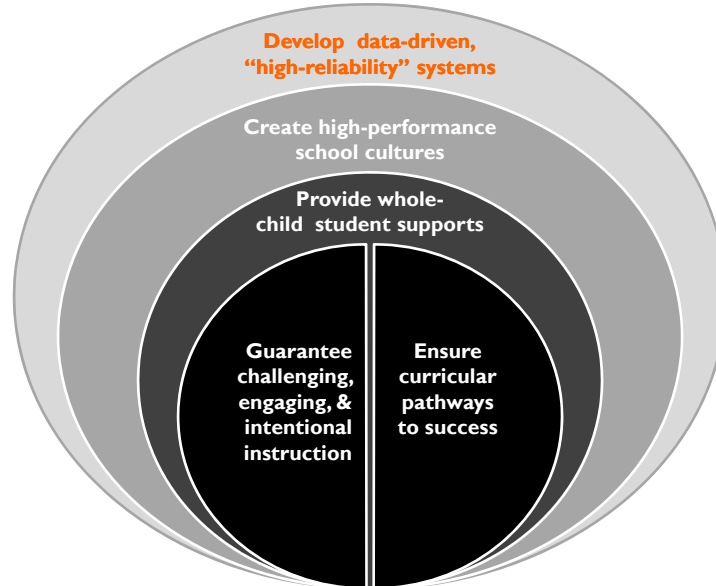

The Process
Success in Sight helps schools identify small improvements that generate quick wins, building to ever larger, more comprehensive school-wide reform efforts. It's a process we call "thinking systemically and acting systematically."

1. Take Stock
2. Focus on the Right Solution
3. Take Collective Action
4. Monitor & Adjust
5. Maintain Momentum

INCREASING EFFICACY, CAPACITY & SUSTAINABILITY

IMPROVEMENT EFFORTS OF INCREASING SCOPE AND IMPACT

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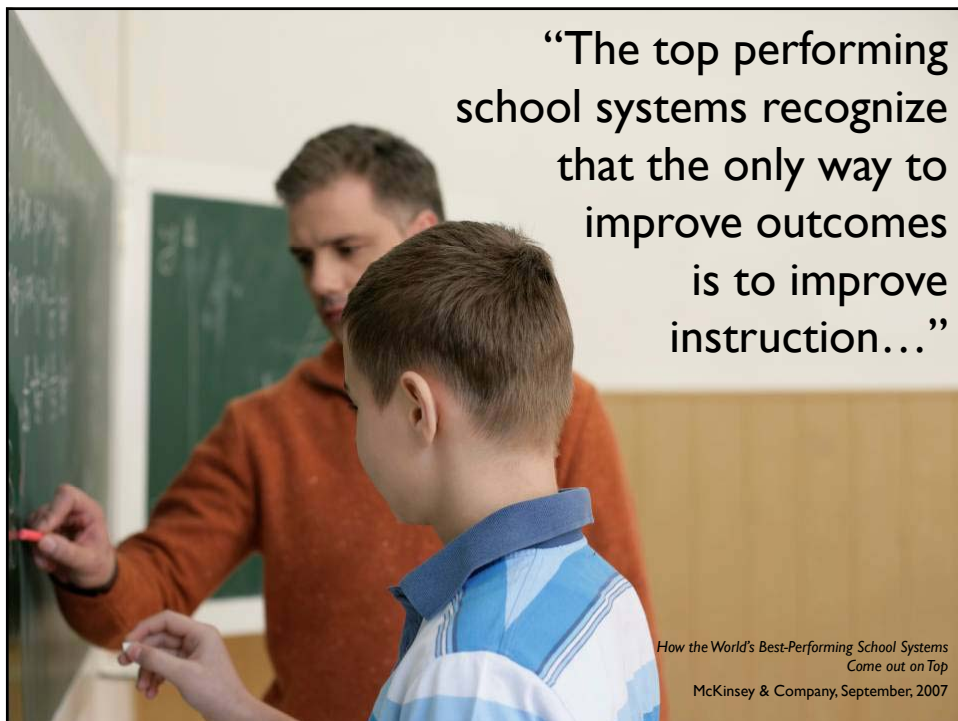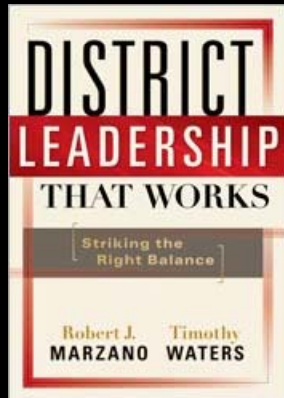
Develop high-reliability district systems

The touchstones

- **Superior execution of "value added" district-level leadership responsibilities.**

- **Translate HRO characteristics into district policy and practice.**

Key job of district leaders: Reduce variability in the quality of instruction between schools

"The top performing school systems recognize that the only way to improve outcomes is to improve instruction…"

How the World's Best-Performing School Systems Come out on Top
McKinsey & Company, September, 2007

6 value-added district-level leadership responsibilities

1. Engaging in collaborative goal-setting
2. Establishing non-negotiable goals for achievement and instruction
3. Ensuring board alignment and support of district goals
4. Monitoring goals for achievement and instruction
5. Using resources to support instruction and achievement goals
6. Define, differentiate, and extend autonomy to schools

HOW MCREL HELPS SCHOOL SYSTEMS

CHANGE THE ODDS

FOR STUDENT SUCCESS

FOCUSING ON

WHAT MATTERS MOST

Focusing on what makes the most difference for students with research & thought partnerships

DELIVERING

WHAT WORKS

Translating research into action through professional development

ANTICIPATING AND CREATING

WHAT'S NEXT

Helping school systems stay ahead of the curve with custom design services

The challenge for educational leaders in Connecticut?

Suspending disbelief about what is possible

- and -

superior execution of existing know-how

For more information

- Visit the McREL Web site
  - www.mcrel.org

- E-mail Tim Waters at:
  - twaters@mcrel.org