Improving Schoolwide Numeracy
NCLB

New era of accountability:
- Schools held to new standards
- Principals expected to be instructional leaders
- Teachers required to reach all students
- Progress evaluated by subgroup score improvement
- Literacy and Numeracy skills taught across the curriculum
For Substantial Change

• Shake up the status-quo
• Hold everyone’s feet to the fire
• Propose new ideas
• Operate from strong beliefs
• Tolerate ambiguity and dissent
• Talk research and theory
• Create explicit goals for change
• Define success in terms of goals

MCREL Meta-Analysis on Leadership
Why Numeracy Matters

Middle Level students 2 or more years behind grade level in math or literacy have only a 50/50 chance of on time promotion to grade 10.

Ninth grade retention is the biggest risk factor for dropping out of high school.

Johns Hopkins University Philadelphia Study
Middle Level Transitions:

Transition to a new school may be MORE difficult for Middle level students:

- 47% felt safe and connected to Elementary school
- 29% feel safe at their current (middle) school
- 52% said parents knew their Elementary teachers
- 24% said parents know their current teachers

MetLife Survey of the American Teacher/Transitions and the role of Supportive Relationships 2005
In Their Own Words: What middle level students like most about their school

- Other students (56% listed #1)
- After School Activities
- Learning new things
- Doing well in class
- Not being at home
- Teachers (5% listed #1)

MetLife Survey of the American Teacher/Transitions and the role of Supportive Relationships 2005
Why Break Ranks?

Who Makes it Through Middle Level?

- **All**: 70%
- **Latino**: 52%
- **African American**: 51%
- **White**: 72%

Why Break Ranks?

A child from a family in the top income quartile is five times more likely to earn a bachelor’s degree by age 24 than a child from the bottom income quartile.
Why Break Ranks?

Only about half of Native American, African-American, and Latino ninth graders graduate from high school within four years, compared to 70% of Asian Americans and 72% of Whites.
Why Break Ranks?

By their late 20’s, more than one-third of Whites have at least a bachelor’s degree, but only 18% of African Americans and 10% of Hispanics have attained degrees.
Why Break Ranks?

Of high school graduates, those from high-income families enter college at rates 25 percentage points higher than those from low-income families.
The Challenge We Face

Eliminating all contributing factors except Mathematics, the higher the level of math course taken in high school, the greater the probability that a student will graduate from college, regardless of subgroup.

Math Matters: the Links Between High School Curriculum, College Graduation, and Earnings
The Education pipeline loses young people at many points along the path.

For every 10 who start H.S.

- Fewer than 7 will get a diploma in 4 years
- 4 will enroll in college the fall semester after graduation
- Fewer than 2 will complete a 2 or 4 year degree within 150% of the required time.
# The Perception of School Leadership

<table>
<thead>
<tr>
<th>Quality</th>
<th>Percent Saying “Excellent”</th>
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<tbody>
<tr>
<td></td>
<td>Principals</td>
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<tr>
<td>Respecting the people in the school</td>
<td>78</td>
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<td>Being approachable</td>
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<td>Being a visible presence throughout the school</td>
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<tr>
<td>Supporting teachers in the school to be the best teachers they can be</td>
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<td>Encouraging students to achieve</td>
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<td>Being a good listener</td>
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<td>Being an overall leader of the school</td>
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<td>Providing opportunities for teachers’ professional development</td>
<td>43</td>
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</tbody>
</table>

“Metropolitan Life Survey of the American Teacher 2003: An Examination of School Leadership.”
ACT: “Reading Between the Lines” March, 2006

1.2 million HS students tested
51% read on college level

Students who MET the Reading Benchmark:
94% met English Benchmark
63% met Math benchmark
47% met Science benchmark
ACT: “Reading Between the Lines”  March, 2006

1.2 million HS students tested
49% did not read on college ready level

Students who did NOT MEET the Reading Benchmark:
41% met English Benchmark
16% met Math benchmark
5% met Science benchmark
ACT: Results

Students reading “on-grade level” are four times more likely to meet the mathematics benchmarks.
‘…and what’s worse, more students are on track to being ready for college-level reading in eighth and tenth grade than are actually ready by the time they reach twelfth grade.’
ACT Subgroup Statistics:

Subgroups Unprepared for College Level Reading (Success predictor)

- Male students
- African American students
- Hispanic American Students
- Native American Students
- Low Income Students
Math Measures Higher Earnings

Because…Students in advanced math classes learn:

🔥 Mathematics skills directly applicable to certain jobs
🔥 Logic and reasoning skills that make them more productive
🔥 The process of “How to Learn” complex tasks

*Math Matters: the Links Between High School Curriculum, College Graduation, and Earnings*
Math Measures Higher Earnings

 Marketable Skills acquired through learning advanced mathematics:

🔥 Complex Learning skills
🔥 Problem Solving Skills in more demanding and higher paid positions.

Math Matters: the Links Between High School Curriculum, College Graduation, and Earnings
Emerging Careers

- Artificial Intelligence Technician
- Automobile Fuel Cell Battery Technician
- Cybrarian
- Image Consultant
- Information Broker
- Medical Diagnostic Imaging Technician
- Neuromarketing

Math and Earnings

Researchers agree that a rigorous math curriculum at any school can benefit students in any subgroup.

*Math Matters: the Links Between High School Curriculum, College Graduation, and Earnings*
Advanced Math and High Level Cognition

70% of Middle Level Students will be working at jobs “not yet invented”
Sophomore Life Values

12 Survey Items,

80% or more of High School Sophomores rated 3 Top Items as Most Important:

🔥 Being successful in Work
🔥 Finding Steady Work
🔥 Having Strong Friendships

Sophomore Educational Aspirations:

High School Sophomores Wanting a 4 year college degree:
- 41% in 1980 to 80% in 2002

Sophomore parents who thought college was most important:
- 59% of fathers in 1980 to 79% in 2002
- 65% of mothers in 1980 to 85% in 2002

Why Support a Culture of Numeracy?

Even as some students are achieving less, the economy is demanding more from them.

Jobs requiring a college degree are the fastest-growing sector of the economy.

Over a lifetime, a college graduate will earn nearly $1 million more than a high school dropout.
Connect the Dots...

More parents and students want post secondary education opportunities
More advanced Mathematics courses ensure successful college completion
More advanced mathematics courses mean substantial employment, higher pay.
More Than 2/3 of New Jobs Require Some Post-Secondary Education

- No HS Diploma: 10%
- HS Diploma: 22%
- Bachelor’s Degree: 31%
- Some Post-Secondary Education: 31%

Achieve, Inc. (2005)
Thank you