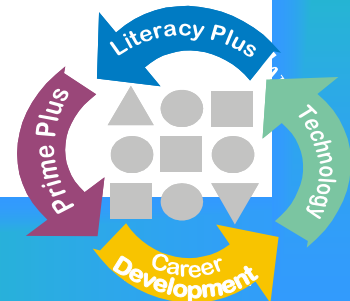


Measuring School and Classroom Levels of Implementation

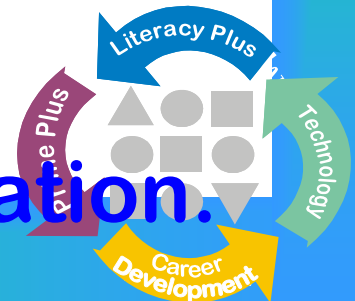
Diane Briars, Ph.D.
Pittsburgh Public Schools



Leadership Institute for Systemic Initiatives, November 3-6, 2005

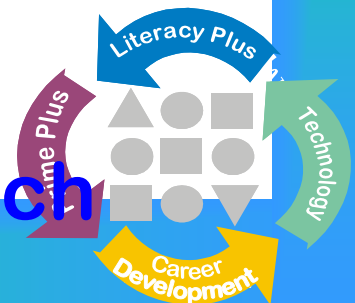
Session Goals

1. Present one approach to measuring schools and classroom levels of program implementation;
2. Highlight how this information is being used to support systemic improvement in mathematics and science instruction;
3. Discuss other approaches to measuring program implementation.



Pittsburgh Public Schools

- 35,000 students
- 85 schools
 - 52 elementary
 - 17 middle
 - 10 high schools
 - 6 other schools
- 58.2% African American; 39.6% White; 2.2% Asian, Hispanic or Native American
- 62.2 % Free or Reduced Price Lunch



PRIME-PLUS Theory of Action

Increase the quality of mathematics and science instruction for all students by:

- Implementing standards-based, research-based instructional materials in all K-12 classrooms;
- Preparing and supporting all teachers to implement these materials as intended;
- Preparing and supporting all administrators to expect and recognize high quality, standards-based instruction;
- Inform the larger community—parents, CBOs, FBOs—so they can support standards-based programs.

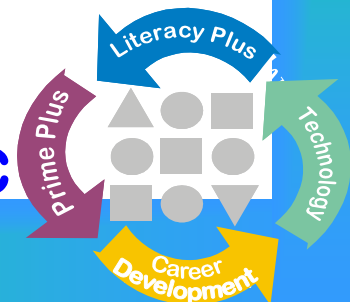


Evaluation Model

1. Assessing student achievement*
2. Assessing classroom impact**
3. Assessing school and district change**
4. Assessing program quality**

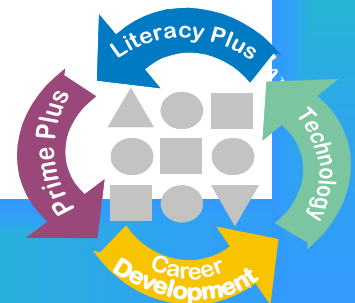
*PPS internal evaluation

**External evaluation: Dr. Barbara Miller, EDC



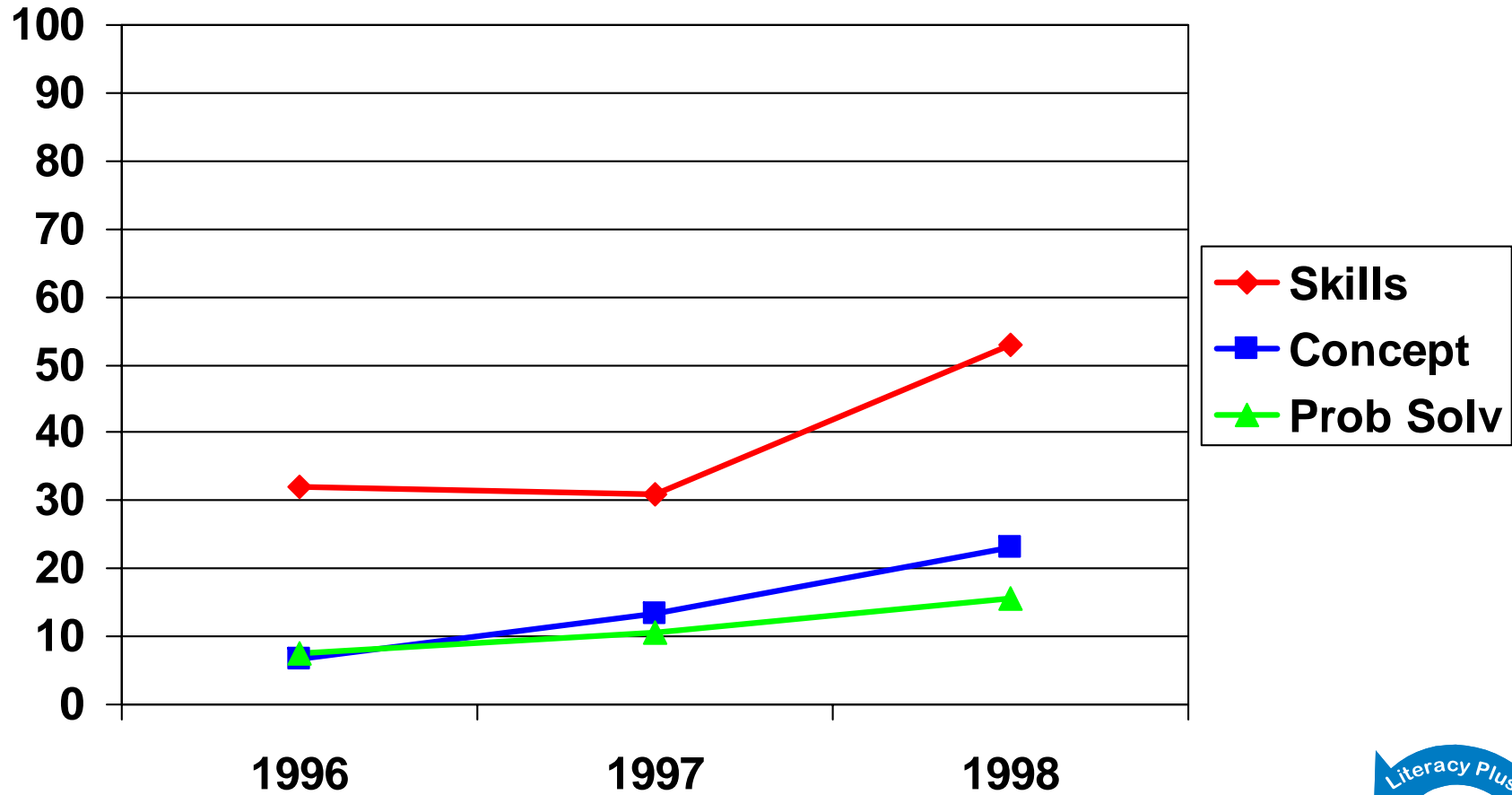
1998 “Program Evaluation”

- “Is Everyday Math working?”
- District-wide student achievement results
- Link results to program

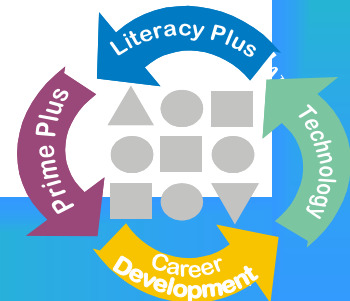


GRADE 4 NSMRE RESULTS

% of Students Who Met or Exceeded the Standard



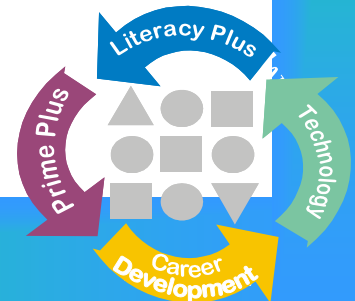
1996 & 1997 cohorts had traditional curriculum, K-4
1998-2002 cohorts had Everyday Math, K-4



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Implementation Measures?

What would you use as measures of program implementation?



School Level of Implementation

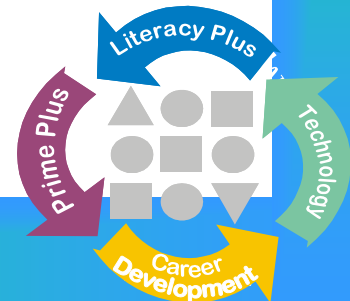
Strong Implementation

All grade 3 (1996-97) and grade 4 (1997-98) teachers used materials as intended:

All components
Student-centered instruction

Weak Implementation

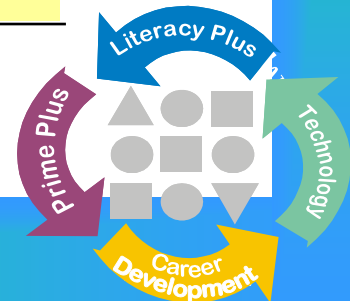
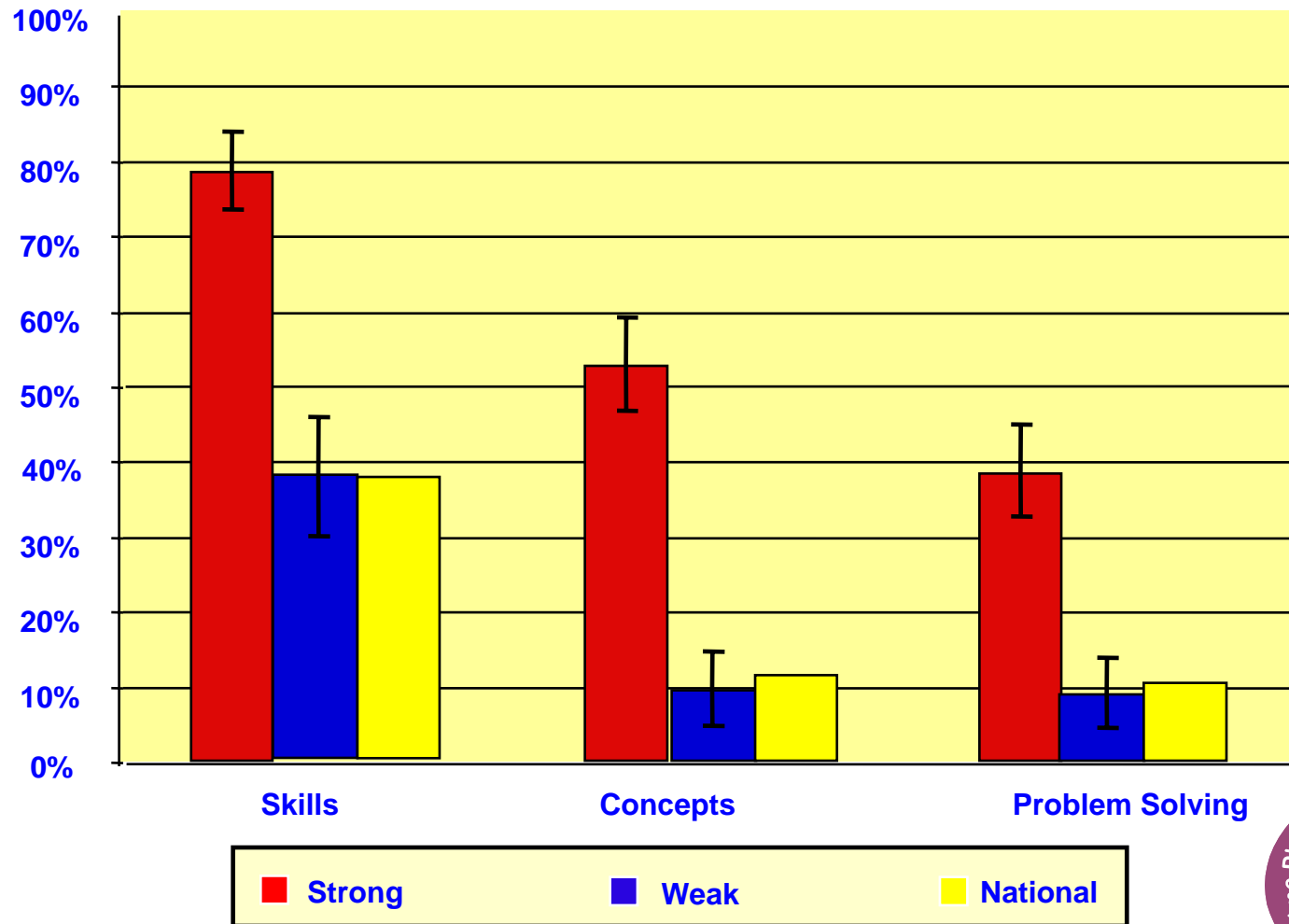
Few teachers used materials; most continued with what they had done before.



NSMRE Grade 4 1998 Results By Level of Mathematics Program Implementation

Percentage of Students Who Achieved the Standard

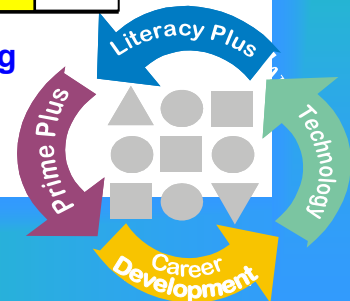
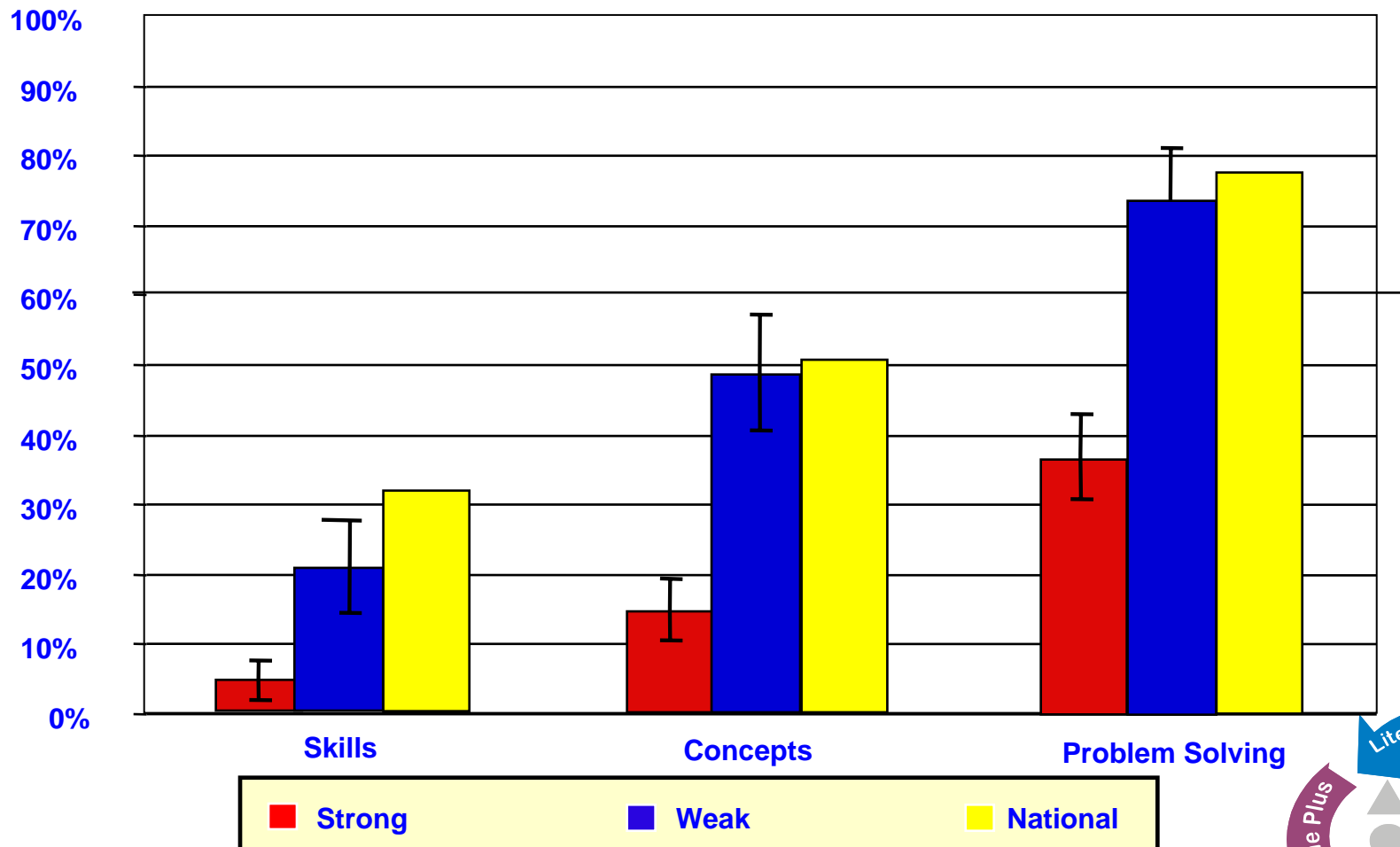
Error bars denote the 99% confidence interval for each data point.



NSMRE Grade 4 1998 Results By Level of Mathematics Program Implementation

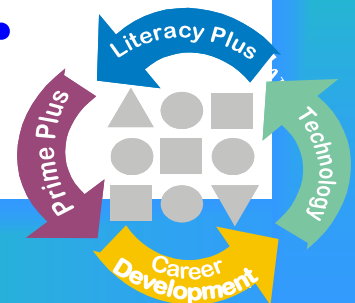
(d) Percentage of Students Who Scored **Well Below** the Standard

Error bars denote the 99% confidence interval for each data point.



Goal

To support *all teachers* in implementing our standards-based mathematics and science curricula *as intended*.



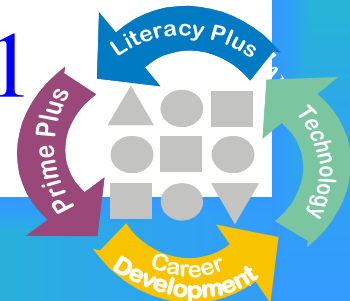
How Many Students Will Experience a K-5 Standards-Based Program?

K 1 2 3 4 5

Ms. A Ms. C Mr. E Ms. G Ms. I Ms. K

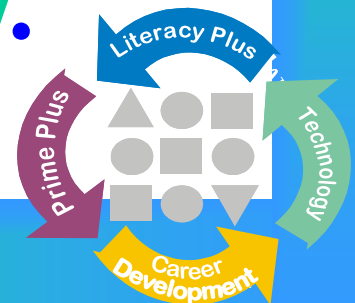
Ms. B Mr. D Ms. F Ms. H Mr. J Ms. L

64 32 16 8 4 2 1
Students

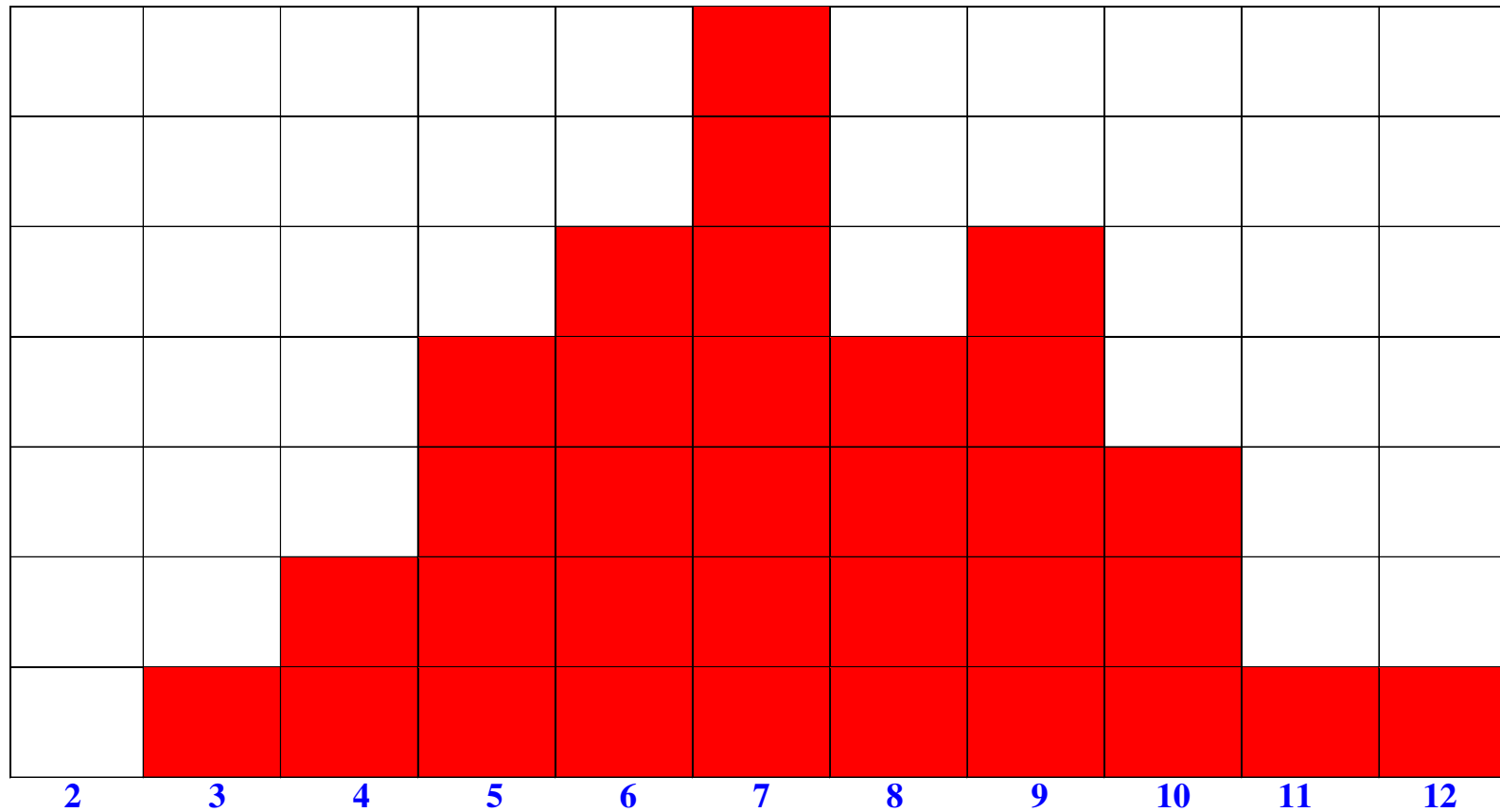


Goal

To support *all teachers* in implementing our standards-based mathematics and science programs *as intended*.



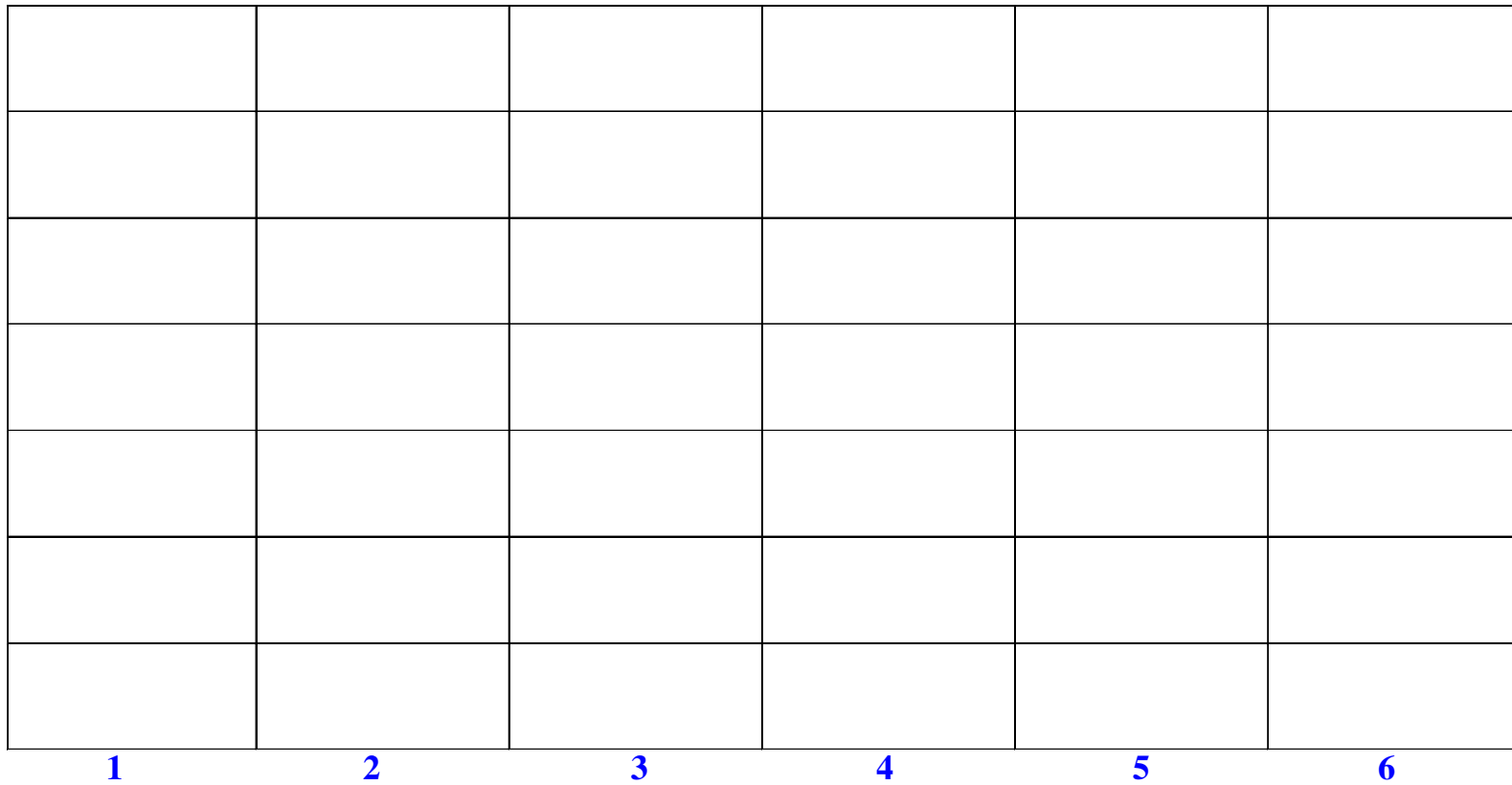
Graphing Dice Throws



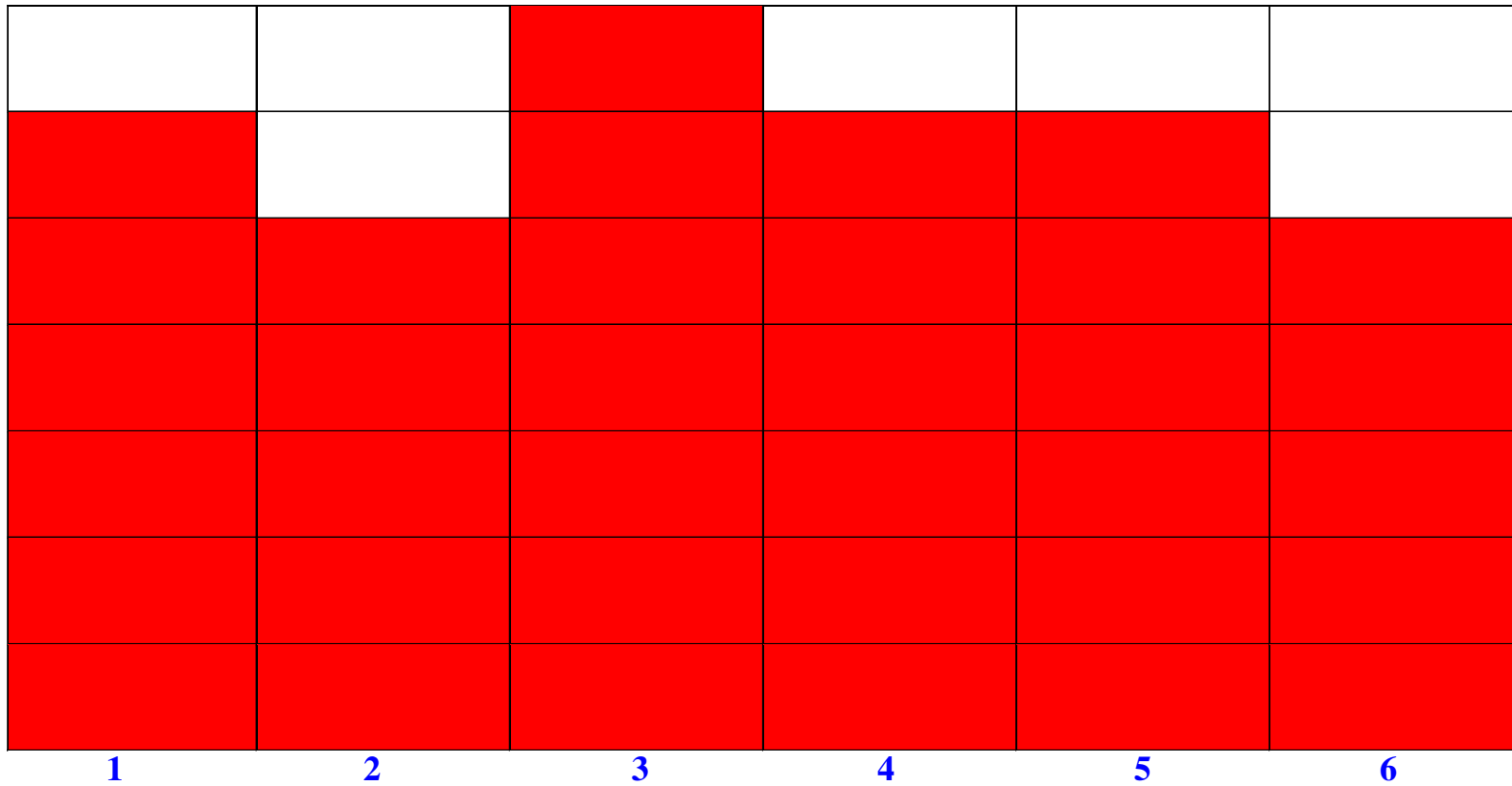
Graphing Dice Throws

“My children are “low level”, so I do the activity using 1 die.”

Graphing Dice Throws

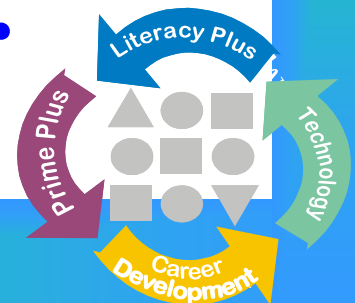


Graphing Dice Throws



Goal

To support *all teachers* in implementing our standards-based mathematics and science curricula *as intended*.



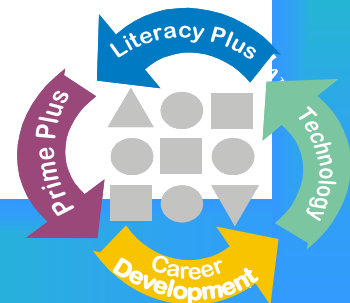
External Evaluation Goals include:

Assessing classroom impact

- Level of teacher curriculum implementation
- Status of elementary mathematics and science specialists and their level of curriculum implementation.

Assessing district impact

- Level of school implementation



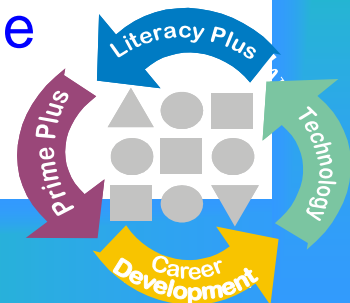
Level of Curriculum Implementation

Goals:

- distinguishing quality of implementation from quantity of implementation
- distinguishing between weak, moderate and strong implementation
- working from a shared understanding of curriculum use “as intended”

Instrument Design:

- The time teachers spend teaching the designated curriculum
- The extent to which teachers use, “as intended”, the instructional model associated with the curriculum

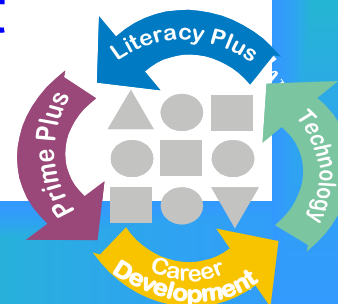


Time Spent Teaching Curriculum

1a. Amount of time spent teaching math/science

Use this coding scheme to rate science instruction time
OR math instruction time:

- 0 does not teach science or math (although s/he should)
- 1 teaches less science or math than district recommends
- 2 follows district recommendations
- 3 teaches more science or math than district recommends

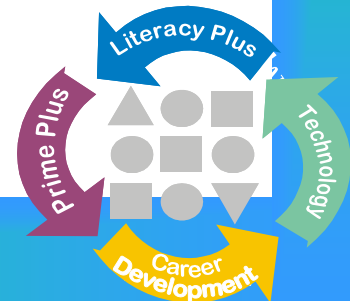


Time Spent Teaching Curriculum

1b. Amount of time spent teaching designated curriculum

Use the following 1 to 5 scale:

- 1 less than 20% of the time
- 2 20-39% of the time
- 3 40-59% of the time
- 4 60-79% of the time
- 5 80-100% of the time



Use Instructional Model “As Intended”

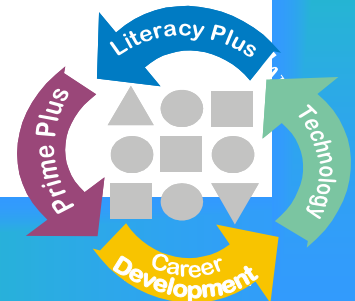
Instructional Model

Elementary Science:

engage, explore, explain, elaborate,
evaluate

Middle School Math:

launch, explore, summarize

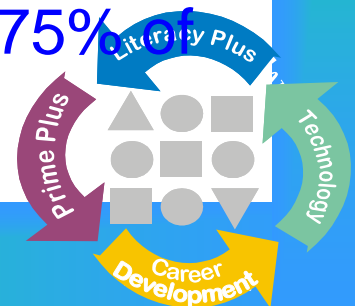


Use Instructional Model “As Intended”

2a. Fidelity to Instructional Model

Use the following 1 to 5 scale:

- 1 doesn't use instructional model (IM) or uses it very infrequently
- 2 uses IM “as intended” occasionally or only uses a single aspect of IM
- 3 uses IM “as intended” at least 50% of the time
- 4 uses IM “as intended” faithfully (at least 75% of the time)
- 5 uses IM “as intended” consistently (more than 75% of the time)

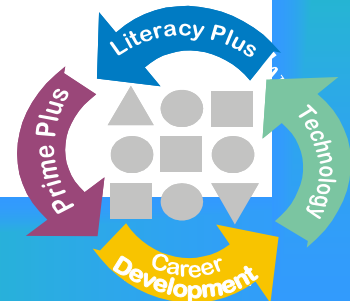


Use Instructional Model “As Intended”

2b. Effectiveness of Instructional Model

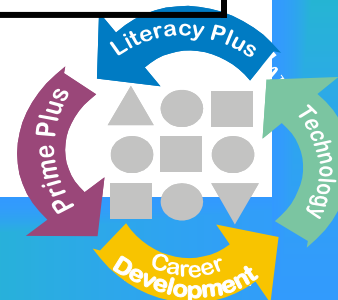
Use the following 1 to 5 scale:

- 1 doesn't use instructional model (IM)
- 2 uses IM mechanically or with very limited skill
- 3 uses IM with some confidence and skill
- 4 uses IM effectively but with some room for improvement
- 5 uses IM proficiently



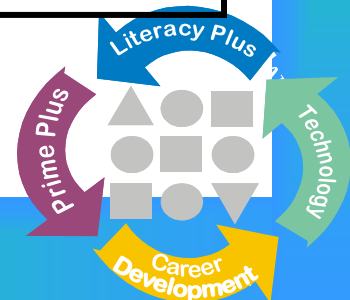
Level of Curriculum Implementation Rating Elementary Mathematics

X if known directl y	Teacher	Grad e	1a. Math Time	1b. Everyday Math Time	2a. Fidelity to IM	2b. Effectiveness



Level of Curriculum Implementation Rating Elementary Science

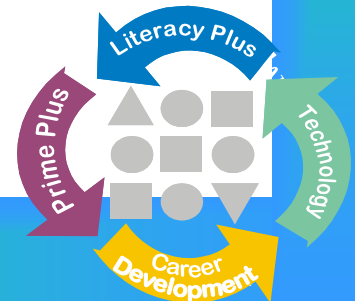
X if known directl y	Teacher	Grad e	1a. Science Time	1b. FOSS Time	2a. Fidelity to IM	2b. Effectiveness



Tchr	Grade(s) taught	1a. Math Time 0-3	1b. Everyday Math Time 1-5	2a. Fidelity to IM 1-5	2b. Effectiveness 1-5
A	0 K	2	4	3	2
B	0 K	2	4	4	3
C	0 K	2	5	4	4
D	1	1	5	4	4
E	1	1	4	4	4
F	1	1	4	4	3
G	2	1	5	4	4
H	2	1	5	5	4
I	2	1	5	5	4
J	3	3	2	2	2
K	3	2	5	5	4
L	4	3	5	5	5
M	4	3	5	5	4
N	4	3	5	4	3
O	5	3	5	5	4
P	5	3	4	3	3
Q	5	3	5	5	4

Decision Rules: Teacher Implementation

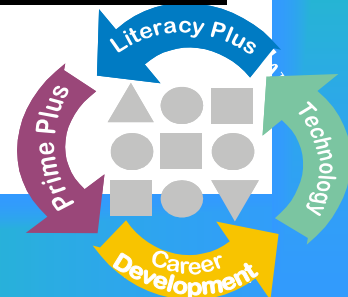
- Strong implementer
- Medium implementer
- Weak implementer



Tchr	Grade(s) taught	1a. Math Time 0-3	1b. Everyday Math Time 1-5	2a. Fidelity to IM 1-5	2b. Effectiveness 1-5
A	0 K	2	4	3	2
B	0 K	2	4	4	3
C	0 K	2	5	4	4
D	1	1	5	4	4
E	1	1	4	4	4
F	1	1	4	4	3
G	2	1	5	4	4
H	2	1	5	5	4
I	2	1	5	5	4
J	3	3	2	2	2
K	3	2	5	5	4
L	4	3	5	5	5
M	4	3	5	5	4
N	4	3	5	4	3
O	5	3	5	5	4
P	5	3	4	3	3
Q	5	3	5	5	4

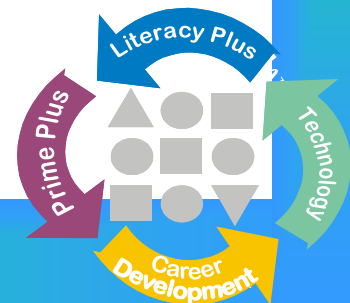
Decision Rules: Level of Teacher Curriculum Implementation

Level of Imp.	1a. Math Time	1b. Everyday Math Time	2a. Fidelity to IM	2b. Effectiveness
Weak	1-3	1 or 2	1 or 2	1 or 2
Strong	2 or 3	5	5	4 or 5
Medium	Not	Strong	Or	Weak



Tchr	Grade(s) taught	1a. Math Time 0-3	1b. Everyday Math Time 1-5	2a. Fidelity to IM 1-5	2b. Effectiveness 1-5	Level
A	0 K	2	4	3	2	M
B	0 K	2	4	4	3	M
C	0 K	2	5	4	4	M
D	1	1	5	4	4	M
E	1	1	4	4	4	M
F	1	1	4	4	3	M
G	2	1	5	4	4	M
H	2	1	5	5	4	M
I	2	1	5	5	4	M
J	3	3	2	2	2	L
K	3	2	5	5	4	S
L	4	3	5	5	5	S
M	4	3	5	5	4	S
N	4	3	5	4	3	M
O	5	3	5	5	4	S
P	5	3	4	3	3	M
Q	5	3	5	5	4	S

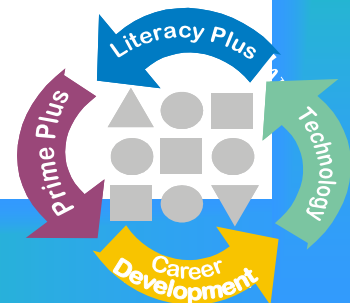
Level of Implementation of this School?



Tchr	Grade(s) taught	1a. Math Time 0-3	1b. Everyday Math Time 1-5	2a. Fidelity to IM 1-5	2b. Effectiveness 1-5	Level
A	0 K	2	4	3	2	M
B	0 K	2	4	4	3	M
C	0 K	2	5	4	4	M
D	1	1	5	4	4	M
E	1	1	4	4	4	M
F	1	1	4	4	3	M
G	2	1	5	4	4	M
H	2	1	5	5	4	M
I	2	1	5	5	4	M
J	3	3	2	2	2	L
K	3	2	5	5	4	S
L	4	3	5	5	5	S
M	4	3	5	5	4	S
N	4	3	5	4	3	M
O	5	3	5	5	4	S
P	5	3	4	3	3	M
Q	5	3	5	5	4	S

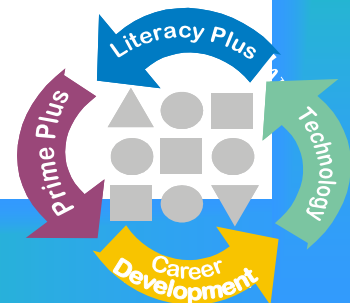
Decision Rules: Level of School Curriculum Implementation

- ***Weak Implementation Schools*** have a majority (>50%) of teachers rated as weak implementers.
- ***Strong Implementation Schools*** have a majority of teachers (>50%) rated as strong implementers.
- ***Medium Implementation Schools*** are those rated neither strong nor weak.



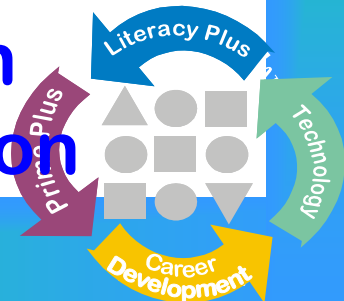
Uses of these ratings

- Indicators of progress in district-wide program implementation.
- Identifies strengths/weaknesses in various schools and in schools overall.
- Information to inform policy decisions, e.g., elementary math and science specialists.
- Evaluation of curricular effectiveness (????)



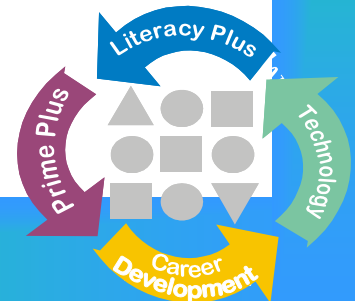
Limitations

- Resource Teachers rate implementation
 - Work consistently in schools
 - Bias
 - Inter-rater reliability.
- School level ratings
 - Don't differentiate grades at which there is strong/weak implementation



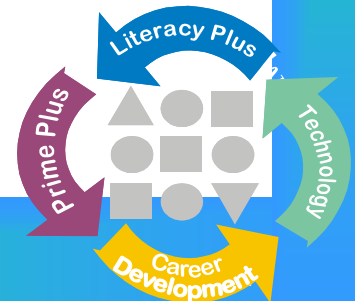
Other Disaggregations: Attendance and Mobility

- Same school and $\geq 95\%$ attendance.
(Stable students)
- Same school, $< 95\%$ attendance.
- Mobile (more than one school) with $\geq 95\%$ attendance.
- Mobile, $< 95\%$ attendance.



NSMRE Performance Levels

- Achieved the Standard with Honors
- Achieved the Standard
- Nearly Achieved the Standard
- Below the Standard
- Little Evidence of Achievement



Results for Stable Attenders

Grade 10 NSMRE Skills

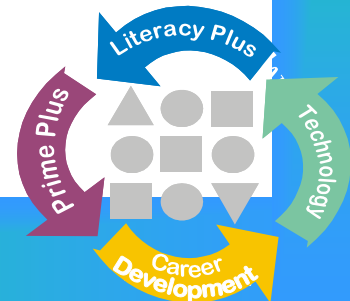
All students, including PSE

	<u>All</u>	<u>White</u>	<u>AA</u>
# of students	1026	604	400
% of test takers	59%	70%	49%
% Met or Exceed Standard	51%	66%	27%
% Below	31%	21%	47%
% Little Evidence	8%	5%	13%

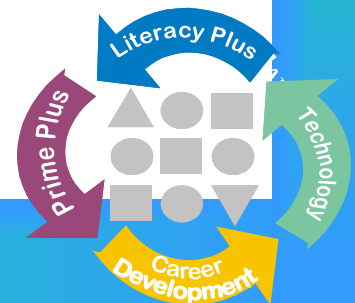


Next Steps

- ❖ Continue to refine use of implementation ratings to inform our work.
- ❖ Collaborate with external evaluators developing school effectiveness indices to investigate the relationship between school effectiveness and school curriculum implementation.
- ❖ Work with teachers and administrators to address the SES and racial achievement gaps in students' math and science performance.



Thank You.



Leadership Institute for Systemic Initiatives, November 3-6, 2005