Math Observations

Table 1: Total number of observations

Teacher Group	Number of Teachers	Number of Observations	Percent Observed	Margin of Error (95% Confidence Level)
Elementary Teachers	935	265	28%	5.1%
Middle School Teachers	93	69	74%	6.0%
High School Teachers	88	64	73%	6.4%

Table 2: Part of Class Observed

	Elementary (n=265)	Middle School (n=69)	High School (n=64)
Beginning of class	65%	81%	55%
Middle of class	29%	9%	27%
End of class	7%	10%	19%

Table 3: Seating Arrangement

	Elementary (n=265)	Middle School (n=69)	High School (n=64)
Rows	6%	30%	45%
Pairs	20%	36%	20%
Groups	63%	51%	34%
Horseshoe	6%	1%	5%
Sitting on floor	73%	4%	3%
Other	2%	3%	3%

Table 4: Amount of Time to Review Homework

	Elementary (n=265)	Middle School (n=69)	High School (n=64)
Less than 5 minutes	Less than 1%	15%	6%
5-10 minutes	2%	16%	2%
10-15 minutes	Less than 1%	1%	5%
Greater than 15 minutes	Less than 1%	3%	11%
Not observed	97%	65%	75%

Table 5: Lesson Objective

	Elementary (n=265)	Middle School (n=69)	High School (n=64)
Teacher or students state the objective verbally	18%	32%	27%
Objective is written	27%	52%	47%
No clearly posted objectives	62%	36%	42%

Table 6: Lesson Objective Aligned to Curriculum

	Elementary (n=265)	Middle School (n=69)	High School (n=64)
The objective is aligned with the curriculum	99%	91%	98%
Objectives have no connection to the curriculum- there are objectives for class but they are not related to the curriculum	0%	0%	0%
Unsure	1%	9%	2%

Table 7: New learning was connected to previous learning

	Elementary (n=265)	Middle School (n=69)	High School (n=64)
Exemplary	37%	45%	39%
Acceptable	56%	41%	52%
Inadequate	5%	15%	8%
Nonexistent	2%	0%	2%

Table 8: The mathematical content presented by the teacher was accurate

	Elementary (n=265)	Middle School (n=69)	High School (n=64)
Exemplary	97%	90%	83%
Acceptable	3%	9%	14%
Inadequate	Less than 1%	1%	3%
Nonexistent	0%	0%	0%

Table 9: Teacher used precise and accurate mathematical language and vocabulary appropriate to the grade level

	Elementary (n=265)	Middle School (n=69)	High School (n=64)
Exemplary	68%	94%	86%
Acceptable	30%	6%	14%
Inadequate	2%	0%	0%
Nonexistent	0%	0%	0%

Table 10 : Students used precise and accurate mathematical language and vocabulary appropriate to the grade level to explain their thinking

	Elementary (n=265)	Middle School (n=69)	High School (n=64)
Exemplary	24%	32%	13%
Acceptable	49%	41%	44%
Inadequate	20%	23%	28%
Nonexistent	6%	4%	16%

Table 11: Teacher uses questioning strategies

	Elementary (n=265)	Middle School (n=69)	High School (n=64)
Exemplary	36%	26%	8%
Acceptable	42%	45%	52%
Inadequate	19%	28%	30%
Nonexistent	3%	1%	11%

Table 12: Teacher provides wait time

	Elementary (n=265)	Middle School (n=69)	High School (n=64)
Exemplary	37%	26%	16%
Acceptable	40%	39%	36%
Inadequate	15%	30%	19%
Nonexistent	8%	4%	30%

Table 13: Instructional Structures Included in the Lesson

	Elementary (n=265)	Middle School (n=69)	High School (n=64)
Inquiry-based or discovery learning	11%	39%	23%
Lecture	3%	4%	22%
Guided practice	56%	65%	84%
Guided discussion	32%	49%	50%
Pair or Group work	50%	46%	31%
Mini lesson	46%	28%	22%
Independent Practice	29%	29%	23%
Number sense routines	45%	9%	23%
Learning stations	29%	12%	3%
Cooperative Learning	33%	23%	30%
Hands on/Experiments/Labs	23%	20%	5%
Directions/Instructions	61%	80%	64%
Self-Evaluation	3%	3%	0%

Reflection	2%	1%	0%
Independent Seatwork	41%	58%	59%
Summarizing	13%	9%	9%
Formative assessment	9%	6%	2%
Problems in context	18%	22%	28%
Closure	2%	4%	0%

Table 14: Cognitive Complexity of Task/Assignment

	Elementary (n=265)	Middle School (n=69)	High School (n=64)
Remember	100%	99%	100%
Understand	97%	100%	100%
Apply	66%	88%	95%
Analyze	15%	49%	55%
Evaluate	2%	15%	28%
Create	2%	9%	0%

Table 15: Cognitive complexity Demonstrated by the Student

	Elementary (n=265)	Middle School (n=69)	High School (n=64)
Remember	100%	100%	100%
Understand	96%	97%	100%
Apply	59%	84%	92%
Analyze	12%	39%	33%
Evaluate	2%	16%	22%
Create	1%	6%	0%

Table 16: Problem-solving Behaviors Demonstrated by Students

	Elementary (n=265)	Middle School (n=69)	High School (n=64)
Collaborate with others	51%	45%	53%
Use varied/appropriate strategies	47%	28%	22%
Construct and discover ideas	27%	19%	3%
Make multiple attempts, if needed	64%	68%	92%
None	10%	6%	3%

Table 17: Mathematics Communication Behaviors Demonstrated by Students

	Elementary (n=265)	Middle School (n=69)	High School (n=64)
Turn and Talk	26%	25%	28%
Explain their thinking	66%	59%	41%
Repeat/Rephrase another student	13%	4%	5%
Ask for clarification	24%	25%	56%
Add on to others	26%	16%	9%
Agree/Disagree and state why	21%	22%	14%
Share/Discuss approaches or ways to solve problem	20%	29%	23%
None	12%	10%	8%

Table 18: Representations Utilized by Students to Demonstrate their Thinking

	Elementary (n=265)	Middle School (n=69)	High School (n=64)
Numbers and/or symbols	80%	94%	100%
Drawing or picture	56%	46%	45%
Concrete material	48%	20%	11%
Digital manipulatives	9%	9%	6%
Tables, chart, and/or graph	15%	17%	13%
None	Less than 1%	0%	0%

Table 19: Mathematics Communication

	Elementary (n=265)	Middle School (n=69)	High School (n=64)
Primarily teacher-to-student	63%	78%	80%
Primarily student-to-student	2%	0%	5%
A balanced mix of teacher-to-student	36%	22%	25%

Table 20: Additional Teacher or Assistant

	Elementary (n=265)	Middle School (n=69)	High School (n=64)
No	45%	71%	69%
Yes: Teacher	17%	4%	6%
Yes: Teaching Assistant	28%	22%	27%
Yes: Unsure	12%	3%	2%

Table 21: Co-teaching Model Observed When an Additional Teacher or Assistant is Present in the Class

	Elementary		Middle School		High School	
	Teacher (n=45)	Assistant (n=75)	Teacher (n=Less than 5)*	Assistant (n=15)	Teacher (n=Less than 5)*	Assistant (n=17)
Alternative teaching	0%	3%		0%		0%
One teach, one assist	24%	49%		73%		88%
One teach, one observe	2%	9%		0%		6%
Parallel teaching	27%	15%		13%		0%
Station Teaching	29%	20%		0%		6%
Team teaching	36%	4%		0%		0%
No observable model	0%	8%		13%		0%

* Responses are calculated from observations where an observer clearly identified a teacher or an assistant.

Table 22:Type of Technology Used by Students

	Elementary (n=265)	Middle School (n=69)	High School (n=64)
None	57%	13%	11%
ipad	34%	48%	5%
Calculator/graphing calculator	Less than 1%	58%	72%
Laptop	2%	7%	28%
Interactive projection device	6%	7%	3%
Non-interactive projection device	2%	6%	0%
Other	1%	3%	6%

Table 23: Type of Technology Used by Teachers

	Elementary (n=265)	Middle School (n=69)	High School (n=64)
None	42%	16%	3%
ipad	Less than 1%	4%	3%
Calculator/graphing calculator	0%	3%	5%
Laptop	19%	10%	3%
Interactive projection device	23%	67%	78%
Non-interactive projection device	34%	12%	2%
Other	Less than 1%	7%	5%

Table 24: Technology is clearly connected to the lesson's objective

	Elementary (n=265/105*)	Middle School (n=69/58*)	High School (n=64/54*)
Yes	94%	100%	94%
No	6%	0%	6%
Unable to observe	2%	1%	2%
N/A	58%	15%	14%

*Response rates for Yes and No are calculated after the removal of N/A and Unable to observe responses

Table 25: Technology provides teachers with record of student's performance

	Elementary (n=265/45*)	Middle School (n=69/43*)	High School (n=64/50)
Yes	69%	35%	24%
No	24%	65%	76%
Unable to observe	25%	25%	6%
N/A	58%	13%	16%

*Response rates for Yes and No are calculated after the removal of N/A and Unable to observe responses

Table 26: Students are on task while using technology

	Elementary (n=265/108*)	Middle School (n=69/58*)	High School (n=64/52)
Yes	100%	97%	90%
No	0%	3%	10%
Unable to observe	1%	1%	2%
N/A	58%	15%	17%

*Response rates for Yes and No are calculated after the removal of N/A and Unable to observe responses

Table 27: Utilization of Technology

	Elementary (n=265/109*)	Middle School (n=69/59*)	High School (n=64/52*)
Substitute	30%	39%	54%
Augment	66%	61%	44%
Modify	3%	0%	0%
Redefine	1%	0%	2%
Unable to observe	0%	0%	2%
N/A	59%	15%	17%

*Response rates for Yes and No are calculated after the removal of N/A and Unable to observe responses