

Teacher Analysis of Interim Assessment Results in Elementary Mathematics: A Two-District Study

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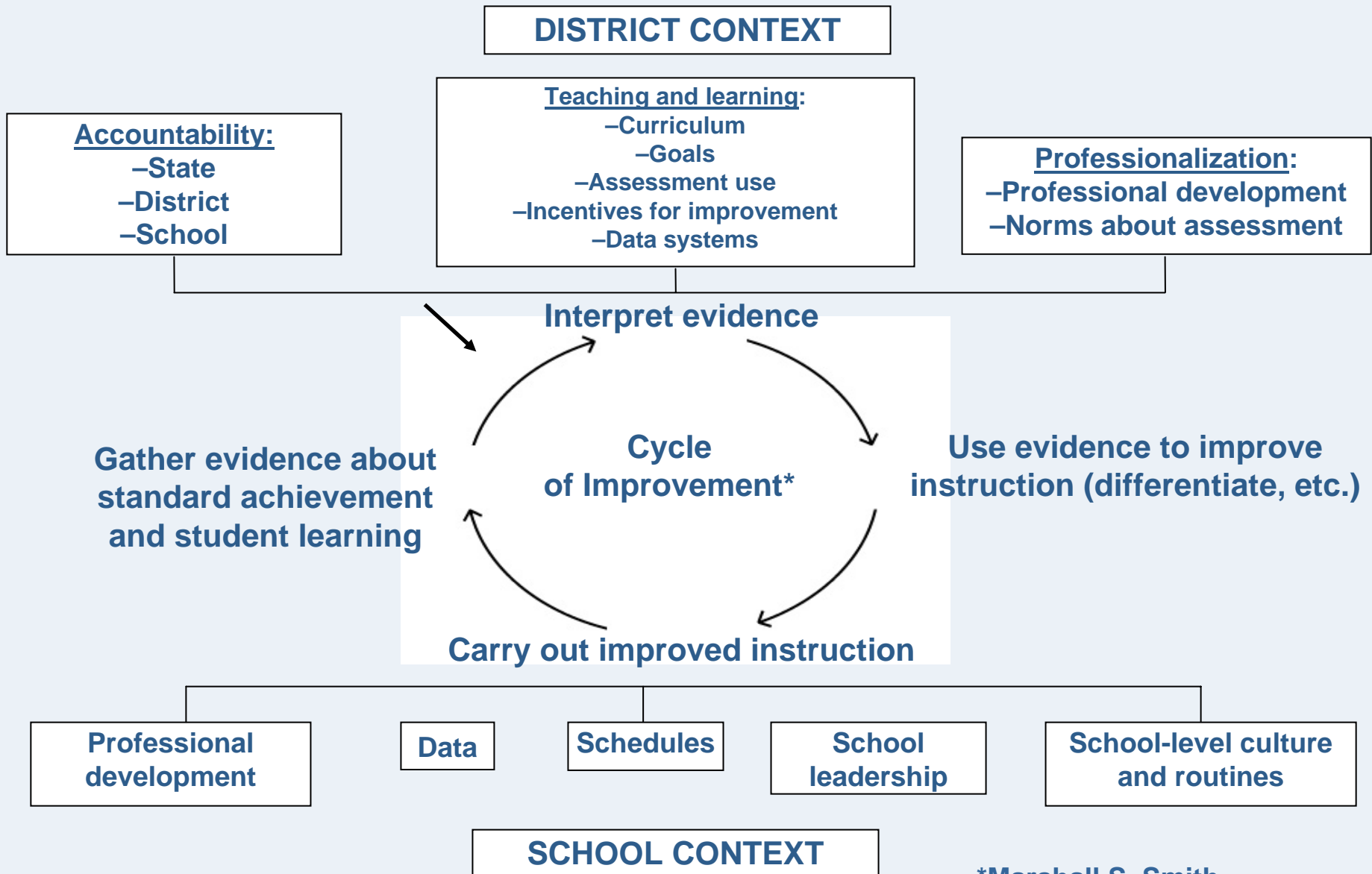
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Cycle of Instructional Improvement



*Marshall S. Smith,
Hewlett Foundation, 2004

Background

Urban	Suburban
6 schools	3 schools
30 teachers	16 teachers
<i>Everyday Mathematics</i>	<i>Everyday Mathematics</i>
TPR assessments <ul style="list-style-type: none">•20-item multiple choice•6-week cycle	District assessments <ul style="list-style-type: none">•Multiple choice and open-ended items•Cycle tied to curriculum

District supports

- **Dedicated time for re-teaching**
- **IMS**
- **PD for the IMS**
- **PD for mathematics instruction**
- **School-based instructional coaches**
- **Data analysis protocol
(urban district only)**

Teacher data sources

- **3 interviews per teacher (Fall, Winter, & Spring)**
 - Data scenario
 - Data report
 - Misconception scenarios
- **3 classroom observations**
- **Mathematics Knowledge for Teaching (CKT-M) score**

Figure 1: Standardized CKT-M Score by District (n=32)

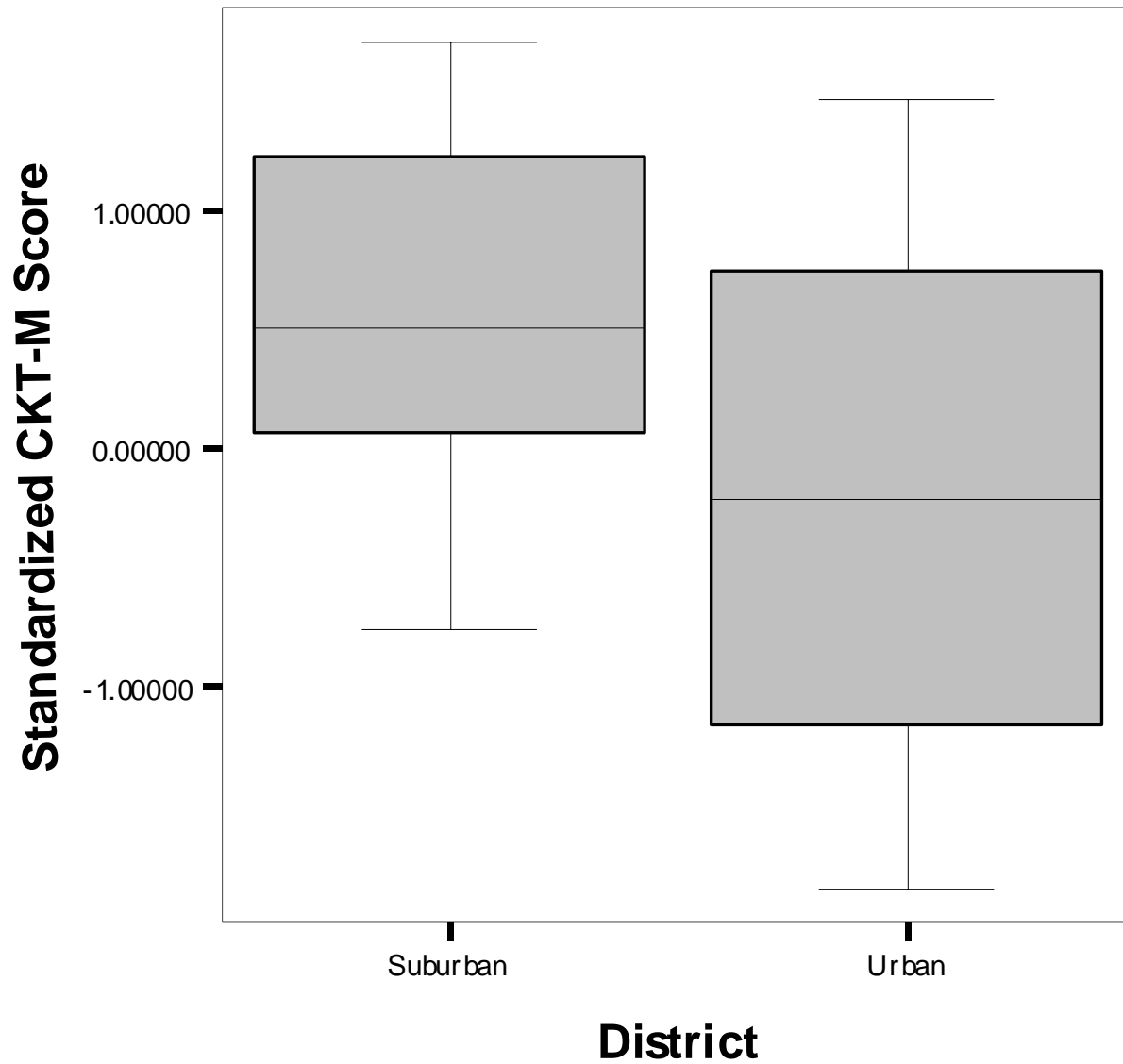
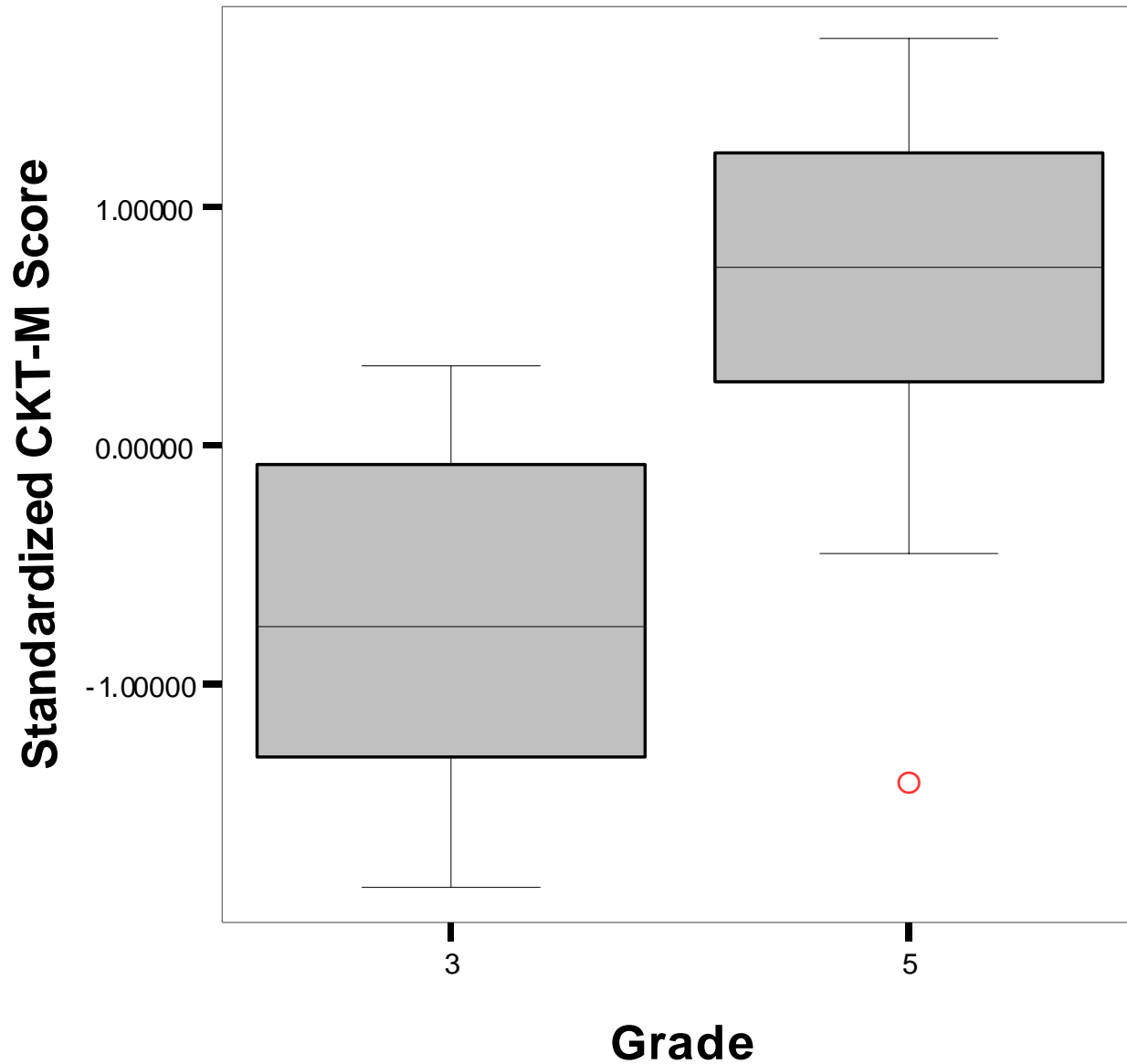


Figure 2: Standardized CKT-M Scores by Grade (n=32)



Research Question

- What do teachers do when they get the interim assessment results?

Interim Assessment Results Spreadsheet for the Urban District

Class-Wide Summary		23 students in this section 20 students took this test																				Total	Standard ID	
How the class performed as a whole on each test item		1 View	2 View	3 View	4 View	5 View	6 View	7 View	8 View	9 View	10 View	11 View	12 View	13 View	14 View	15 View	16 View	17 View	18 View	19 View	20 View	Total	Correct Response	
Standard ID	--	2.2.5A.1	2.2.5A.1	2.2.5.C.1	2.2.5A.1	2.2.5.C.1	2.11.5A.1	2.15.D.1	2.11.5A.1	2.2.5.I.1	2.4.5A.1	2.2.5.B.1	2.1.5.B.1	2.1.5.E.1	2.1.5.B.1	2.4.5A.1	2.6.5A.2	2.1.3.I.1	2.4.5A.1	2.2.5.B.1	2.2.5.C.1	--	Correct Response	
Correct Response	--	A	D	A	C	C	C	B	D	A	A	A	B	D	B	D	B	C	B	C	C	--	Point Value	
Point Value	20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20	Summary Score (Points)	
Summary Score (Points)	327/400	16/20	16/20	12/20	16/20	12/20	20/20	19/20	12/20	16/20	20/20	20/20	18/20	18/20	12/20	13/20	20/20	18/20	18/20	17/20	14/20	327/400	Summary Score (Percent)	
Summary Score (Percent)	82%	80%	80%	60%	80%	60%	100%	95%	60%	80%	100%	100%	90%	90%	60%	65%	100%	90%	90%	85%	70%	82%	Standard ID	
Student-by-Student Data																								
The list below reveals how each student answered each test item. You can select one or more students to add to a Student Group.																								
<input type="text"/> <input type="button" value="Go"/>																								
	Total	1 View	2 View	3 View	4 View	5 View	6 View	7 View	8 View	9 View	10 View	11 View	12 View	13 View	14 View	15 View	16 View	17 View	18 View	19 View	20 View	Total	Standard ID	
Abey Z.	95%	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	B	✓	✓	✓	✓	✓	✓	95%	Abey Z.	
Ananda Y.	50%	D	B	✓	D	B	✓	✓	C	B	✓	✓	✓	D	✓	A	B	✓	✓	✓	B	50%	Ananda Y.	
Ali X.	70%	✓	✓	C	✓	B	✓	✓	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	C	A	B	70%	Ali X.	
Cheyenne W.	90%	✓	✓	C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	A	✓	✓	✓	90%	Cheyenne W.	
Deondre V.	95%	✓	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	95%	Deondre V.	
Dakota U.	65%	✓	✓	D	✓	B	✓	C	C	✓	✓	✓	✓	✓	✓	D	B	✓	✓	✓	A	65%	Dakota U.	
Dwayne T.	75%	C	✓	✓	B	✓	✓	✓	✓	B	✓	✓	✓	✓	✓	C	B	✓	✓	✓	✓	75%	Dwayne T.	
Jacy S.	70%	✓	✓	D	✓	B	✓	✓	C	✓	✓	✓	✓	✓	✓	A	B	✓	✓	✓	B	70%	Jacy S.	
Jarrah R.	85%	✓	✓	C	✓	B	✓	✓	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	85%	Jarrah R.	
Kendis Q.	95%	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	C	✓	95%	Kendis Q.	
Lakin P.	90%	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	A	C	✓	✓	✓	✓	90%	Lakin P.	
Lenelle O.	50%	C	B	D	D	B	✓	✓	C	B	✓	✓	D	✓	A	✓	✓	✓	✓	✓	B	50%	Lenelle O.	
Mekella N.	95%	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	B	✓	✓	✓	✓	95%	Mekella N.	
Mancel M.	90%	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	A	✓	A	✓	90%	Mancel M.	
Nara L.	100%	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100%	Nara L.	
Shandi K.	80%	✓	✓	D	✓	B	✓	✓	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	B	80%	Shandi K.	
Sidone J.	65%	B	C	✓	B	✓	✓	✓	✓	B	✓	✓	✓	✓	B	A	B	✓	✓	✓	✓	65%	Sidone J.	
Talisa I.	100%	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100%	Talisa I.	
Tate H.	100%	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100%	Tate H.	
Yancy E.	75%	✓	✓	C	✓	B	✓	✓	A	✓	✓	✓	✓	✓	✓	A	✓	✓	✓	✓	B	75%	Yancy E.	

Interim Assessment Results Spreadsheet for the Suburban District

Practice test problem numbers	19,20,21,2 2	3,4,5,6,7,8	9,10	11, 12, 14	1,2,13	15,16,17,1 8
Learning Goal	Equivalent mixed numbers	Adding & subtracting fractions and mixed number	Percent-decimal-fraction correspondence	Comparing or ordering fractions	Finding common denominators	Multiplying fractions
Proficiency level	S	D/S	S	D/S	S	D
Number of items	4	6	2	6	2	4
Name	Number wrong on Practice test					
1. Michael Ambruster		1		1		
2. David Bridgewater	1	2	1	4	2	1
3. Brittany Cooper				3	1	
4. Skye Davidson		1				
5. Hodgkin Eames	1		1	1		
6. Paige Fairly	1	5	2	4	2	1
7. Tony Garafalo				1		
8. Sorrell Hill	3	2		2	1	
9. Madelaine Isaak	4				1	
10. Alexander Jacob				1		
11. Kiki King			1	2	1	
12. Anton Lang	2	4	2	3	2	1
13. KC Monroe						
14. Clay Nailor			1			
15. Daniel Ooster	1	1	1	2	1	1
16. Adam Powell						1
17. Elif Ross						
18. Jenna Smith	1		1	2	1	1
19. Randal Tatum		1			1	
20. Ari Urbinski			1	3	1	
21. Jonah Valdez	4			2		
22. Ambrosia Wallace		1	1			
23. Ynes Yaragosa				1	1	

What do teachers do?

- Primarily identify **content areas of weakness**
 - Teachers link performance to state standards
- And **low-performing students**

What do teachers do?

- Teachers seek to (in) validate benchmark assessment results
 - Is the **item** valid for measuring student understanding?
 - Was the **content covered**?
 - How did my **grade group partner** do?

What do teachers do?

- Thresholds for mastery and proficiency vary
 - By **teacher** (and by school?)
 - Dependent on **range** of responses
 - Dependent on **curriculum**
 - Influenced by **expectations** of students' growth

What do teachers do?

- Teachers offered various types of diagnoses for student errors:
 - Procedural diagnoses
 - Conceptual diagnoses
 - Other learning/cognitive diagnoses
 - ‘External’ diagnoses

What do teachers do?

- In general, teachers reported that the interim assessments
 - Did not provide new or surprising information
 - Were useful in confirming what they already knew about their students' mathematical understanding

District differences

- Urban teachers focused more on re-teaching to the lowest performing students
- Suburban teachers more likely to plan enrichment activities and to allow students choice in activities
- Suburban teachers expressed more confidence in ability to interpret interim assessment results

Policy considerations

- How do different formative assessment practices align with one another?
- What is the nature of PD?
 - For interpretation?
 - For instruction?
- Role of teachers' content knowledge