



## **Improving Evaluation of PD in Math & Science**

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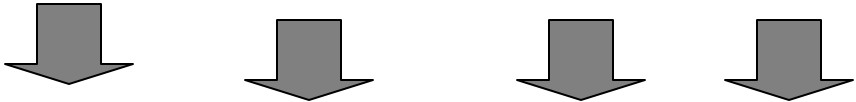
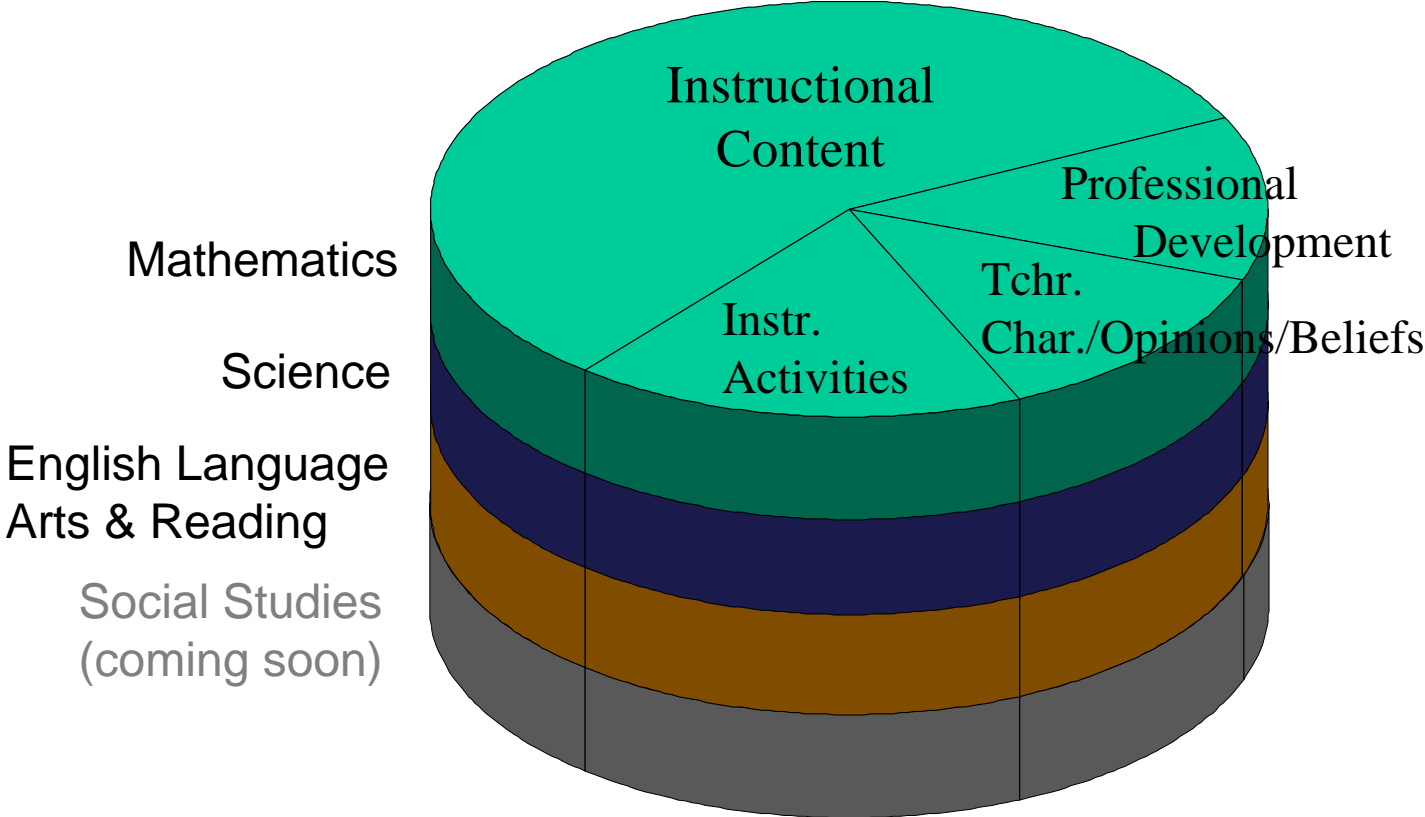
**Using the Surveys of Enacted Curriculum (SEC)  
to measure changes in  
teacher practice and content coverage**

**John Smithson  
Wisconsin Center for Education Research  
April 25, 2008**

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# The SEC Data-set

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SUMMARY MEASURES

**Content / Practice / Climate / Prof. Dev.**

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## Using Teacher Self-report survey data ...

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### What good is it?

#### Concerns about Validity and Reliability

Socially acceptable responses / giving the 'right' answer  
Inaccurate and/or overly optimistic responses

#### Limitations of Survey Data

Better at 'how much' than 'how well'  
Better at 'perception' than 'reality'



## **Levels of SEC Data-Use:**

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### Primary: Teacher Reflection

*Occurs at two points in time: Input & Output*

Input: While taking the survey teachers must reflect on their own practice over the previous/current school-year.

Output: Once completed, teachers have immediate access to their own results and are able to compare to other teachers and/or state or national standards and assessments.



## Levels of SEC Data-Use:

### Secondary: Teacher Collaboration & Planning

*SEC data results provoke powerful conversations among teachers.\**

Facilitates examination/discussion of  
grade level articulation of content  
within-grade/across-class consistency of coverage  
pedagogical practices/instructional activities  
alignment of instruction to standards/curric. frameworks

De-personalizes conversations about teacher practice, reducing teacher defensiveness while promoting professional learning communities.

*\* Typically, requires knowledgeable facilitator to manage discussion and assist with data interpretation.*



## Levels of SEC Data-Use:

### Tertiary: Research & Evaluation

*Both a strength and a weakness of SEC data.\**

Strengths & Weaknesses:

SEC as an intervention or evaluation tool?

Broad range of questions make SEC...

- relevant to a wide range of research and evaluation questions.
- too general or shallow to inform in-depth analyses.
- a very long survey.

But these are not necessarily Either/Or options

*\* Requires additional data sources / mixed methods approach.*



## **The Non-Survey Side of SEC Data**

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### **Content & Alignment Analysis**

Content analysis of key documents (e.g., standards/assessments) enables graphic displays of important instructional ‘targets’ that describe in some detail the subject matter content embedded in these documents.

Alignment analysis of the relationship between instruction and key instructional targets provides a valuable measure for linking PD and instruction to student outcomes (achievement gains).



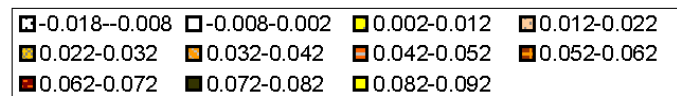
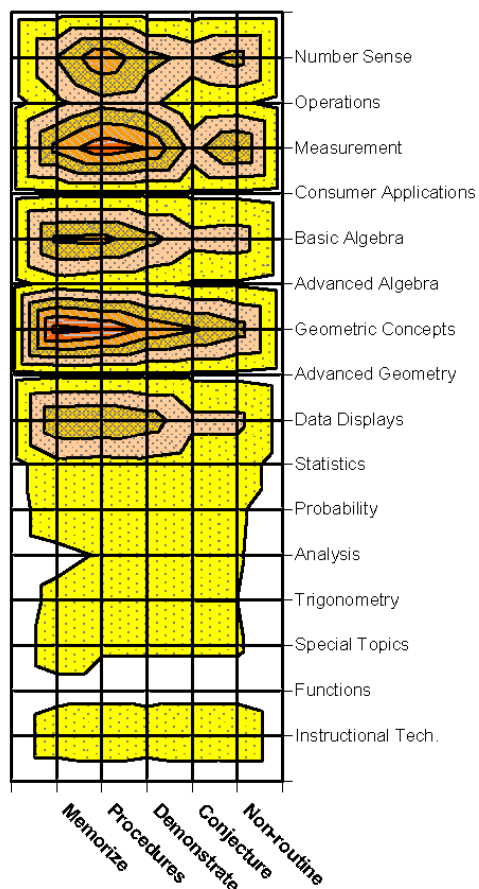
## Content Analysis & Teacher Reflection

Alignment Index: 0.23

Gr. 8 (2006) [24489]

Grade Gr. 8

All Content Areas

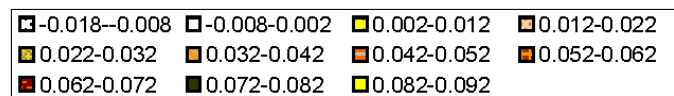
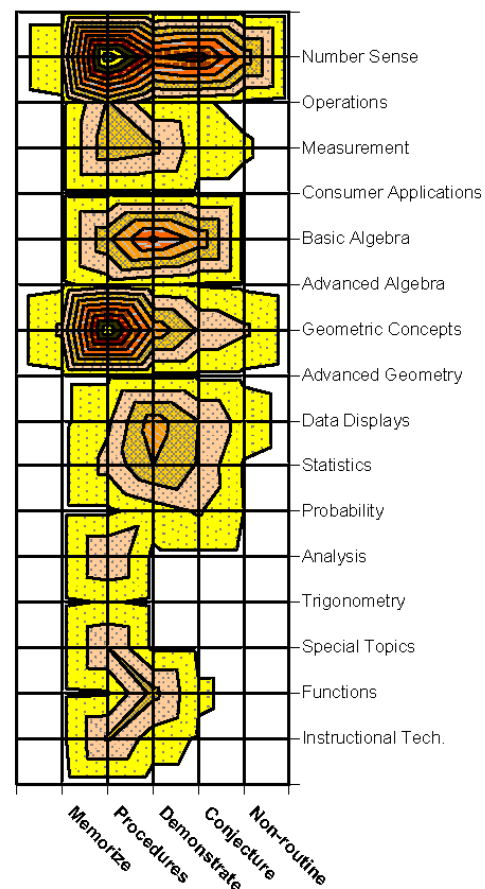


Coarse Grain: 0.55

PA Stnds Gr. 8

Document

All Content Areas





## Alignment Analysis & Explaining Achievement

Table 1: Correlations\* between Achievement scores, SES, Grade Level, Alignment and Prior Achievement

	Disadvantaged	Grade Level	OH Gr. K-4 Benchmarks	Prior Achievement
rnc05		<b>0.82</b>	<b>0.41</b>	<b>0.81</b>
rvnc05	<b>-0.18</b>	<b>0.16</b>	<b>0.22</b>	<b>0.40</b>
rcnc05	<b>-0.13</b>	<b>0.73</b>	<b>0.37</b>	<b>0.74</b>
wanc05			<b>0.20</b>	<b>0.44</b>
rss05		<b>0.66</b>	<b>0.42</b>	<b>0.71</b>
rvss05	<b>-0.14</b>	<b>0.72</b>	<b>0.36</b>	<b>0.77</b>
rcss05	<b>-0.14</b>	<b>0.71</b>	<b>0.39</b>	<b>0.79</b>
wass05		<b>0.63</b>	<b>0.38</b>	<b>0.74</b>

\* Correlation is significant at the 0.01 level (2 tailed).

rnc05 Reading Number Correct  
rvnc05 Reading Vocabulary Number Correct  
rcnc05 Reading Comprehension Number Correct  
wanc05 Word Analysis Number Correct

rss05 Reading Scale Score  
rvss05 Reading Vocabulary Scale Score  
rcss05 Reading Comprehension Scale Score  
wass05 Word Analysis Scale Score



## Alignment Analysis & Explaining Achievement

Table 7: Alignment to K-4 Benchmarks as a predictor of Student Achievement Gains, controlling for prior achievement\*, grade level and economic disadvantage

5,515 Students nested in 348 classrooms	Mean	Standard Deviation	Regression Coefficient	Standard Error	Significance Level	Effect Size**
<b>predicting RNC05</b>						
<b>Level 1</b>						
Grade Level	2.50	0.50	5.6	0.36	<b>0.000</b>	
Disadvantaged	0.71	0.46	-0.76	0.24	<b>0.002</b>	
<i>gmean</i> RNC04	21.82	4.48	0.88	0.02	<b>0.000</b>	
<i>mis</i> RNC04	0.44	0.50	-1.04	0.22	<b>0.000</b>	
<b>Level 2</b>						
<i>Constant</i>			29.9	0.17	<b>0.000</b>	
K-4 Benchmarks	0.19	0.03	17.17	5.61	<b>0.003</b>	<b>34%</b>
<b>predicting RSS05</b>						
<b>Level 1</b>						
Grade Level	2.50	0.50	7.6	1.72	<b>0.000</b>	
Disadvantaged	0.71	0.46	-3.96	1.15	<b>0.001</b>	
RSS04	588.98	31.56	0.53	0.02	<b>0.000</b>	
<i>mis</i> RSS04	0.44	0.50	-6.91	1.06	<b>0.000</b>	
<b>Level 2</b>						
<i>Constant</i>			612.83	0.82	<b>0.000</b>	
K-4 Benchmarks	0.19	0.03	107.01	27.66	<b>0.000</b>	<b>71%</b>

\* Missing data on prior achievement replaced with grade level mean.

\*\* Percent of Average Annual Achievement Gain



## Missouri PRISM Project Data

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- **Assessments (Teacher & Students)**
- **Classroom Observations & Walk-thru Evaluations**
- **Video-taped classroom instruction**
- **Student-work**
- **Teacher-work**
- **Coach/Mentor field notes**
- **Teacher (SEC) Surveys**



## Missouri PRISM Project Highlights

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- Graduate course-work throughout the year
- Teacher collaboration with colleague not in program
- PD & Admin. of Formative Assessments
- Teacher Content Knowledge Assessments
- Develop criteria and protocols for observing inquiry-based lessons
- Administrator Training & Observations
- Teachers given PDA's for planning/ organizing assignments
- Training in simulations and probe-ware



## Comparison Groups

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### **MO-PRISM Group**

Teachers participating in the MO-PRISM project for 2 (n=51) or 3 (n=47) years

### **Other MSP Groups**

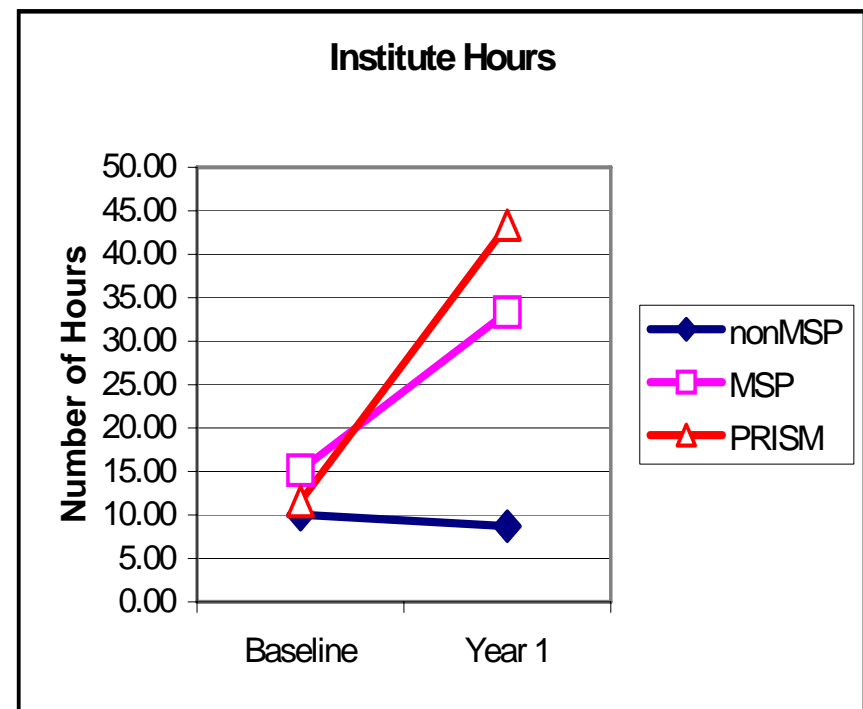
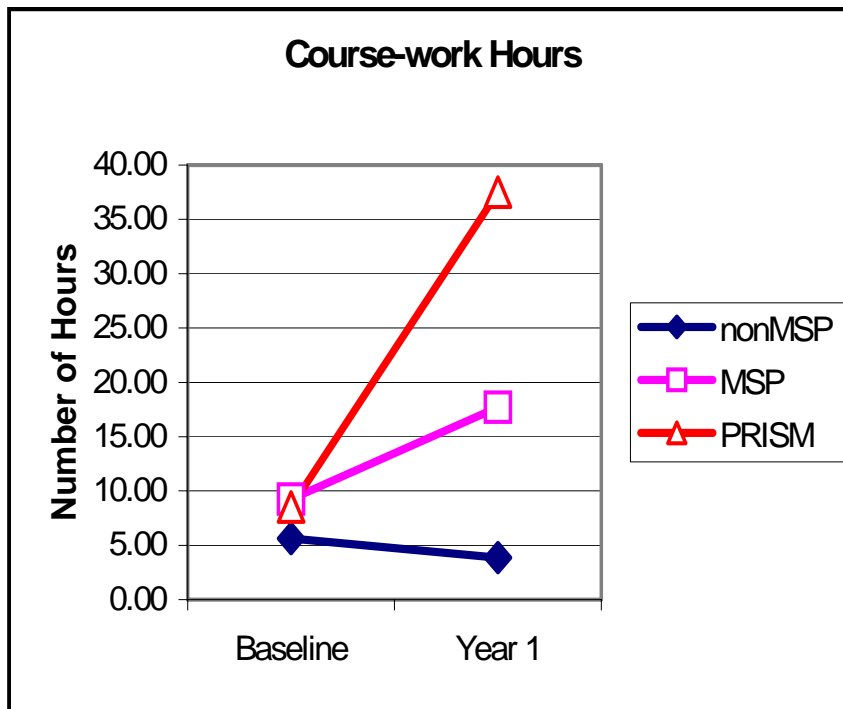
Teachers participating in other state MSP projects for 2 (n=606) or 3 (n=174) years

### **Non-MSP Groups**

Teachers participating in school/district-based school improvement initiatives for 2 (n = 73) or 3 (n=6) years.

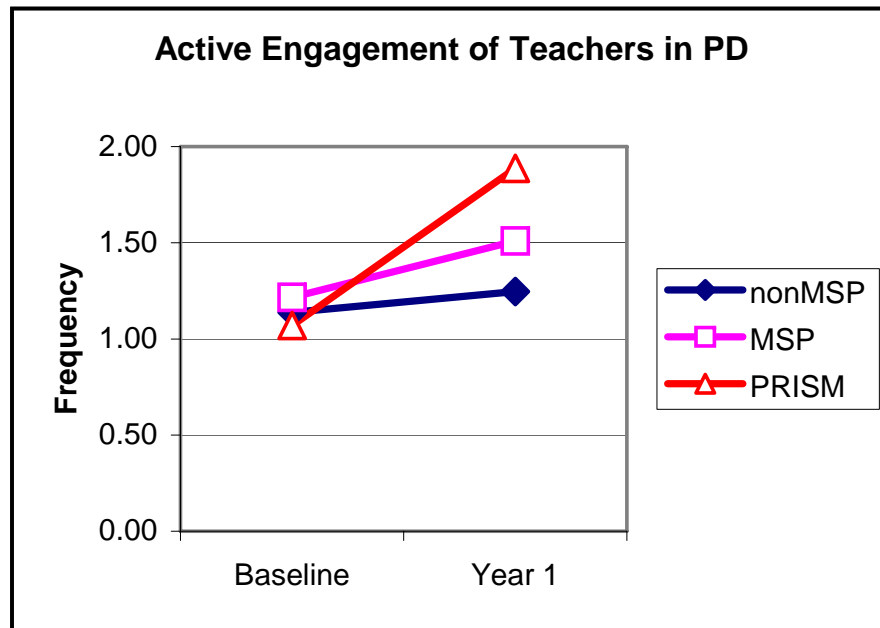


## Participation in Formal Course-work & Institutes

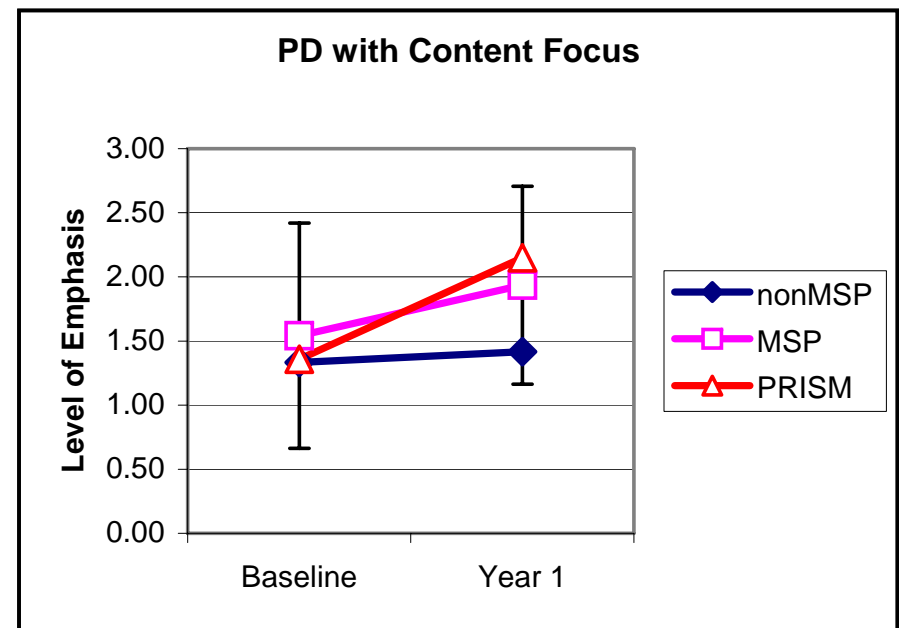




## SEC Indicators of Quality Professional Development



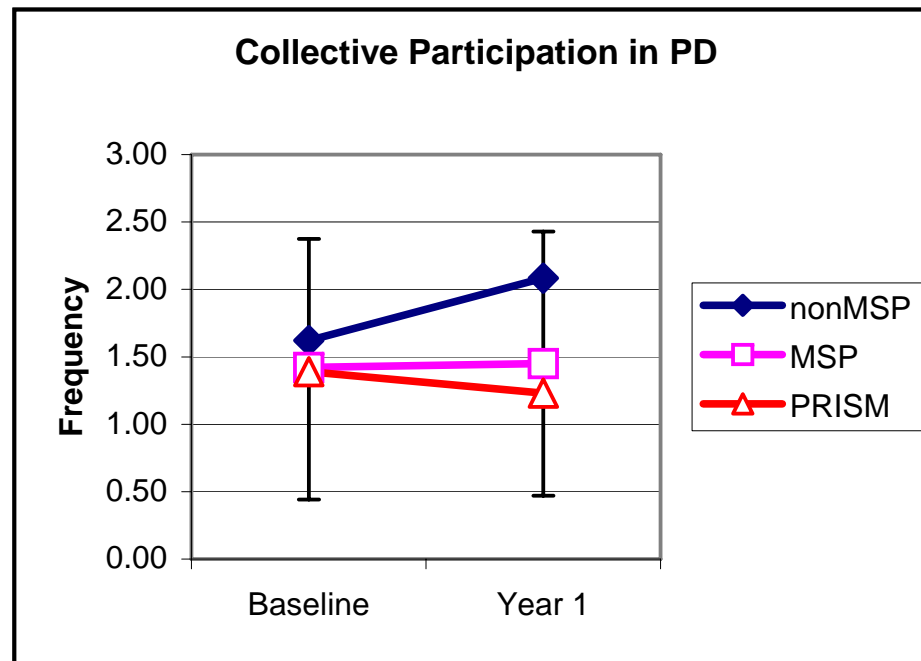
0 = Never, 1 = Rarely, 2 = Sometimes, 3 = Often



0 = None, 1 = Slight, 2 = Moderate, 3 = Great



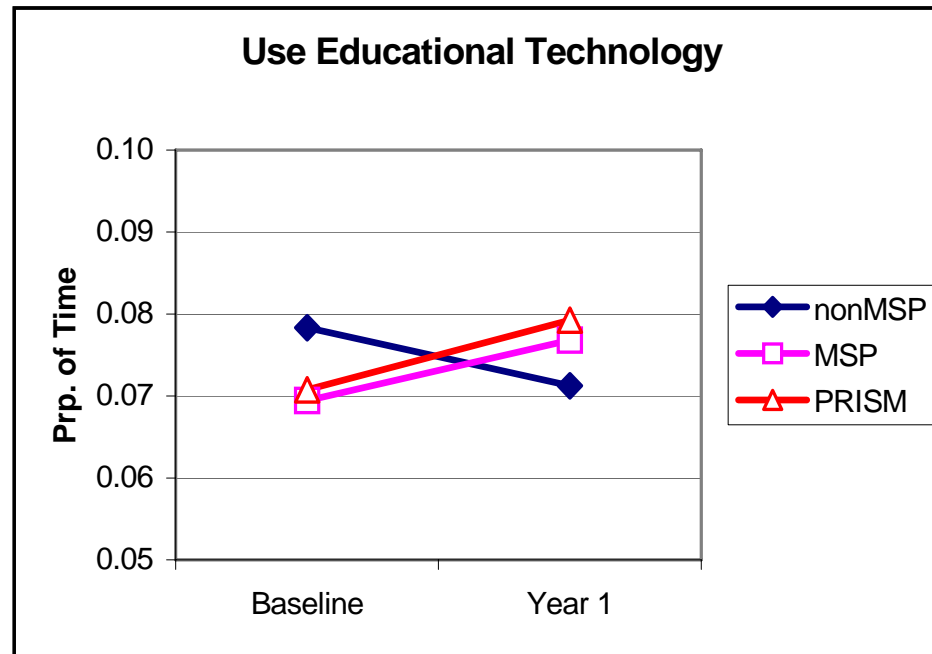
## SEC Indicators of Quality Professional Development



0 = Never, 1 = Rarely, 2 = Sometimes, 3 = Often

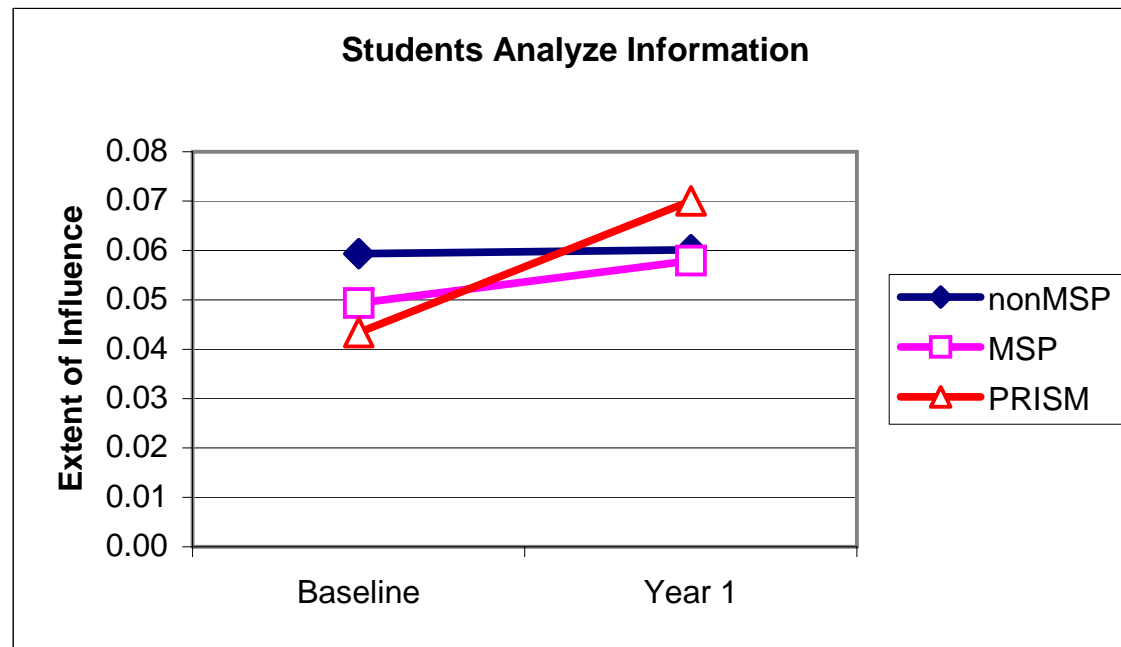


## SEC Reports of Instructional Practice



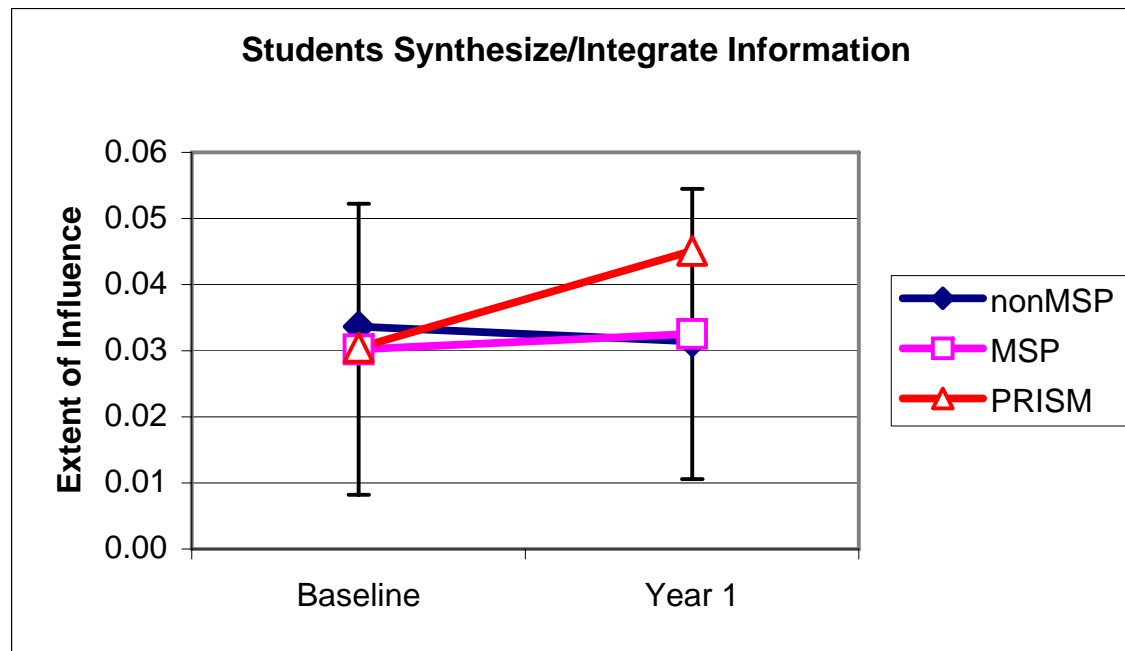


## SEC Reports of Instructional Practice

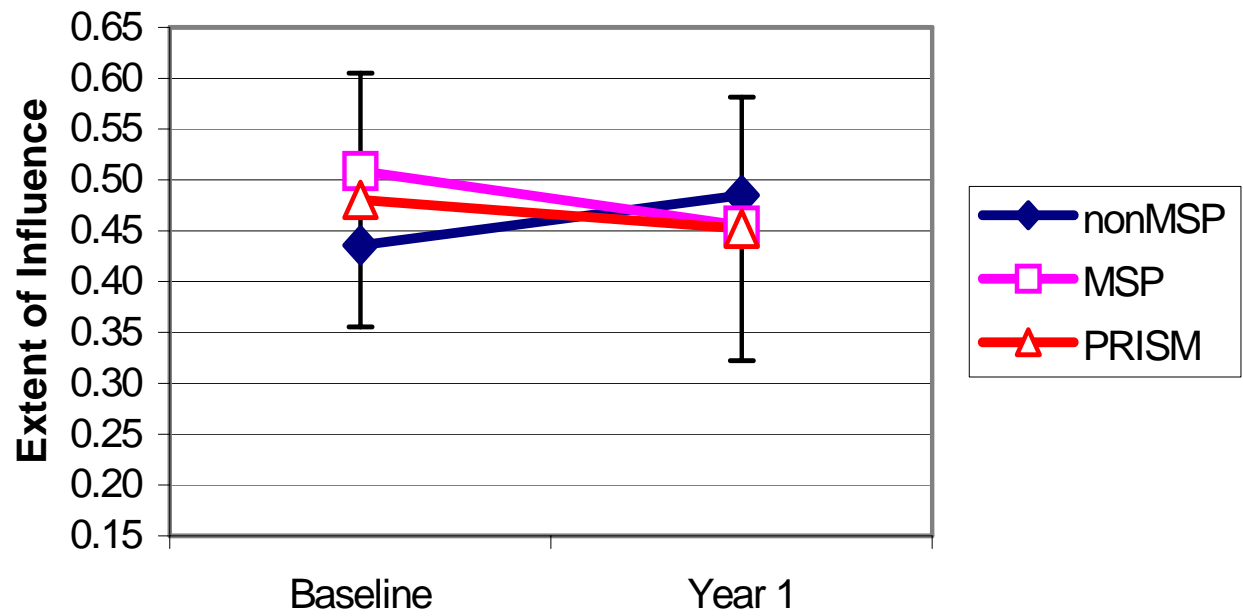




## SEC Reports of Instructional Practice



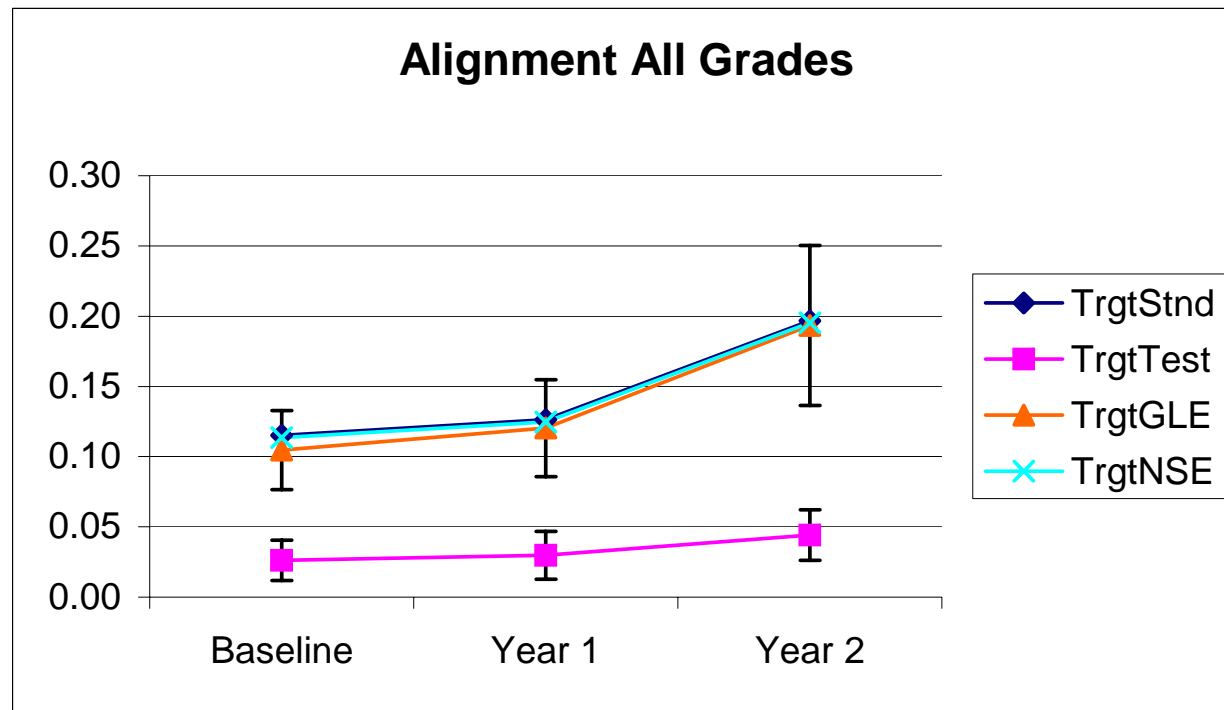
### Breadth of Instructional Content





## SEC Longitudinal Data Patterns

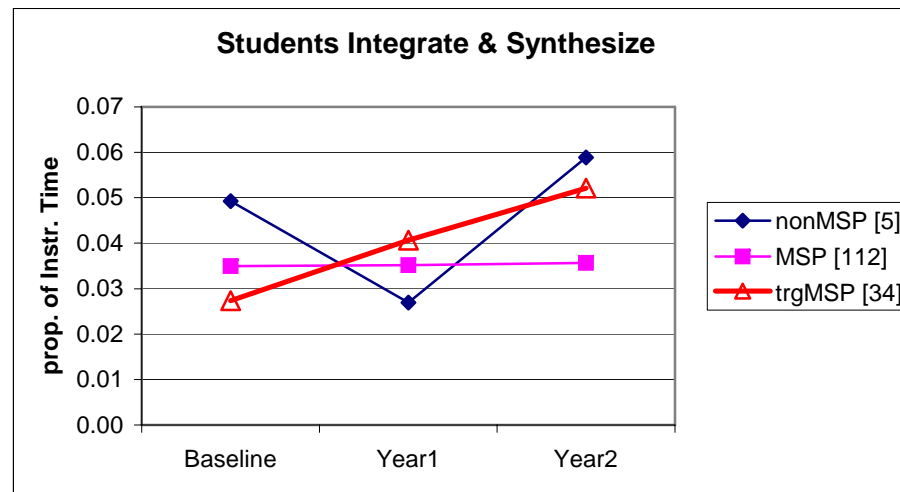
### The 'Lag' Effect





## SEC Longitudinal Data Patterns

### The 'Negative Growth' Effect





## SEC Longitudinal Data Patterns

### The 'Sustainability' Effect

