Implementing and Sustaining Schoolwide Practice for Mathematics Improvement

May 12, 2016
Goals

• Understand the purpose of systemic mathematics learning intervention
• Learn about schoolwide practices which support student learning
• Learn methods to implement and sustain schoolwide practices supporting student learning of mathematics
Region X

- 9 time zones
- 5 U.S. states
- 2 U.S. territories
- 1 commonwealth
- 2 republics
- 4 federated states
Presenters

Patrice Woods
Region X EAC
Education Northwest

Heather Patterson-Hutton
Stewart Middle School
About You

Using the link, please share:

• Your name
• Your role
• What excites you about education?

Go to www.govote.at and use the code 39 28 47
Overview

In this session we will address:

- **Systems in the context of schools**
  - Implementation of systems
  - Sustainability of systems
What connections do you make between the image and “school systems?”

Please go to:  
www.govote.at
use the code 17 24 35
Poll
(We’ll use this information later)

How long (in minutes) are class periods in your context?

Go to www.govote.at and use the code 68 07 8
System

“... a group of related parts that move or work together ...”

http://www.merriam-webster.com/dictionary/system
Systems: Implementation

Alignment
- Mission
- Vision

Capacity
- Administrators
- Teachers
- Students

Context
- Culture
- Climate
Systems: Sustainability

1. Take Stock
2. Focus on the Right Solution
3. Take Collective Action
4. Monitor & Adjust
5. Maintain Momentum

Increasing efficacy

Increasing capacity

Increasing sustainability
Measurement of Student Progress (MSP)

Mathematics MSP Achievement

<table>
<thead>
<tr>
<th>Grade</th>
<th>2009-10</th>
<th>2010-11</th>
<th>2011-12</th>
<th>2012-13</th>
<th>2013-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>6th</td>
<td>19.60%</td>
<td>30.50%</td>
<td>34.10%</td>
<td>35.80%</td>
<td>46.20%</td>
</tr>
<tr>
<td>7th</td>
<td>24.20%</td>
<td>25.90%</td>
<td>18.60%</td>
<td>37.90%</td>
<td>34.70%</td>
</tr>
<tr>
<td>8th</td>
<td>27.50%</td>
<td>25.20%</td>
<td>11.60%</td>
<td>17.20%</td>
<td>19.80%</td>
</tr>
</tbody>
</table>
Student Achievement - Subgroup Data

Source: OSPI State Report Card

Note: Cells shaded in green represent increases over time; cells shaded in red represent decreases over time.

Percents are rounded to the nearest tenth.

Table 4. Subgroup Achievement Data on State Assessments from Baseline (2010) to 2013 in Reading/Math Combined

<table>
<thead>
<tr>
<th>Stewart</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Change Baseline to 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>32.1%</td>
<td>37.4%</td>
<td>35.3%</td>
<td>36.8%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Asian</td>
<td>45.3%</td>
<td>41.0%</td>
<td>46.4%</td>
<td>50.0%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Black</td>
<td>24.8%</td>
<td>28.6%</td>
<td>23.5%</td>
<td>28.1%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>19.8%</td>
<td>29.7%</td>
<td>31.3%</td>
<td>30.4%</td>
<td>10.6%</td>
</tr>
<tr>
<td>White</td>
<td>37.8%</td>
<td>43.5%</td>
<td>40.4%</td>
<td>42.2%</td>
<td>4.3%</td>
</tr>
<tr>
<td>Special Educ.</td>
<td>9.6%</td>
<td>12.5%</td>
<td>11.8%</td>
<td>7.5%</td>
<td>-2.1%</td>
</tr>
<tr>
<td>Low Income</td>
<td>29.2%</td>
<td>34.4%</td>
<td>31.2%</td>
<td>32.6%</td>
<td>3.3%</td>
</tr>
</tbody>
</table>

Figure 4. Subgroup Achievement Data on State Assessments from Baseline (2010) to 2013 in Reading/Math Combined
The “Why” … in Context

2010-2013
• SIG Status
• Intervention Model: Turnaround

2014-2017
• RAD status
• Intervention Model: Transformation
Basic Research Background

Visible Learning for Teachers
Maximizing Impact on Learning
John Hattie

Barometers of Influence

- \(d = 0.0 - 0.15\): What students could achieve without schooling
- \(d = 0.15 - 0.4\): Typical effects of teachers on students that can be accomplished in a year of teaching
- \(d > 0.4\): Zone of desired effects

Below \(d = 0.0\): Decrease achievement

Effects

Region X Equity Assistance Center at Education Northwest
The Concept of “Effect Size”

“The key to many of the influences above the $d = 0.40$ hinge-point is that they are deliberate interventions aimed at enhancing teaching and learning.”

John Hattie, *Visible Learning for Teachers*, p. 17
Implementing Instructional Reform Strategies
AVID (Advancement Via Individual Determination)

- For all **SMS** 6th graders
  - a program designed to teach the skills that students need in every class and for high school and beyond:
    - Notetaking
    - Organization skills
    - Study skills
    - Testing skills
    - Goal setting - goal setting for each class, each semester, middle school, high school, and after graduation
    - College planning for scholarships, applications, course offerings by declared majors
- Elective for 7th and 8th graders
Interactive (Math) Notebook

- **Student outcomes**
  - Consistency across subjects
  - Improvement in learning skills
- **Teacher outcomes**
  - Common language
  - Strengthened organization
### Left page

**Personal side**

You interact with the information in your unique and creative way.

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**OUT activity**

**Purpose:** reflect or apply today's activity

Examples: content or lab questions, quick-write, 3-2-1 summary, diagram, graph.

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**IN activity**

**Purpose:** focus on today’s activity

Examples: pre-test, quick-write, demonstration, T-chart.

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**THROUGH activity**

**Purpose:** information from today’s activity (learning)

Examples: textbook or lecture notes, vocabulary, lab procedure & data, worksheet, concept map.

### Right page

**Information side**

You write or glue in information from class (today’s lesson).

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### Processing of Notes

**Title**

Learning Objective:

Should demonstrate higher level understanding of the learning objective

**Summary:**

(Should connect back to the learning objective)
Standards-based Learning

The Teaching & Learning Cycle

- **Standards**: What do students need to know, understand, and be able to do?
- **Assessment**: How will we know students have learned? (create pre/post & apply post)
- **Student Learning**: How do we know students have learned? (create pre/post & apply pre)
- **Instruction & Intervention**: What do we do when students don't learn or do reach mastery before expectation?
- **Formative Assessment**: Rti, Reteach & Enrich
- **Core Instruction**: How do we teach effectively to ensure students learn?

Professional Learning Community
### Increased Learning Time
(Back to poll)

67 minute daily core classes increase learning time in the toughest subjects

<table>
<thead>
<tr>
<th># of minutes/class period</th>
<th># of minutes/schoolyear</th>
<th>Difference in instructional minutes</th>
<th>additional class periods (compared to 45min periods)</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>8100</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>55</td>
<td>9900</td>
<td>1800</td>
<td>33</td>
</tr>
<tr>
<td>65</td>
<td>11700</td>
<td>3600</td>
<td>55</td>
</tr>
</tbody>
</table>
High School Credit

- Math
  - Algebra – all 8th graders
  - Geometry
- Technology
- Foreign language
Extracurricular Supports

- 92% of students – afterschool activities
  - Voluntary
  - Academic
  - Sociocultural
Staff Support and Improvement

Daily common planning time for teachers

• Grade level PLC (bi-weekly)
• Content PLC (bi-weekly)
  – Focus on Implementing Effective Mathematics Teaching Practices (NCTM, 2014)
• Common Assessments
  – Formative and summative
  – Collaboratively created
Staff Support and Improvement

- Studio Models
  - Grade level
  - Content specific

- Peer observation cycles
  - Monthly school-team mathematics collaboration
  - Common focus goal
    - Mathematical Habits of Mind/Interaction
  - Prebrief/debrief feedback
Focus on Instruction

<table>
<thead>
<tr>
<th>Rank</th>
<th>Category</th>
<th>Influence</th>
<th>Studies</th>
<th>Effects</th>
<th>ES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Self-report grades</td>
<td>209</td>
<td>305</td>
<td>1.44</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Absence of disruptive students</td>
<td>140</td>
<td>315</td>
<td>.86</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Classroom behavioural</td>
<td>160</td>
<td>942</td>
<td>.80</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Quality of teaching</td>
<td>141</td>
<td>195</td>
<td>.77</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Reciprocal teaching</td>
<td>38</td>
<td>53</td>
<td>.74</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Prior achievement</td>
<td>3387</td>
<td>8758</td>
<td>.73</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Teacher-student relationships</td>
<td>229</td>
<td>1450</td>
<td>.72</td>
<td></td>
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<tr>
<td>8</td>
<td>Feedback</td>
<td>1276</td>
<td>1928</td>
<td>.72</td>
<td></td>
</tr>
</tbody>
</table>
Progress Monitoring Tools

- Interim Assessment Blocks
  - Districtwide (2015–2016)

- i-Ready – benchmark assessments
  - Districtwide (2016–2017)
  - Math
  - Reading
Recap: “The Halo Effect”
How is Stewart doing?

Mathematics SBA 2014-15

- 6th Grade: Stewart 32.10%, District 37.20%, State 45.10%
- 7th Grade: Stewart 29.50%, District 40.80%, State 47.50%
- 8th Grade: Stewart 39.80%, District 37.30%, State 45.80%
Spring 2014 to Spring 2015 Achievement Index Growth
How does it all happen?

- What does this mean for teachers?
- How does it become part of the system?
- What makes it sustainable?
Questions?
Resources

http://www.k12.wa.us/StudentAndSchoolSuccess/pubdocs/FinalReportStewartMiddleSchool.pdf


NCTM. (2014). *Principles to Actions: Ensuring Mathematical Success for All*. Reston, VA: NCTM.
Thank You!

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