Isolated on a Hill of Beans: Disciplined Inquiry Might Help?

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AACTE, 2/27/2015
Education reform is “miracle goals without methods.”

-W. Edwards Deming

• Quote 1991 about Goals 2000

• NCLB, “all children proficient by 2014.”

• Is the next chapter the Common Core?

• If we continue to do what we have always done, we will continue to get what we have always gotten.

• We have to find a better way to accelerate learning in and through practice to improve.
Isolation and a Hill of Beans

• Shared focused
  – Isolated practice*
  – Few shared referents
  – No common measures of practices and micro-markers of progress
  – No common vocabulary
  – No standard work

• Accumulation
  – Little sustained learning
  – Little adaptive integration

*Lortie 1975, Boles & Troen 2002
Knowledge that Supports Change

**Subject Matter Knowledge**

Scientific knowledge, Professional knowledge, Practical knowledge, Powerful tools

Appreciation of systems, Understanding variation, Organizational knowledge, Local contexts

**Profound Knowledge**
Knowledge that Supports the Processes of Improvement

*Improvement:* Combines subject matter knowledge and profound knowledge in creative and disciplined ways to develop reliable change.
V. Accelerate Improvement: Embrace Disciplined Inquiry

• The Romance of the Silver Bullet
  – We move quickly to large scale implementation, but…

• We typically don’t know whether:
  – We can make these ideas work at all;
  – We have capacity and will to determine if execution at scale is possible.
  – If we can get locally generated evidence from practice

• Quick, minimally intrusive, empirical warrants for progress
  – Mantra: *Learn Fast, Fail Fast, Improve Fast!*

• One form of localizable disciplined inquiry is the PDSA cycle
Scaffolding Improvement: Filling the Knowledge Gaps

- Awareness gap
  - Declarative knowledge
  - Identifying quality ideas
  - Assessment of promise

- Knowing – Doing Gap
  - Execution know-how
    - What to do next
    - What is necessary, what is optional
  - Adaptive Integration: How interventions change by contexts
  - Depends on professional knowledge
Figure XX. A cycle of research that is rigorous and relevant to practice.
The Model for Improvement: Building Practiced-Based Evidence

I. Making your theory explicit

II. Testing changes (theory) and building knowledge

What are we trying to accomplish?

How will we know that a change is an improvement?

What change(s) can we make that will result in improvement?
I. Driver Diagram:

What are we trying to accomplish?

AIM

What changes might lead to an improvement?

Barriers?

Primary Driver

Primary Driver

Primary Driver

Primary Driver

Primary Driver

Primary Driver

MEASURES:

How do we know if a change is an improvement?

• Secondary Driver
• Secondary Driver
• Secondary Driver

• Secondary Driver
• Secondary Driver
• Secondary Driver

• Secondary Driver
• Secondary Driver

• Secondary Driver
• Secondary Driver
• Secondary Driver

Carnegie Foundation
for the Advancement of Teaching
II. The PDSA Cycle

**ACT**
- Next steps:
  - Adapt
  - Adopt
  - Abandon

**PLAN**
- What’s your change?
- What’s your prediction?
- Plan to conduct test

**STUDY**
- Compare results to prediction
  - What did you learn?

**DO**
- Execute test
- Collect data, document observations
A Developmental Dynamic

Hunches
Theories
Ideas
Initiating Resources

More Effective Practices, Deeper Understandings

Aiming for Efficacy with Reliability

DATA

Time
Case Example 1: Reference to Text

• *Local school community in LA wanted to improve students ability to make reference to Text*

• *Reference/support from text:* This is a measure of how well references to text details are used to support statements in the essay. A text detail is a quotation, paraphrase, or any other reference to information and ideas in the texts provided.
## Annotation Routine – Draft 1

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Student Step 15</strong></td>
<td>Students then pass the peer-reviewed science texts to the front of the classroom and Ms. Herrera gathers the checked texts.</td>
</tr>
<tr>
<td><strong>Student Step 16</strong></td>
<td>Ms. Herrera then discusses the argument and supporting evidence in the science text and brings the discussion back to the big question of the day.</td>
</tr>
<tr>
<td><strong>Teacher step 2</strong></td>
<td>Ms. Herrera makes predictions about students’ performance. Her measures might involve: a) the amount of time it</td>
</tr>
</tbody>
</table>

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Here, the aim is for Ms. Herrera to have data for checking predictions and analyzing results.</td>
</tr>
<tr>
<td>Here, the aim is to reconnect students to the big question (the overall content focus of the day).</td>
</tr>
<tr>
<td>Here, the routine can only get better if there are set of expectations about how it will perform. When it fails to perform, as expected, it is an opportunity to</td>
</tr>
</tbody>
</table>

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kimberley Gomez 9/8/13 1:24 PM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comment [5]: Love this</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herrera: How will we be keeping the student data?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herrera:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Should I stick to a predicted amount of time it will take the students to finish regardless if they finish or</td>
</tr>
</tbody>
</table>
Professional Growth

- Building will
- Professional know-how
## Engagement in Disciplined Inquiry

<table>
<thead>
<tr>
<th>2013-2014</th>
<th>Engagement</th>
</tr>
</thead>
</table>
| Sep 2013  | • Worked with Biology teacher to (1) design and (2) test a instructional routine  
|           | •  
| Oct – Feb 2014 | • Science team ($n=3$) try routine in classrooms and arrive at a stable routine. 44 PDSAs |
| Feb 2014  | • Teachers arrive a 3-Day Instructional Cycle and focus PDSA work on Day 1 (parts 1 and 2) |
# Standard Work: 3-Day Instructional Cycle

## PDSA Cycle 2 Flow Chart

<table>
<thead>
<tr>
<th>Day 1</th>
<th><strong>Identification of Claim and Evidence</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Engage Prior Knowledge</td>
</tr>
<tr>
<td></td>
<td>Use Demo’s, Videos, Illustrations, etc.</td>
</tr>
<tr>
<td></td>
<td>Read and Annotate on Text</td>
</tr>
<tr>
<td></td>
<td>Lab Background Information, Articles, etc.</td>
</tr>
<tr>
<td></td>
<td>Fill out Bubble form from annotated Text</td>
</tr>
<tr>
<td></td>
<td>Write Down the Author’s Claim/s</td>
</tr>
<tr>
<td></td>
<td>Class Discussion on why the claims/evidence were chosen</td>
</tr>
<tr>
<td></td>
<td>Edit earlier annotations.</td>
</tr>
<tr>
<td></td>
<td>Paraphrase claim and evidence on TEJ</td>
</tr>
<tr>
<td></td>
<td>Write Summary</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Day 2</th>
<th><strong>Writing a Laboratory Report</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Write a Title for the Lab</td>
</tr>
<tr>
<td></td>
<td>Write down background to lab (using summary from annotation)</td>
</tr>
<tr>
<td></td>
<td>Have students write down the “Question” to the lab report.</td>
</tr>
<tr>
<td></td>
<td>Guide Students writing Hypothesis</td>
</tr>
<tr>
<td></td>
<td>Guide Students writing the Methods</td>
</tr>
<tr>
<td></td>
<td>Have students perform and collect data</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Day 3</th>
<th><strong>Analysis of a Laboratory Report</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Write analysis by using questions that address data</td>
</tr>
<tr>
<td></td>
<td>Write Discussion/Conclusion Section</td>
</tr>
<tr>
<td></td>
<td>Have an oral Class Discussion on Conclusion section</td>
</tr>
<tr>
<td></td>
<td>Rewrite New understanding of conclusion</td>
</tr>
</tbody>
</table>
## Scores on CREEST ILA Reference to Text

<table>
<thead>
<tr>
<th>Reference to Text</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students with a score of ‘1’</td>
<td>68% n=217</td>
<td>63% n=223</td>
<td>29% n=98</td>
</tr>
<tr>
<td>Students with a score of ‘2’ and higher</td>
<td>32% n=102</td>
<td>37% n=131</td>
<td>71% n=242</td>
</tr>
</tbody>
</table>
Case Example 2: Beginning Teacher Effectiveness (BTEN)

Aim:
To increase the number of new teachers judged efficacious and improve their retention rates

1987-1988

2007-2008

Figure 3.3 – Teacher Job Satisfaction Through the Years (% Very Satisfied)


54% 52% 57% 56% 62% 59% 44% 39%
### Variation and Room for Improvement 2014-2015

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle School</td>
<td>118</td>
<td>29</td>
<td>58</td>
<td>28</td>
<td>3</td>
</tr>
<tr>
<td>Biology</td>
<td>114</td>
<td>54</td>
<td>41</td>
<td>18</td>
<td>1</td>
</tr>
<tr>
<td>Chemistry</td>
<td>108</td>
<td>15</td>
<td>59</td>
<td>32</td>
<td>2</td>
</tr>
</tbody>
</table>

- All student groups to achieve a "proficient" status within "Band D,"
BTEN Organizational Structure

BTEN Hub

Austin Independent School District

Baltimore City Public Schools

School

School

School

School

School
To increase the number of new teachers judged efficacious and improve their retention rates

Primary Drivers

- Hiring and placement system
- School-based professional community
- Feedback that supports improvement
- Relationship between principals and NTs
- Professional development for NTs

Aim

BTEN Driver Diagram (Theory of Practice Improvement)
To increase the number of new teachers judged efficacious and improve their retention rates
BTEN Change Package

**Ultimate Aim**

Improve the quality of feedback provided to beginning teachers in 31 schools by May 2015.

**Primary Drivers**

- Hiring and placement system
- School-based professional community
- Feedback that supports improvement
- Relationship btwn principals and NTs
- Professional development for NTs

**Secondary Drivers**

- Feedback
- Coordination
- Support

**Changes**

- 2 week feedback & support process
- Roles
- Conversation protocols
- Coordination meetings
- Online tool to track feedback & support

**Quality**
- Frequent
- Actionable
- Aligned
- Manageable
- Builds trust
Communities of PDSAs

Moving toward a common Goal

Sub Problem 1

Sub Problem 2

Sub Problem 3

Sub Problem 4
Summing Up: Disciplined Inquiry In Improvement Science

- Builds constitutively like more traditional social science inquiry
- Focuses more on external validity for successful replication: practice-based evidence
- Emphasis on working (provisional) theory + common iterative analytic disciplines
- Promising methodology for improving educational practice and outcomes -- aiming for efficacy with reliability
It is all about accelerating how we learn in and through practice to improve.