Welcome to the Improvement Science Deep Dive: Building a Culture of Continuous Improvement for Equity

Slides: https://goo.gl/JDnikE
Essential Questions

● How can we use continuous improvement to tackle persistent problems of practice?
  ○ How can we use empathy interviews and root cause analysis to gain a deeper understanding of the issue we want to improve?
  ○ How can we identify/test high-leverage change ideas to guide our next steps?
● How can we integrate continuous improvement into existing professional development structures?
● How do protocols support an equitable, collaborative learning process?
Why Protocols?

“Don’t just give people tools. Give people each other.’
~ Joe McCannon, Billions Institute
Improvement Norms

● Avoid Solutionitis... seek to understand before jumping to solutions
● “Yes and”... celebrate and build on ideas without getting too attached
● Embrace “definitely incomplete; possibly incorrect”... don’t let perfection get in the way of learning
● Focus on learning, not judging... we have to be vulnerable to improve
● Share the air... step up, step back, invite others in
Why Improvement?

“...to improve constantly and forever.”
~ Edward Deming
To increase the number of African American, Latino and Native American young men of color who go directly to 4 year colleges, and succeed there.
1 in 10 Kindergarteners from low SES earn a college degree

13% who start at CC earn a 4-year degree
Increase the number of underrepresented students who graduate college, career, and civic ready.

**Primary drivers (the what)**

**Awareness of College and Career Pathways**
“*I can see a path to my future*”

**Family engagement**
“My family knows how to support me”

**Academic preparation and eligibility**
“I am ready and know how to think deeplys”

**Learning mindsets and skills to succeed post-graduation**
“I belong and believe I can succeed”

**HTH Projects**

- Internships (HTHNC)
- College application process, including FAFSA (HTHNC)
- Family engagement (HTM, HTHI)
- NGSS Project Design (all schools)
- Improving mentoring/coaching (GSE, HTMNC, HTHMA)
- Literacy/English Language Learners (HTM, HteCV)
- Mathematical authority and success (all high schools)
- Equitable group work (HTeCV, HTHI)
- Making Thinking Visible (HTeCV)
- Assessment for Growth (HTHI)
- Chronic absenteeism (HTHNC, HTHI, HTMNC)
- Belongingness/Agency (HTHMA, HTeCV, HTHI, HTe)
The principal realized that applying to college was no easy task, even for someone who is used to filling out forms and documents. Imagine how the students feel, OVERWHELMED!

What could we do to make applying to college more accessible?

Results

- Pay for Application
- Help students fill out applications
- Senior teachers help with personal statements

<table>
<thead>
<tr>
<th>Year</th>
<th>% Seniors Applying</th>
</tr>
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<tbody>
<tr>
<td>2012</td>
<td>75%</td>
</tr>
<tr>
<td>2013</td>
<td>78%</td>
</tr>
<tr>
<td>2014</td>
<td>84%</td>
</tr>
<tr>
<td>2015</td>
<td>99%</td>
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</tbody>
</table>
HTHNC began working on improvement project for 4-year college application rate.
HTHNC began working on improvement project for 4-year college application rate.
% HTH graduates attending 4 year college

- Total: 66.7% (2011), 66.1% (2012), 65.6% (2013), 64.8% (2014), 65.2% (2015)
- Median: 65.0% (2011-2017)

% attending 4 year college

2015-2017
58% → 67% FRL
Index Card Mingle

What’s a question you want to ask others in the room?
Three Improvement Questions

What are we trying to accomplish?

What changes can we make that will result in improvement?

How will we know that a change is actually an improvement?
Understand the problem
What will you do to understand the problem more deeply?

Refine the Theory & Achieve the Aim

Get Moving
What will you try, and gather data on, to guide your learning and next steps?

The key to avoiding analysis paralysis is to start small and learn along the way.
“If I had an hour to solve a problem I’d spend 55 minutes thinking about the problem and 5 minutes thinking about solutions”

-- Albert Einstein
Learn by Doing

Education is not an affair of 'telling' and being told, but an active and constructive process.

— John Dewey —
Our Problem: Some students struggle in math and feel they can’t succeed.

Our Goal: To abolish the phrase “I’m not a math person” and ensure all students succeed in math.
Understanding the Problem

- Gather data
- Uncover and explore underlying causes
- Map your system
Excavate!

How did you feel about math in K-12?
Share a moment that stands out with a partner.
Empathy Interviews to understand the user experience

- Safety first!
- Seek to understand, not confirm
- Elicit stories & feelings
- Ask once, clearly
- PROBE:
  - “Tell me more...”
  - “What was that like for you?”
Partner Prep for Empathy Interviews

What questions could you ask a student to understand his/her experience with math, and the factors that support or hinder their mathematical success?

- Question Selection/Creation (5 min)
- Share & Organize (5 min)
- Predict & Plan (3 min)
**Content:** What did we hear? What are we learning about the **root causes** that contribute to the problem?

**Process:** Are there **questions we wish we would have asked**? Are there **questions that were particularly fruitful**? Did we **probe** effectively?
Lunch

Be ready to go at 1:00!

Sit in groups of 4 where everyone interviewed someone different.
Improvement Tool: Fishbone Diagram

*Helps us...*

- Identify the different contributing factors to a problem
- Drill down to root causes that were not readily apparent
- Scope a massive problem statement down into a project that feels more manageable
Problem: Students do not participate equitably in groupwork.

Pair Share

What do you notice about how the fishbone diagram is constructed?
Some students struggle in math and feel they can’t succeed.
Ask a chain of “Whys”

Students have trouble working in groups.

Why?

They don’t understand how to work well with others.

Why?

They have little prior experience with group work.

Why?

Teachers tend to emphasize individual learning in task design.

Why?

Some students disengage from group tasks

Why?

Workload not shared equally

Why?

Students still developing skills of communication, negotiation, compromise.
Cowperson up Facilitators!

Keep it moving. Uphold norms.
Fishbone Generation Protocol

Quick Whip: **Share one thing that struck you from your interview?**

1. Use the problem statement:  
   **Some students struggle with math.**

2. Brainstorm Causes (5 min)

3. Share & Categorize (20 min)

4. Post & Reflect (5 min) ✨❤️
Should you get more coffee?

Are you a unicorn?

no

Get more coffee.

Liar.

yes

Return back here by 2:15.
Revisiting the Problem: Interrelationship Digraph

Purpose: Helps us determine which root causes to focus on (often it is not what we think!)

Pair share with student effort example:

- What do we notice?
Cowperson up! New facilitator!

Keep it moving. Uphold the norms. Embrace “Yes and...”!
Interrelationship Digraph

Protocol:

1) Write the **problem statement** at the top.
2) Identify and arrange the **5-7 main root causes** in a circle.
3) **Predict:** Which cause do you think is most important?
4) **Construct the digraph:**
   - Starting with one cause, for each pair of causes ask yourself:
     - Is there a relationship between these two?
     - If yes, which causes the other, *the most*? Draw an arrow from one to the other to show directionality.
   - Repeat for all causes.
   - Tally (out, in) for each cause; *the root causes with the most outgoing lines* most impact the issue/problem. **Star the top 1-2 root causes!**
5) **Discuss** predictions and implications.
What are your top two most important root causes?

Did they match your predictions?
Identifying High Leverage Change Ideas

Diagram:
- High impact, low effort. (YES!)
- High effort, high impact. (MAYBE)
- High effort, low impact. (NO!)
- Low impact, low effort. (MAYBE)
Change Idea Generation: New Facilitator!

Protocol:

1) **Individual Brainstorm (5 min):** What could we try that would impact our most important root causes? One idea per post-it.

2) **Chart the Change Ideas (15 min.):** Where does each idea fit on the effort vs. impact matrix? *Start with each person sharing their favorite idea.* Cluster similar ideas as you go.

3) **Select High Leverage Change Ideas to Move on (5 min.):** Which ideas in the “high impact, low effort” quadrant can we get moving on now? (Star these!) Which ideas on the “high impact, high effort” do want to work toward?

change ideas you are excited about!
Where would we go from here?

Improvement Tool: PDSA Cycle

\[
\begin{align*}
\text{P} &= \text{Plan} \quad \text{(plan a change or idea related to improvement)} \\
\text{D} &= \text{Do} \quad \text{(do something, preferably on a small scale)} \\
\text{S} &= \text{Study} \quad \text{(study the results; what did we learn?)} \\
\text{A} &= \text{Act} \quad \text{(adopt, abandon, or adapt the change idea)}
\end{align*}
\]
Ultimate Goal of PDSA Cycle

Is our change idea working?

Yes  
ADOPT  
Regular Part of Our Practice

Kinda  
ADJUST  
Tweak it

No  
ABANDON  
Stop doing it

Based on EVIDENCE!
PDSAs happen quickly and build on one another so we can Learn Fast to Implement Well... Together.
By June 2018, 80% of traditionally underserved students in participating classrooms will demonstrate increased mathematical agency and success.

If we want to improve our AIM, then we need to focus on PRIMARY drivers, through SECONDARY drivers, and one way to do that is through a CHANGE IDEA.
Attend our Institute with your team on June 7-8!
Use our Protocols and Change Ideas!

www.hthgse.edu/CREI
Exhibition Prep

What is one take-a-way you want to share - insight, lingering question, next step?

Exhibition = “Truth Test”
What do you want feedback on?
- What resonates?
- What’s missing?
- What should we consider?

Each person gets 3-5 post-its!
Exhibition at HTe!

4:00 - 4:30    First Shift
4:30 - 5:00    Second Shift

With your group, decide which 2 people will present during each shift. *When you are not presenting, you are attending!*
User experience

Design
Attend our upcoming Institute with your team on June 7-8: Building a Culture of Continuous Improvement for Equity

Use our Protocols & Change Ideas

Reach out to learn more...

The Center for Research on Equity and Innovation at the High Tech High Graduate School of Education  
www.hthgse.edu/crei