Improvement Science: Plan, Do, Study, Act
Goals Today

● Give you a quick introduction into Improvement Science ideas
  ○ Six elements to Improvement Science

● Walkaway with tools that you can use with your teams to brainstorm solutions
  ○ Fishbone Diagram, the 5 Whys and the Driver Diagram

● Resources to explore more and improve yourself and others
  ○ Websites and books to read
Making Toast, Part I

Resources:
- A marker/pen and white sheet of paper

Activity:
- Working independently and silently, please draw your process for making a single piece of toast.
How do we make toast?
What made the processes different?

- Definitions
- Perspective
- Materials
- Location
- Time
- Number of people
A Five Whys Worksheet

Define the problem:

Why is it happening?

Why is that?

Why is that?

Note: If the last answer is something you cannot control, go back to the previous response.
What does 5 why look like?

- **Problem:** There is a puddle of water on the floor.
  - Why
    - The overhead pipe is leaking.
      - Why
        - There is too much water pressure in the pipe.
          - Why
            - There is a faulty control valve.
              - Why
                - Control valves have not been tested.
                  - Why
                    - Root Cause: Control valves are not on the maintenance schedule.

Breakout here- Danielle (teacher) Garrett (grandparent)
What is Improvement Science? 1st: Problem Analysis

1. Make the work problem-specific and user-centered.
   - It starts with a single question: “What specifically is the problem we are trying to solve?”

2. Variation in performance is the core problem to address.
   - Not what works, but rather what works, for whom and under what set of conditions.
   - Aim to advance efficacy reliably at scale.

3. See the system that produces the current outcomes.
   - It is hard to improve what you do not fully understand.
   - Go and see how local conditions shape work processes.
   - Make your hypotheses for change public and clear.
What is Improvement Science? 2nd: Study & Act

4. We cannot improve at scale what we cannot measure.
   - Embed outcome and measurement changes to track if change is an improvement.
   - We intervene in complex organizations.

5. Anchor practice improvement in disciplined inquiry.
   - Engage rapid cycles of Plan, Do, Study, Act (PDSA) to learn fast, fail fast, and improve.
   - That failures may occur is not the problem; that we fail to learn from them is.

6. Accelerate improvements through networked communities/PLCs.
   - Embrace the wisdom of crowds.
   - We can accomplish more together than even the best of us can accomplish alone.
How can we improve slowly?
Two kinds of causal theory diagrams:

**Fishbone:**
Team theories about what **IS** causing an effect.

Account for present *situation*

**Driver Diagram:**
Team theories about what changes **WILL** result in improvement.

Justify *action (change)*
A Fishbone Diagram is a structured brainstorming tool using categories to explore root causes for an undesirable effect.
Students need work to support themselves and family. LEC lacks extracurriculars. LEC funding model support adult needs. Jobs do not require high school diplomas. Poverty creates family problems. Students have multiple ACEs. Students can find jobs that pay $10+/hr. Students need work to support themselves and family.

LEC lacks extracurriculars. Students want different school experience. LEC funding model support adult needs. Low paying jobs cannot support needs. Change in address and phone number. Students have failed at school in the past. Students have trauma. Students do not experience personal success. Students do not think they can be successful.

Lost Contact
Life Coaches cannot reach students. Dropouts need more resources. Dropouts have smaller safety net. Dropouts are more likely to commit crime. Students have failed at school in the past. Students have trauma. Student Health. Student Motivation. Incarceration.

LEC loses 10-20% of student population every eight weeks.
Breakout: Different groups
Scenario: Students’ grades are falling
build theory

AIM

HOW

HOW

HOW

HOW

 HOW
General Adult Violence Reduction Collaboratives’ Driver Diagram

**AIM**

To reduce physical violence at [unit] by X% by [timeframe]

**PRIMARY DRIVERS**

Identify, prediction and responsiveness, working as a team

Openness, transparency and sharing of safety as a priority for the ward community

**SECONDARY DRIVERS**

1. Objective assessment of risk: mitigates against biases
2. Effective MDT working and team communication
3. Speed of decision-making and actioning decisions on ward
4. Effective transfer of learning from shift to shift
5. Staff skills/confidence/attitude to anticipating / predicting needs
6. Flattening of hierarchies and stronger MDT working
7. Minimising aggravation as a result of unmet needs
8. Reducing rigidity of ward environment
9. Discussion of violence with SUs and families/carers
10. Learning from feedback as a ward community
11. Sharing data / information on violence and safety culture

**CHANGE IDEAS**

- Broset Violence Checklist (1, 5, 7)
- Safety Huddles (2, 3, 5, 6, 7)
- Safety discussion community meetings (9, 10, 11)
- Safety Cross (11, 9)
Reducing Student Withdrawals

AIM

Primary Drivers

Positive Relationships

- Teachers recognize students for class performance
- Positive goal setting
- Reduced schedules for students with poor educational histories

Startings small

- Develop guidelines and incentives for eLearn classes
- Increase teacher communication regarding student best practices

Coping skills

- Teacher training on brain-based practices

Secondary Drivers

- Train other admin and coaches for schedule signals and tips
- Create behavior expectations and incentives for eLearn
- Have teachers brainstorm in department teams, consistent awards and incentives
- Have scheduling standards for students’ grades based on transcripts
- Do a mini-PD regarding different learning styles

Change Ideas

LEC will reduce withdrawal students by 33% a term
Want to Learn More?

Resource Links:

Carnegie Foundation and the 90-day cycle

Institute for Healthcare Improvement
Presenter’s Bio

Garrett Wilson is the Lead Teacher at the Lafayette Excel Center. Over the past five years with Goodwill, Garrett helped open University Heights as a Humanities instructor and then was promoted the following year to be Lead Teacher back home in Lafayette. Garrett has completed the Director series and Level 1 Leadership Series. He is a licensed administrator from Purdue University, and he is continuing to grow and learn with his ED.D. coursework at Indiana University.