

Personalized
Learning
Summit
2017



The Role of Collaborative Technology and Data Analytics in Networked Improvement Communities

How to Learn Fast and Implement Well

Jojo Manai & Hiro Yamada

@jmanai & @hryamada

Agenda

1. Introduction:

- Getting to know each other

2. Why Improvement Science?

3. High Leveraged Problem:

- Remedial Math Education

4. NILS

5. Q&A



The Carnegie Foundation

Who are we?



Jojo Manai

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Director of Analytics

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Why the Carnegie Foundation for the Advancement of Teaching?

- Chartered in 1906 by an act of Congress
- Policy and research center
 - Founded Teachers Insurance and Annuity Association (TIAA)
 - Published the Flexner Report on medical education
 - Created the Carnegie Unit
 - Founded the Educational Testing Service
 - Developed the Carnegie Classification of Institutions of Higher Education
 - Supported the development of Pell Grants
 - Led a renewal in the scholarship of higher education
 - Now working to develop the field of **Improvement Science** and support **Networked Improvement Communities**

Carnegie Staff



Life at Carnegie



This Workshop





Who are you?

Getting to know your table



Getting to know the room



_____ or _____

Are you more inclined toward...

Details ——— *or* ——— Big Picture



Are you more inclined toward...

Answers ——— *or* ——— Questions



Are you more inclined toward...

Logic ——— *or* ——— Feeling



Are you more inclined toward...

Convergent — *or* — Divergent



Are you more inclined toward...

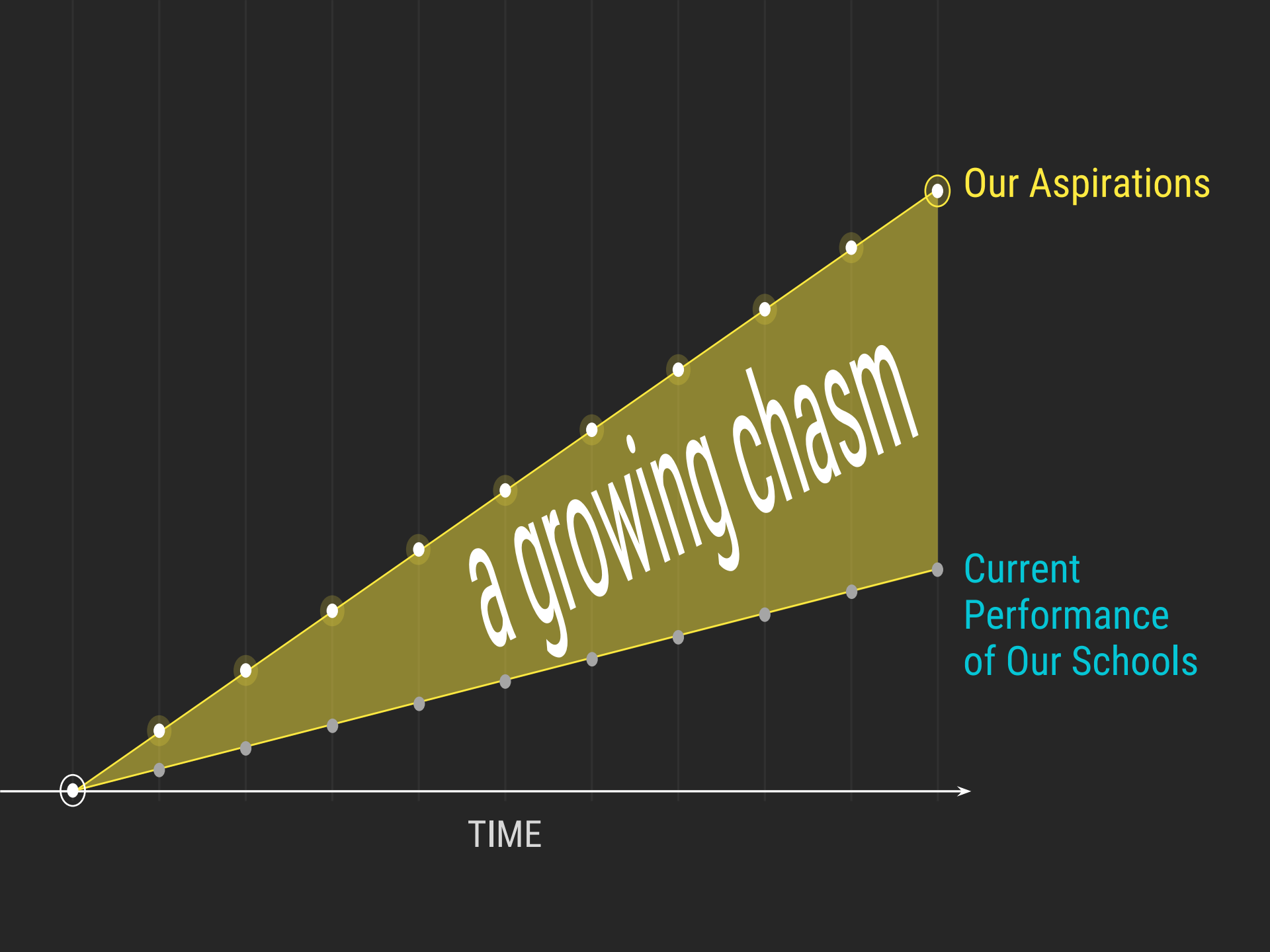
Problem
Finding

or

Problem
Solving



Why Improvement Science?



Our Aspirations

Current
Performance
of Our Schools

TIME

a growing chasm



Last Decade: Performance Management Using Accountability to

Abs	Tardy	Home Language	Y O H	MAP Math Δ	MAP Reading Δ	Ward	ELL	MEPA	Has IEP	Afterschool
4	11	Portuguese	5	+14 (176 ⇔ 190)	+8 (152 ⇔ 160)	6	Yes	R15 / W12	Yes	B&G
6	0	English	4	+9 (157 ⇔ 166)	+20 (219 ⇔ 239)	3	Yes	R16 / W23	No	B&G Comm Schl
1	9	Spanish	4	+34 (232 ⇔ 266)	+8 (231 ⇔ 239)	6	No		Yes	B&G
1	8	Portuguese	6	+20 (252 ⇔ 272)	+1 (258 ⇔ 259)	5	No		Yes	Mystic B&G
8	19	English	6	+6 (165 ⇔ 171)	+0 (256 ⇔ 256)	4	Yes	R21 / W22	No	B&G
6	2	English	5	+6 (230 ⇔ 236)	+1 (185 ⇔ 186)	5	Yes	R13 / W19	No	B&G Comm Schl
10	11	Portuguese	4	+24 (204 ⇔ 228)	+4 (233 ⇔ 237)	5	Yes	R10 / W19	No	Comm Schl
15	4	English	1	+20 (154 ⇔ 174)	+15 (234 ⇔ 249)	7	Yes	R22 / W15	No	B&G
11	8	Croato-Italian	6	+5 (212 ⇔ 217)	+14 (189 ⇔ 203)	3	Yes	R26 / W13	No	Comm Schl
7	7	English	1	+11 (248 ⇔ 259)	+15 (199 ⇔ 214)	7	No		No	B&G Comm Schl
1	4	Portuguese	6	+16 (178 ⇔ 194)	+10 (242 ⇔ 252)	6	Yes	R17 / W18	No	B&G
1	13	Portuguese	6	+7 (153 ⇔ 160)	+14 (227 ⇔ 241)	3	Yes	R24 / W20	Yes	Peabody
14	15	English	5	+1 (153 ⇔ 154)	+13 (234 ⇔ 247)	4	No		No	Mystic
16	1	English	6	+9 (249 ⇔ 258)	+11 (249 ⇔ 260)	7	Yes	R15 / W10	No	Mystic B&G

Set targets

Create incentives

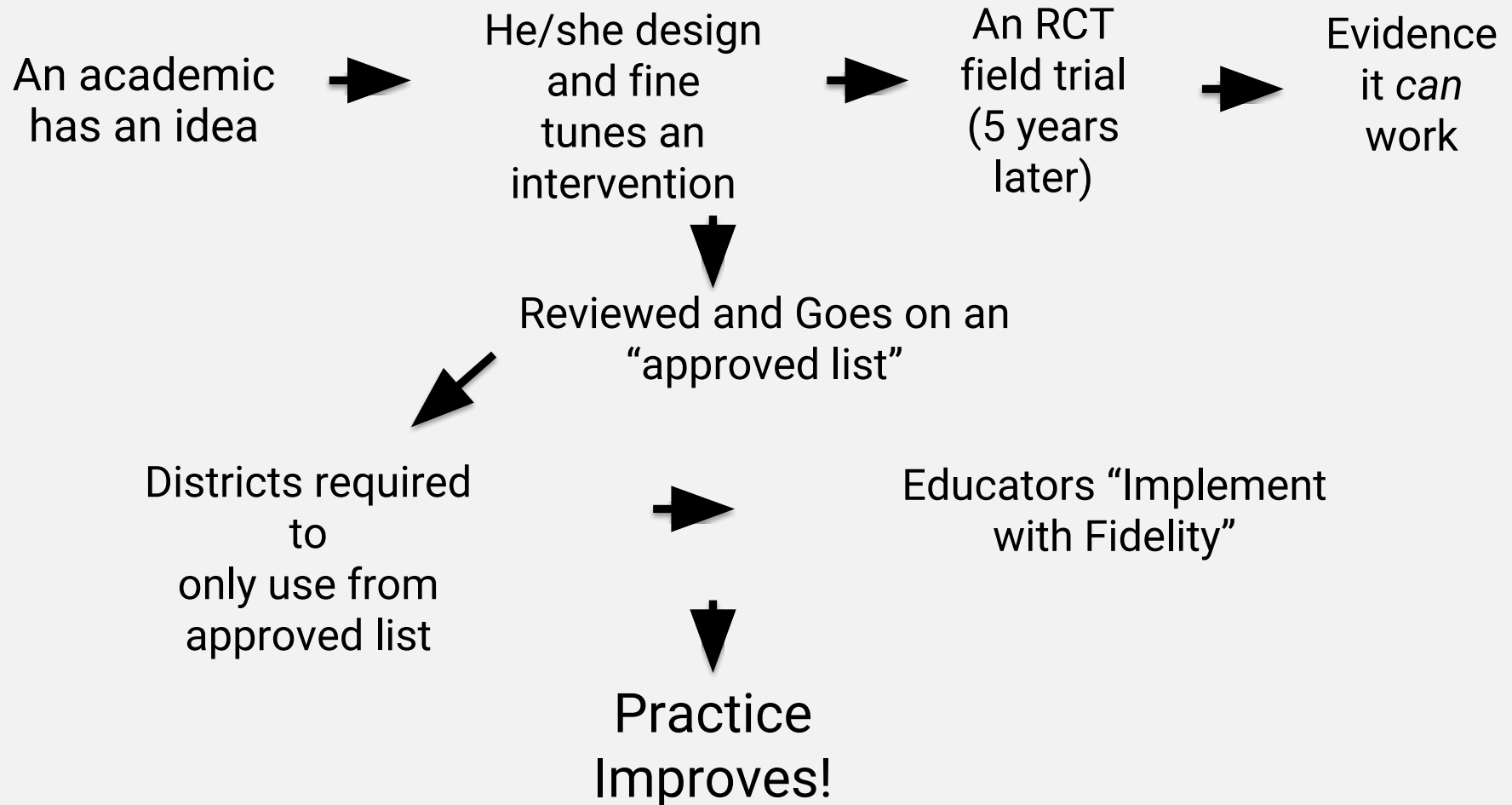
Collect data/dashboards

Hold **individuals** accountable

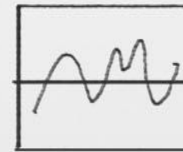
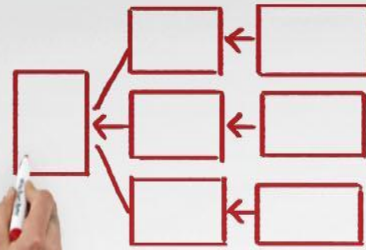
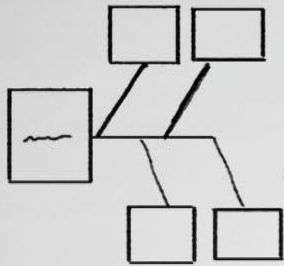


“Go figure it out or else...”

Last Decade: Evidence-based Practice Movement



Improvement Principles



Be problem-focused
and user-centered



Attend to
variability



See
the system



Embrace
measurement



Learn through
disciplined
inquiry



Organize as
networks



6

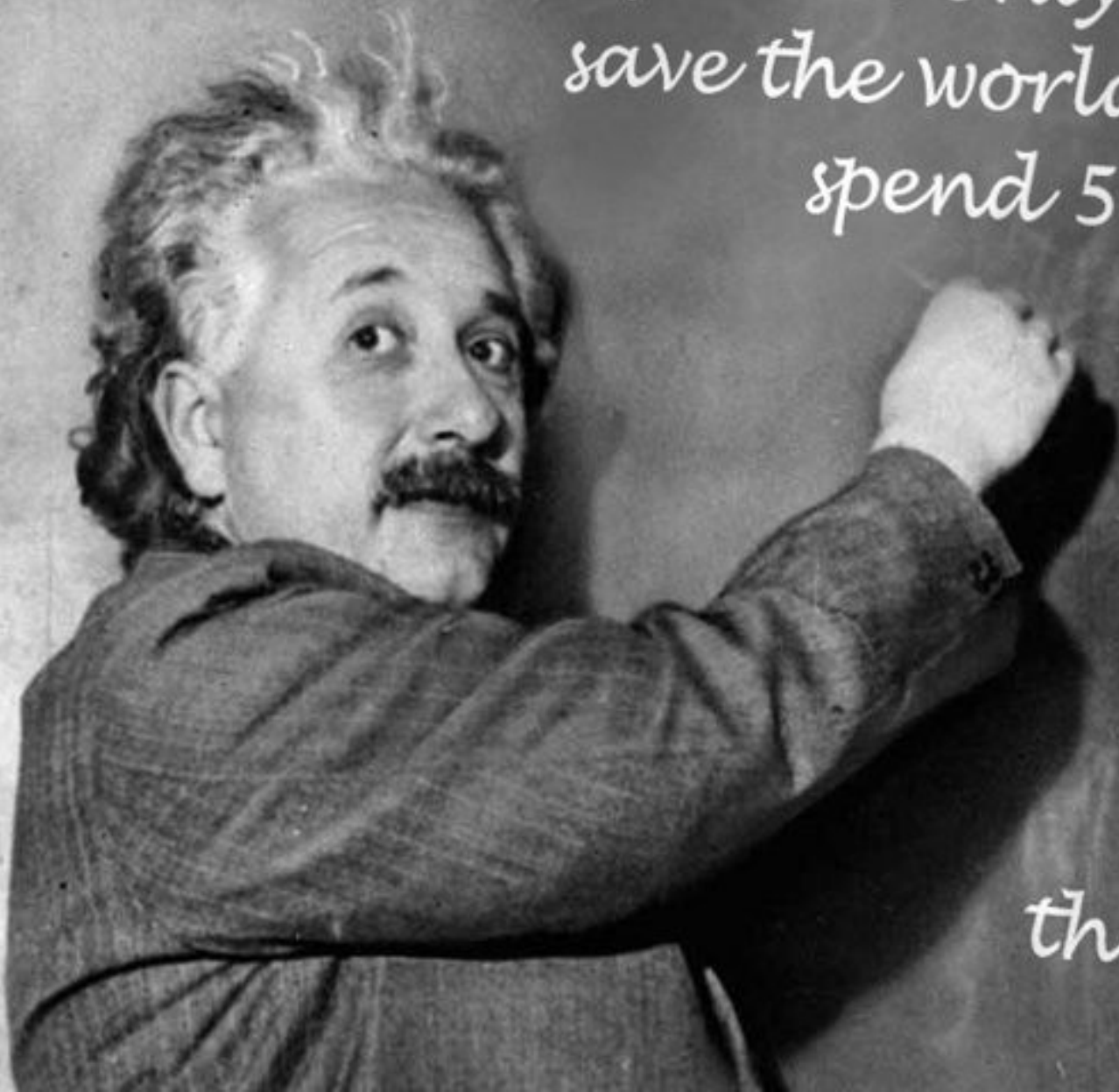
CORE PRINCIPLES OF
IMPROVEMENT



SOLVING PROBLEMS

Be problem-focused
and user-centered

If I had only 1 hour to
save the world, I would
spend 55 minutes
defining
the
problem
and only
5 minutes
finding
the solution



Understanding the Problem: Three Sources of Knowledge



Professional Knowledge

Professional Knowledge: Knowledge of local organizational context, structures, and processes.

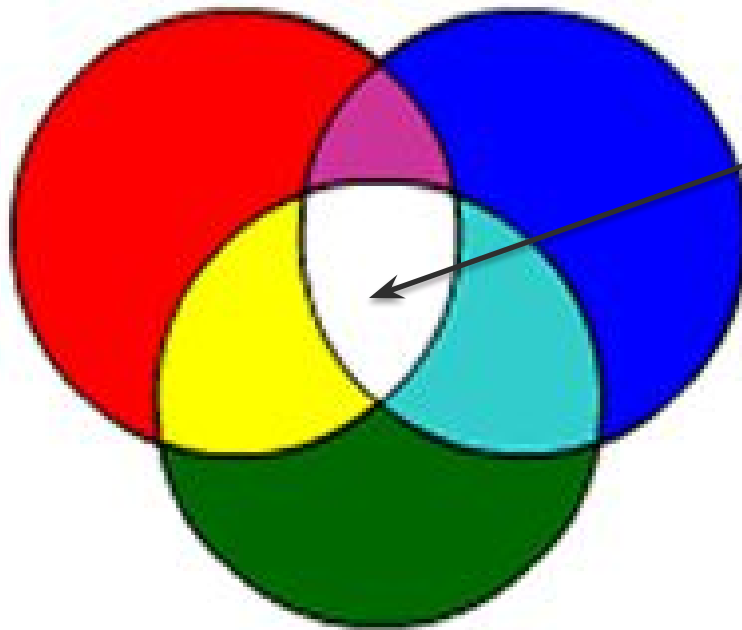
Improvement Knowledge

Improvement Knowledge: The principles, tools, methods and human and social resources that structure this work

Research Knowledge

Research Knowledge: About what *can* work and relevant basic scholarship.

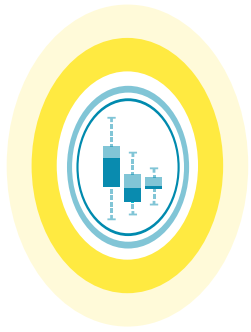
Understanding the Problem: Three Sources of Knowledge



Leverage professional, improvement and research knowledge in combination to deeply understand the problem.

Activity (5 mins)

- Think about one problem at your local context (institution) that you'd like to solve
- Think about the user (Student, Teacher, Administrator etc) this problem affects
- Within what time frame you'd like to solve this problem?



Attend to
variability

A Case Example

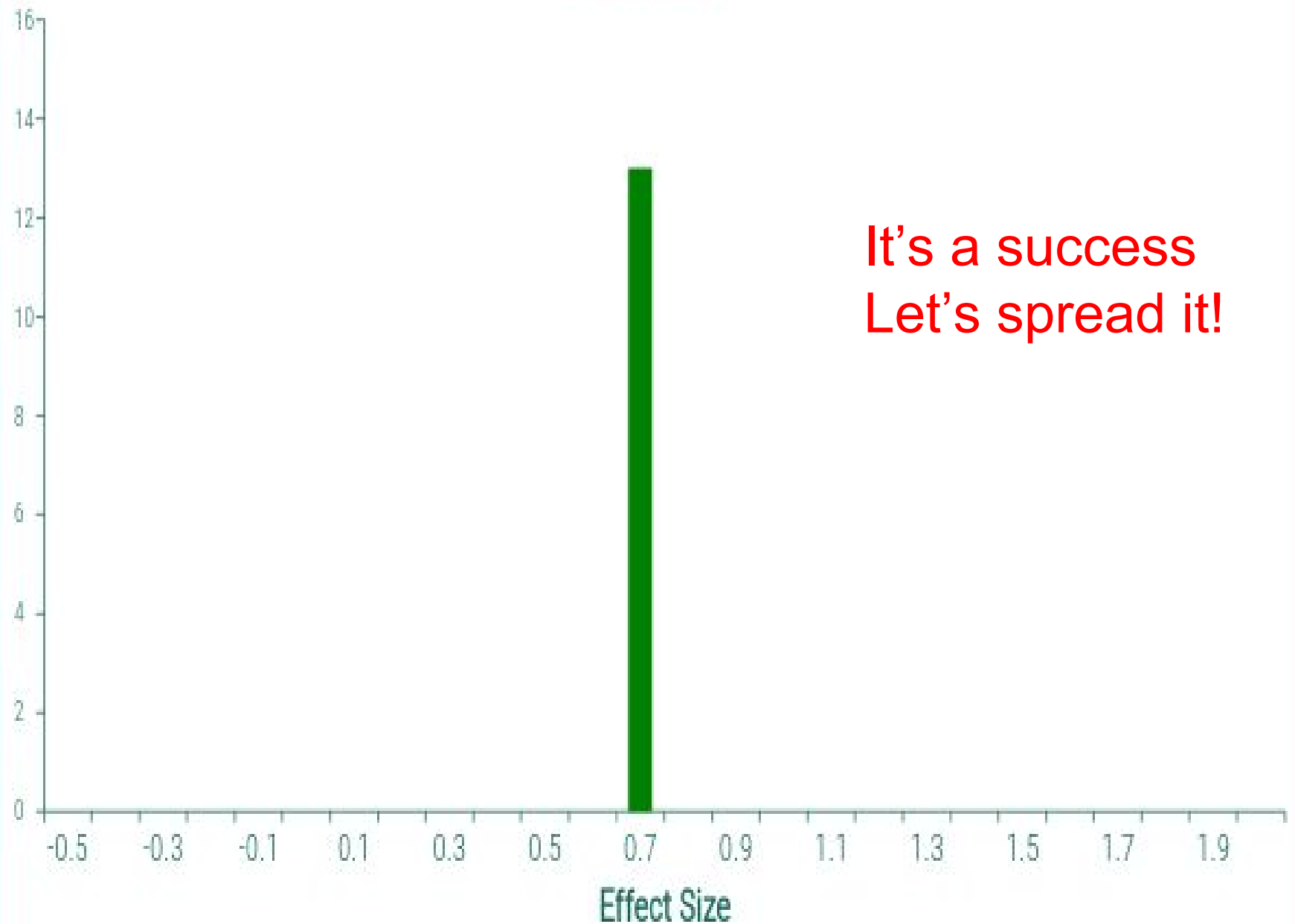
First year results
from a large randomized field trial
of Reading Recovery
(13 initiatives)



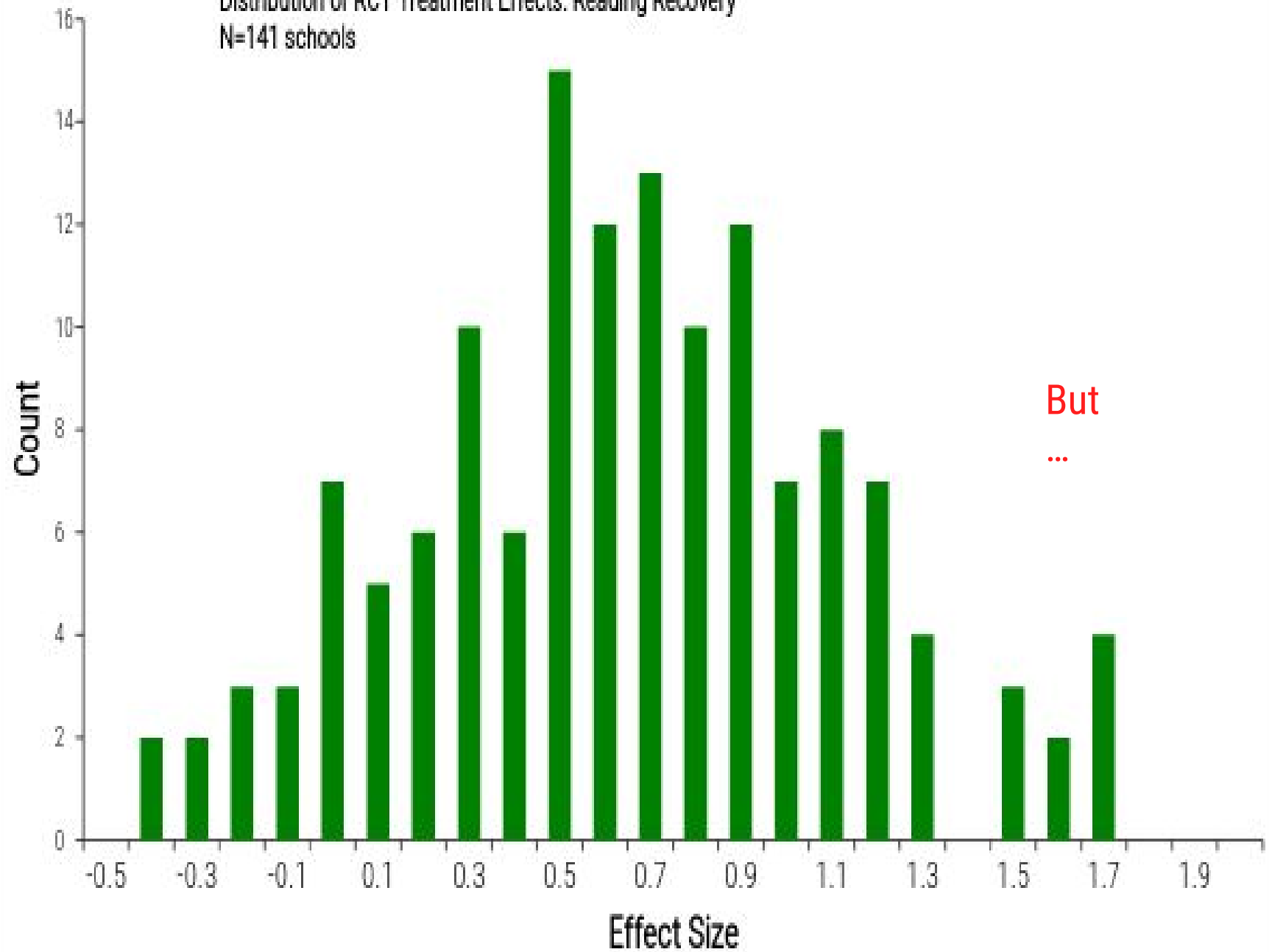
We open doors to a literate future for
children who initially struggle in learning to
read and write.

RCT (average) Treatment Effect: Reading Recovery

N=141 schools

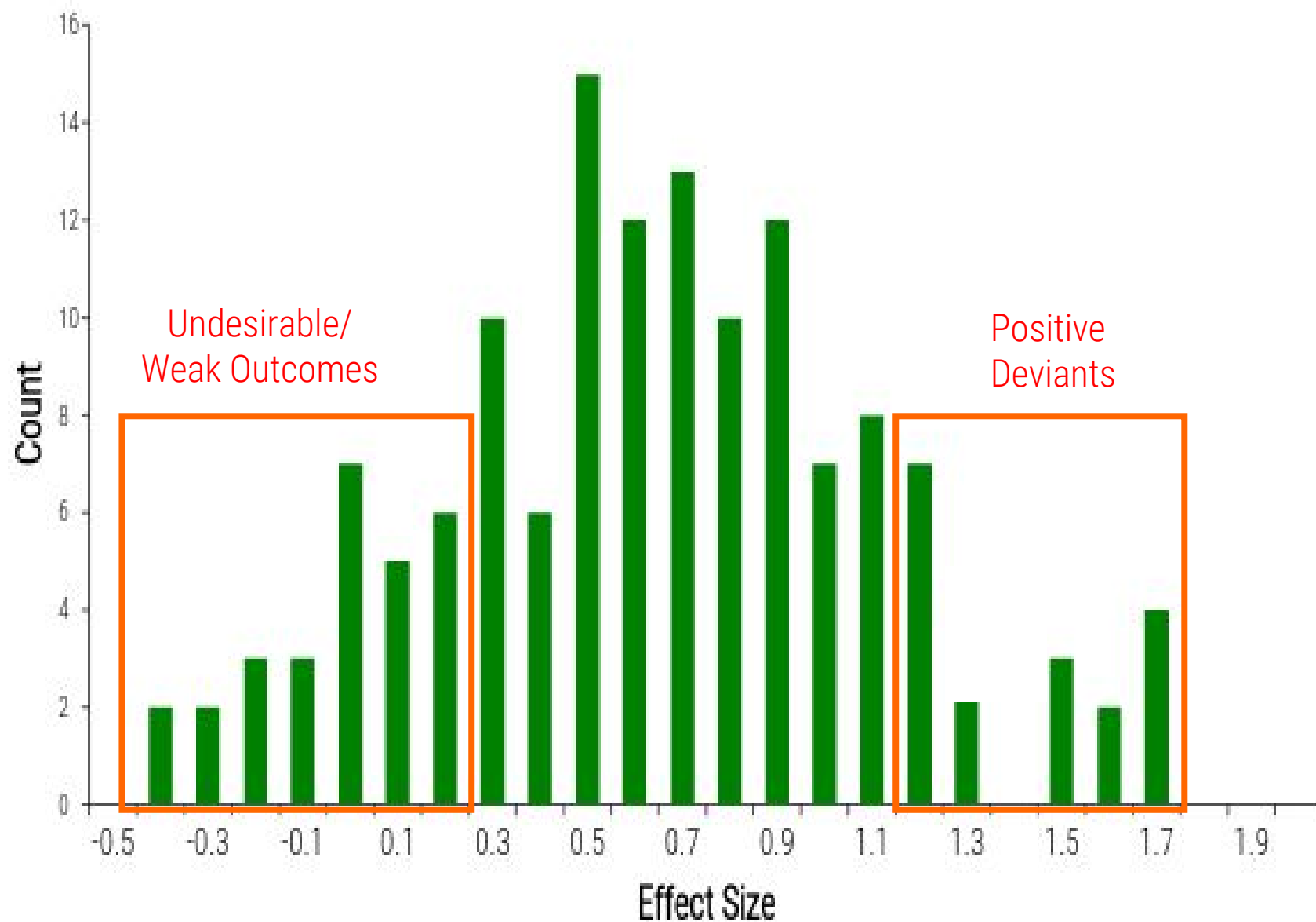


Distribution of RCT Treatment Effects: Reading Recovery
N=141 schools



But
...

Distribution of RCT Treatment Effects: Reading Recovery
N=141 schools





See
the system

What's actually producing
the outcomes we observe?

See the system: An argument by analogy from healthcare



See the system



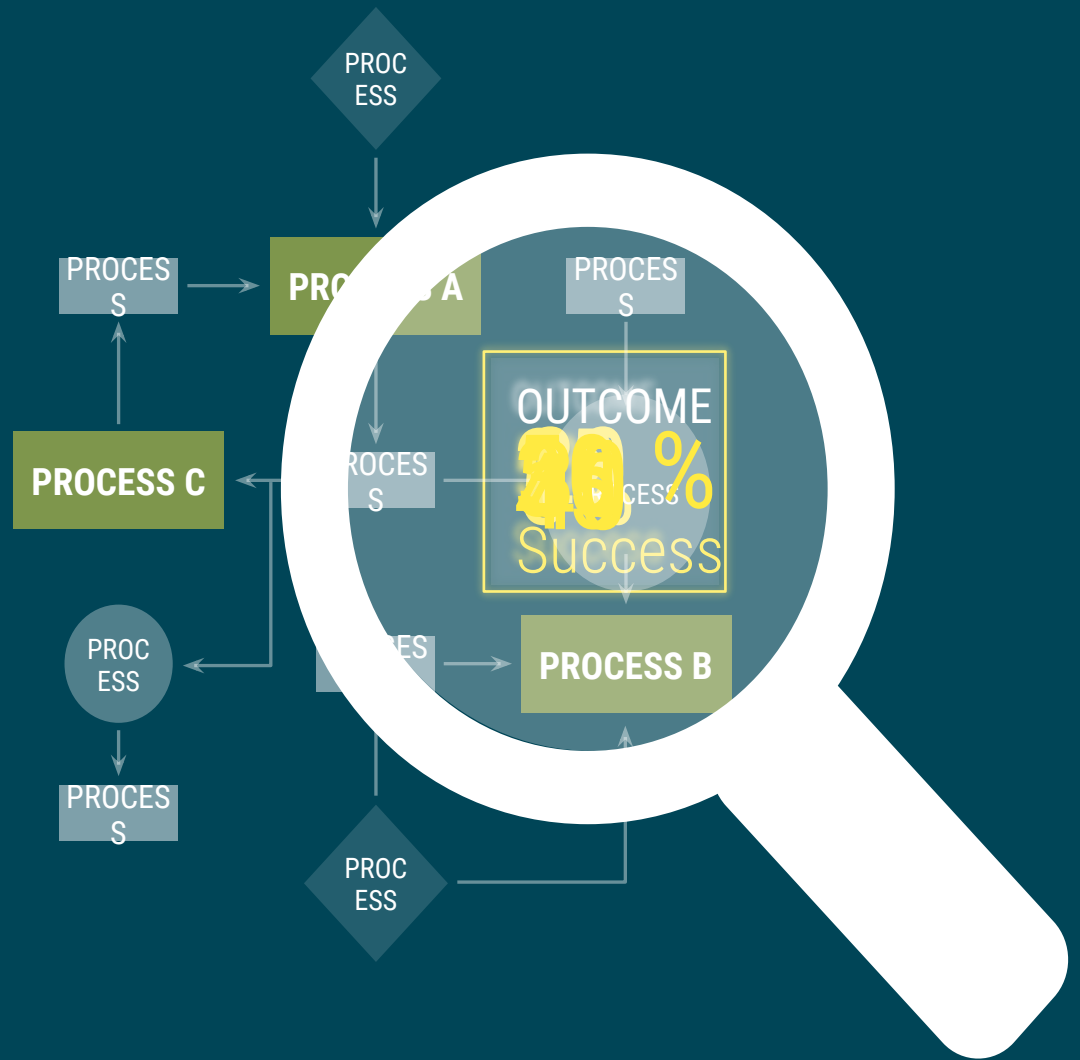


Embrace
measurement

Are we truly
improving anything?



Embrace
measurement

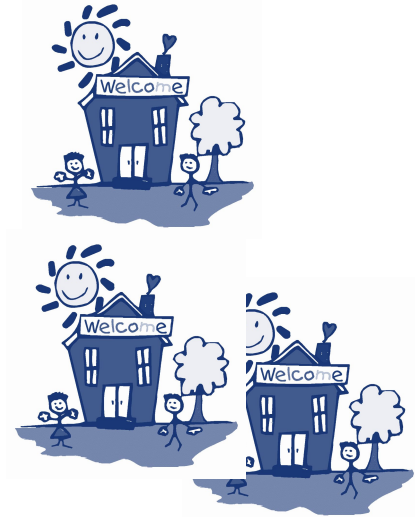




Learn

through disciplined
inquiry

How can we learn faster to
achieve the outcomes we
seek?

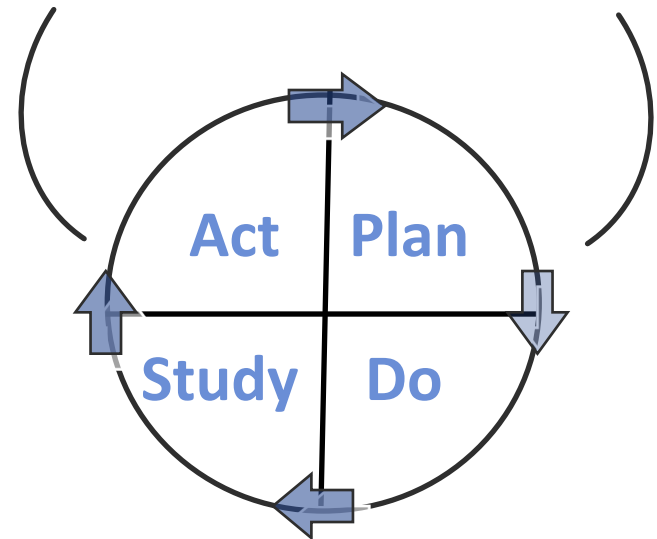
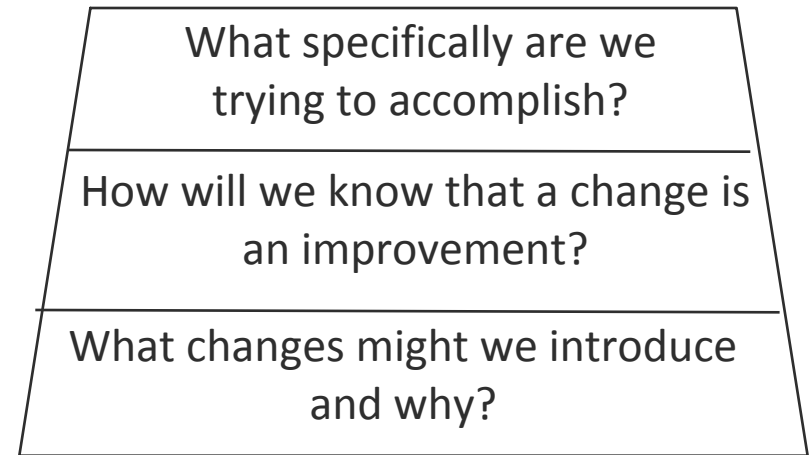
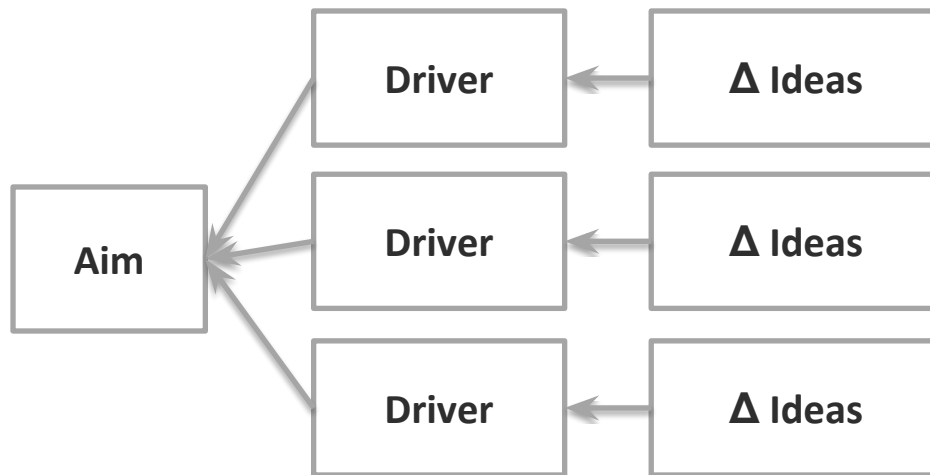


AIM



A common methodology for learning

A collective theory of improvement



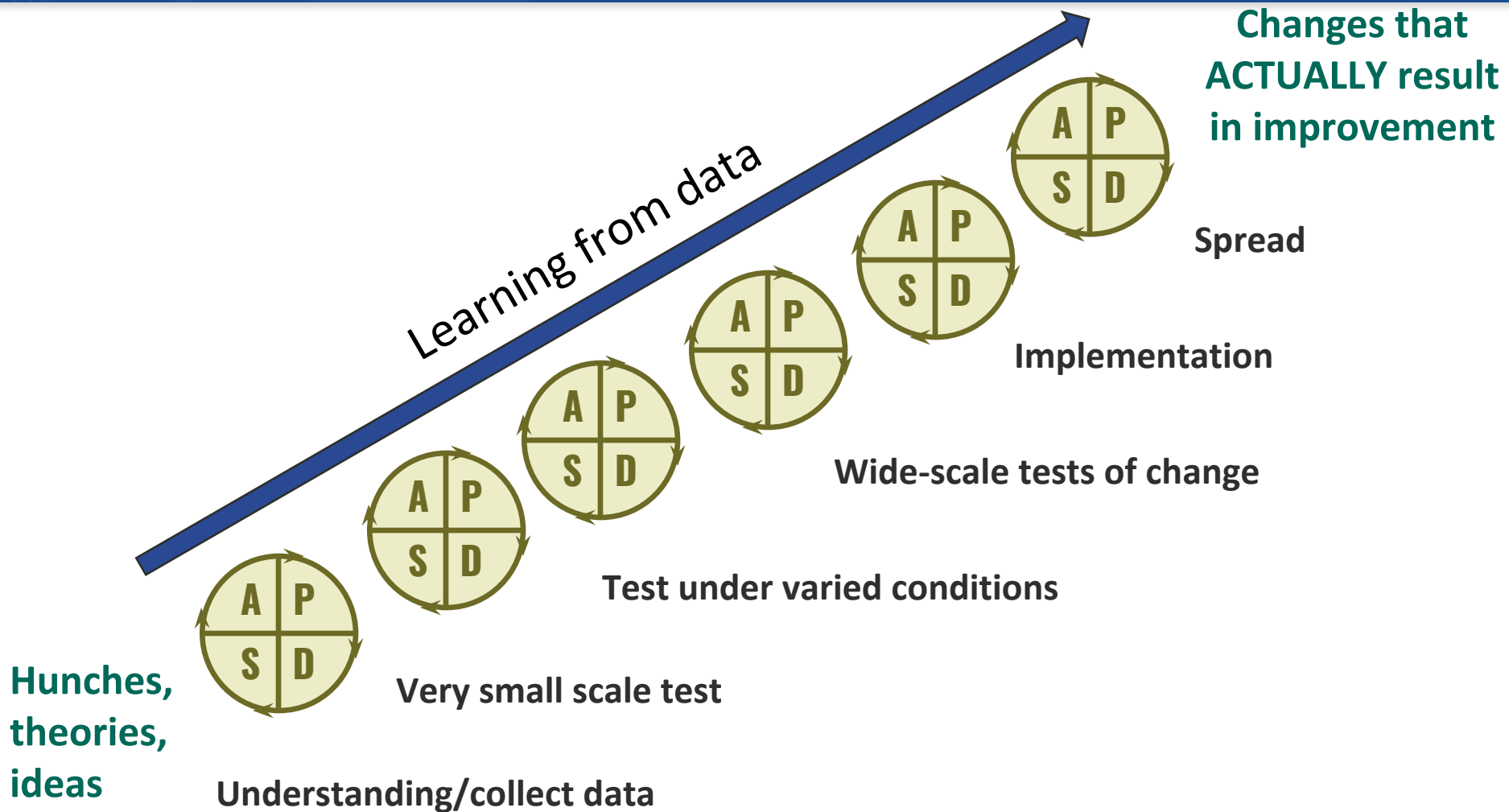
What are some examples from your institution?

How does the model for improvement help to evolve the network theory?

TURN AND TALK

*The Model for Improvement
Adapted from Associates for
Process Improvement*

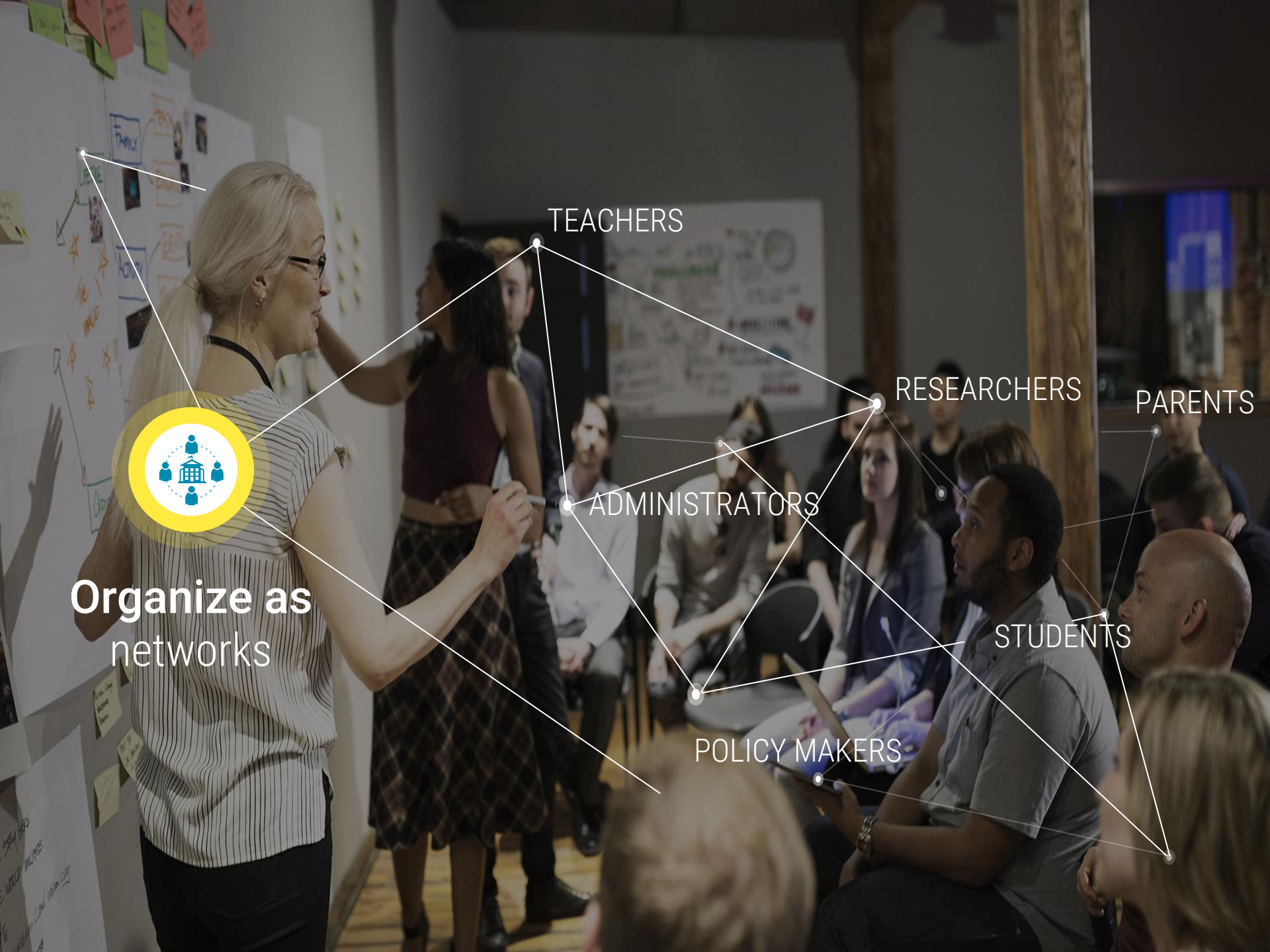
P-D-S-A Ramp





**Organize as
networks**

How can we combine our
efforts
to make real improvement?



TEACHERS

RESEARCHERS

PARENTS

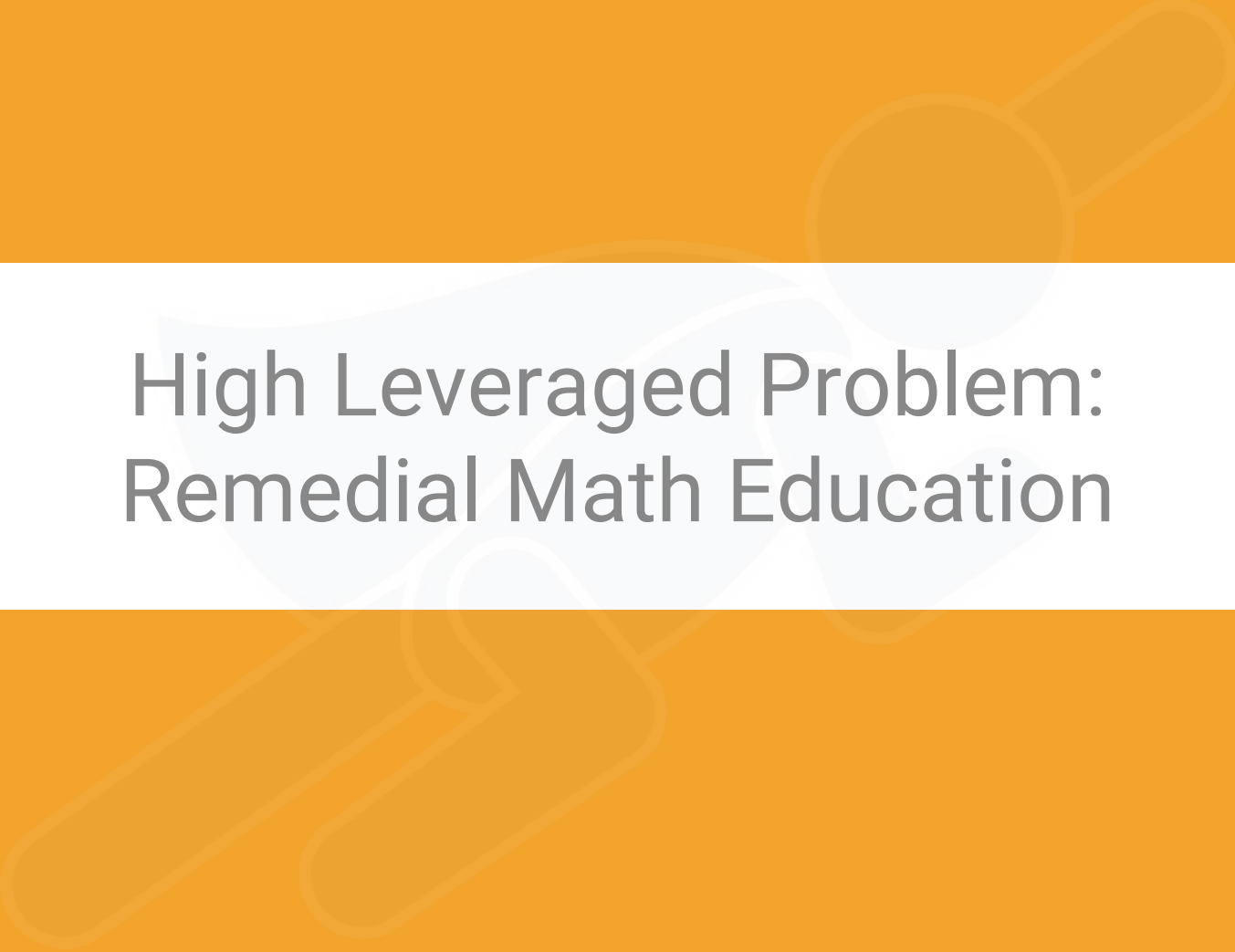
ADMINISTRATORS

STUDENTS

POLICY MAKERS

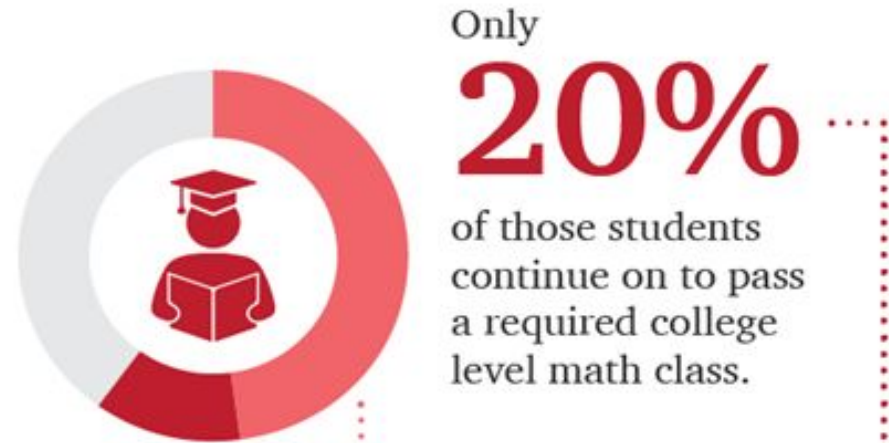
**Organize as
networks**





High Leveraged Problem: Remedial Math Education

Problem: Remedial Math Crisis

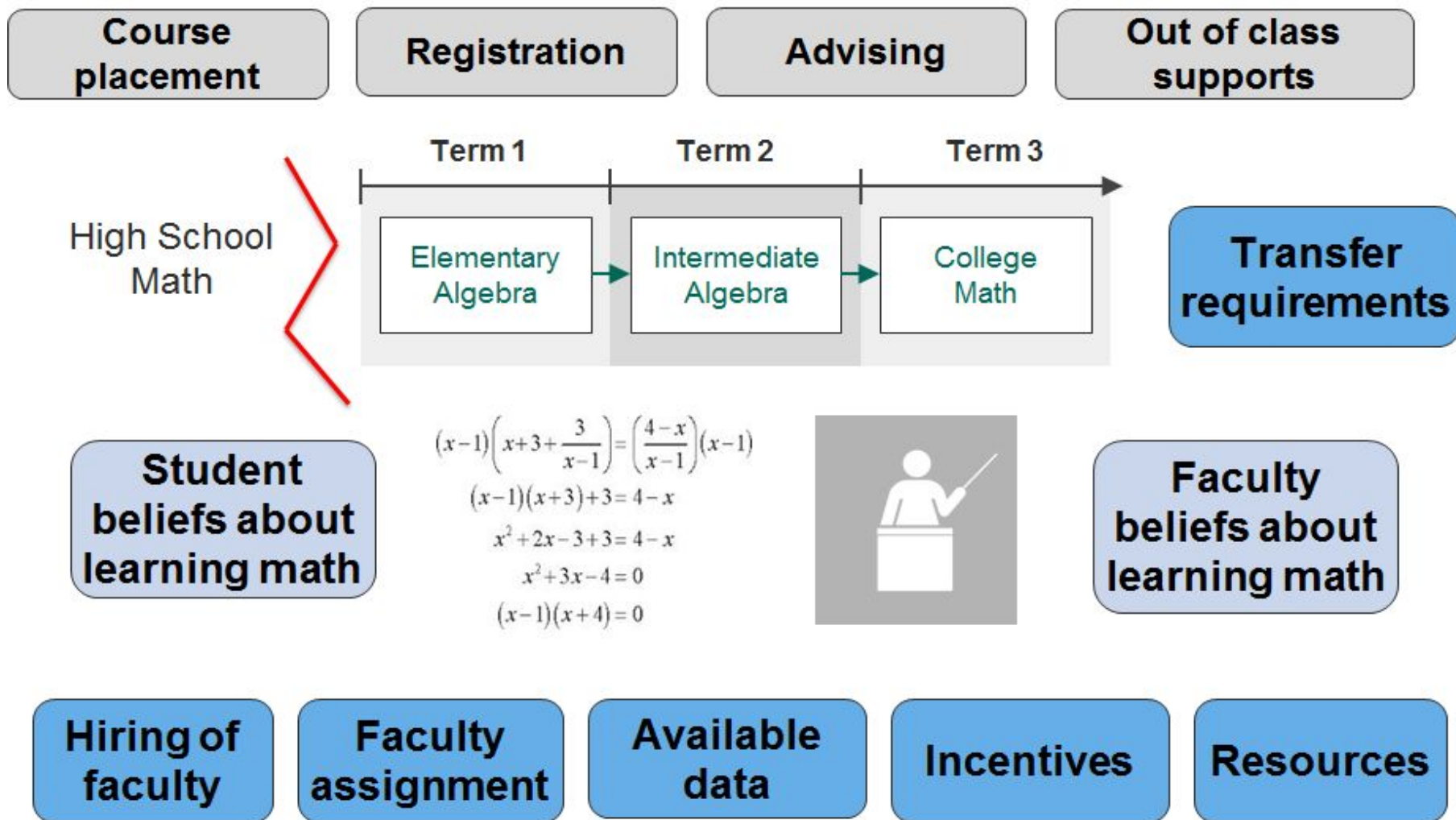


**500,000
STUDENTS**

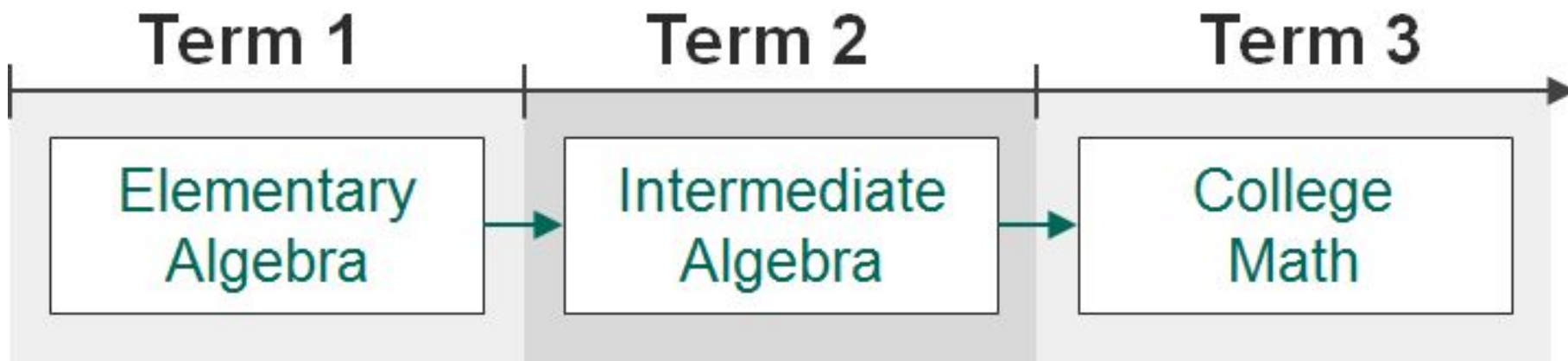
in every cohort will never complete the developmental math requirement.

 = 10,000 students

Why are We Getting the Outcomes We are Currently Getting?

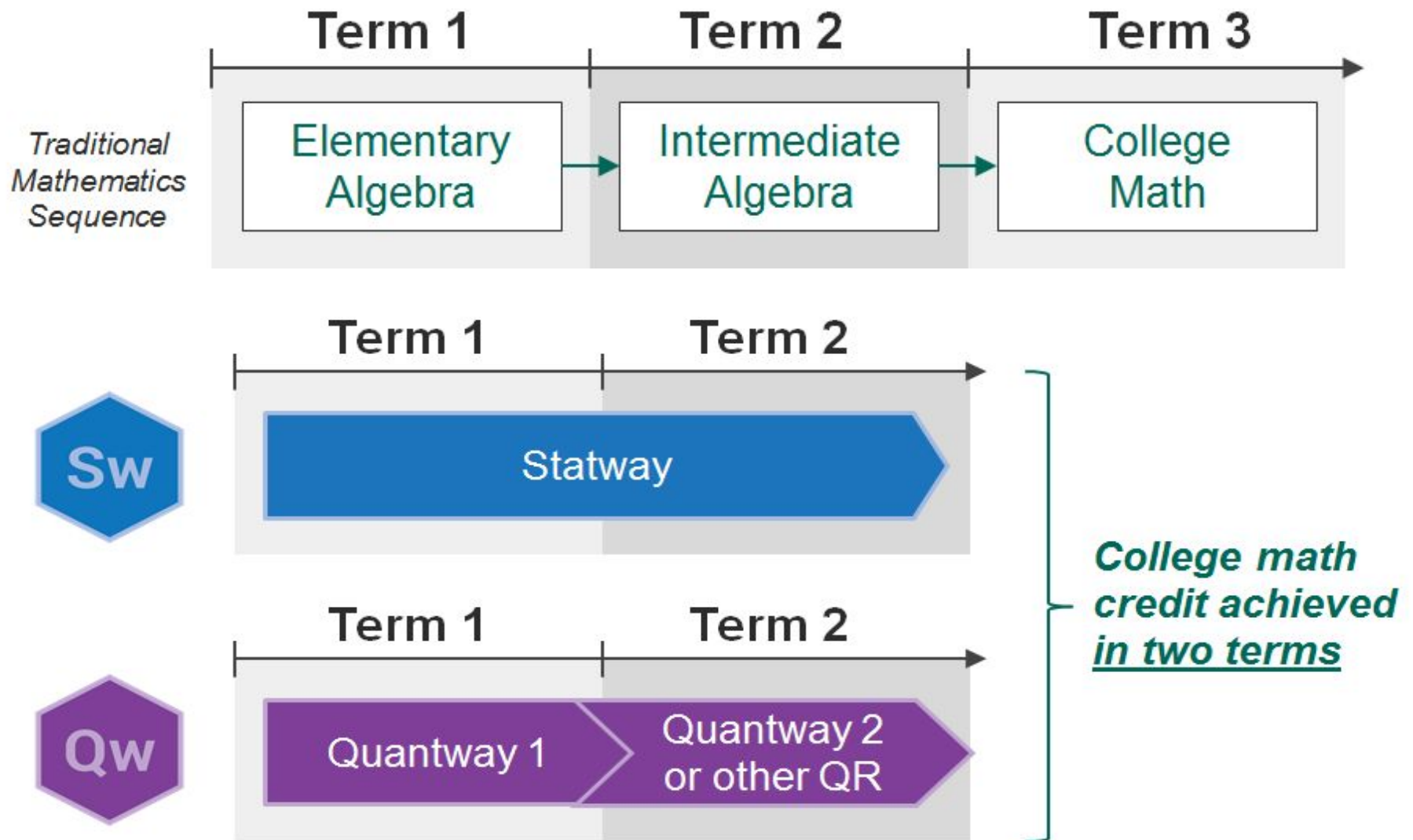


Problem: Traditional Math Sequence



Takes at least 1.5 to 2 years

Solution: Accelerated Pathways



*Theory
of
Improvement*

By July 2018,
reclaim the
mathematical
lives of
30,000
students

Accelerated Pathway

Ambitious, relevant, problem-centered curriculum

Student-focused, collaborative pedagogy

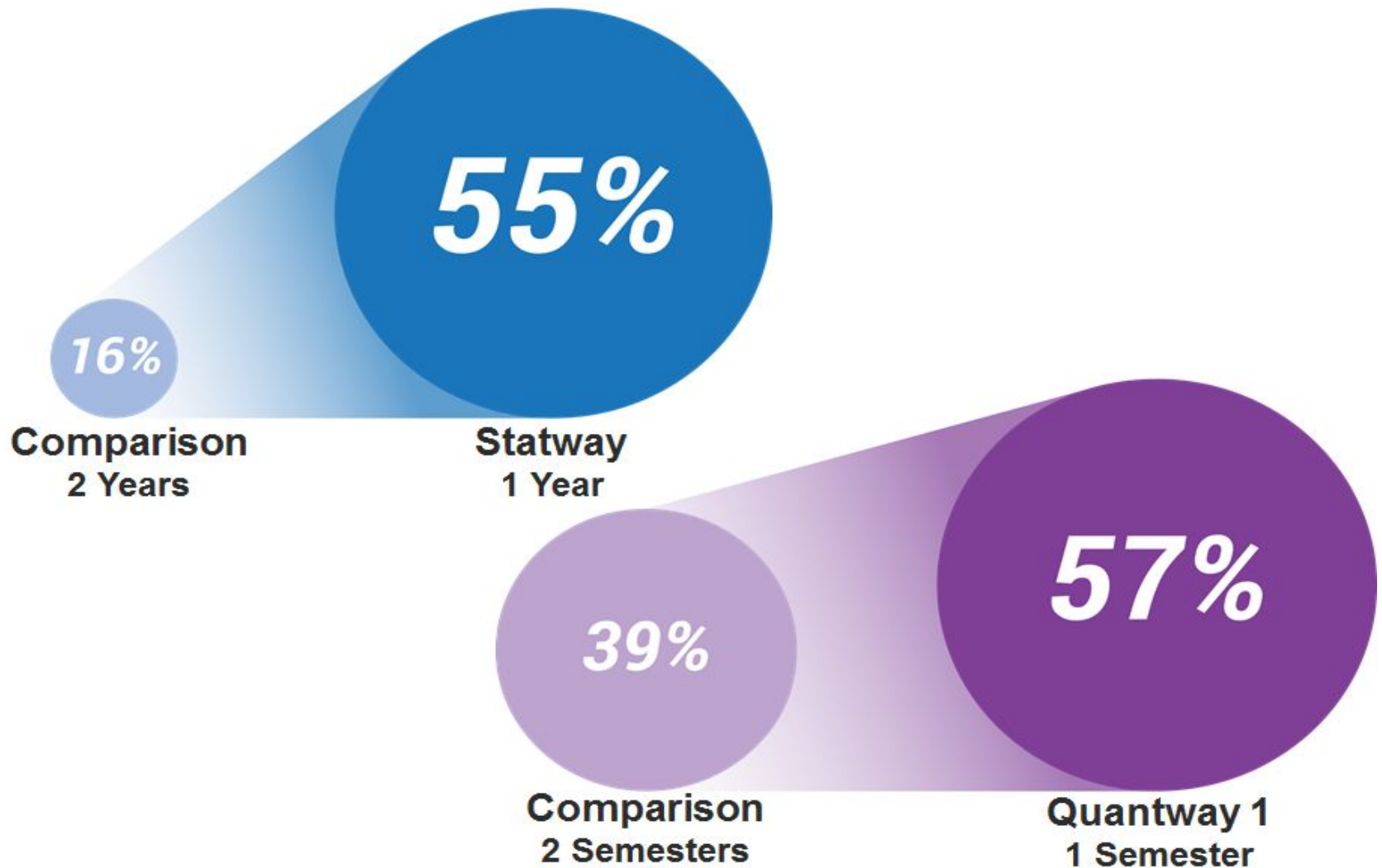
Productive Persistence interventions/practices

Language and Literacy supports

Comprehensive and sustained professional
learning opportunities

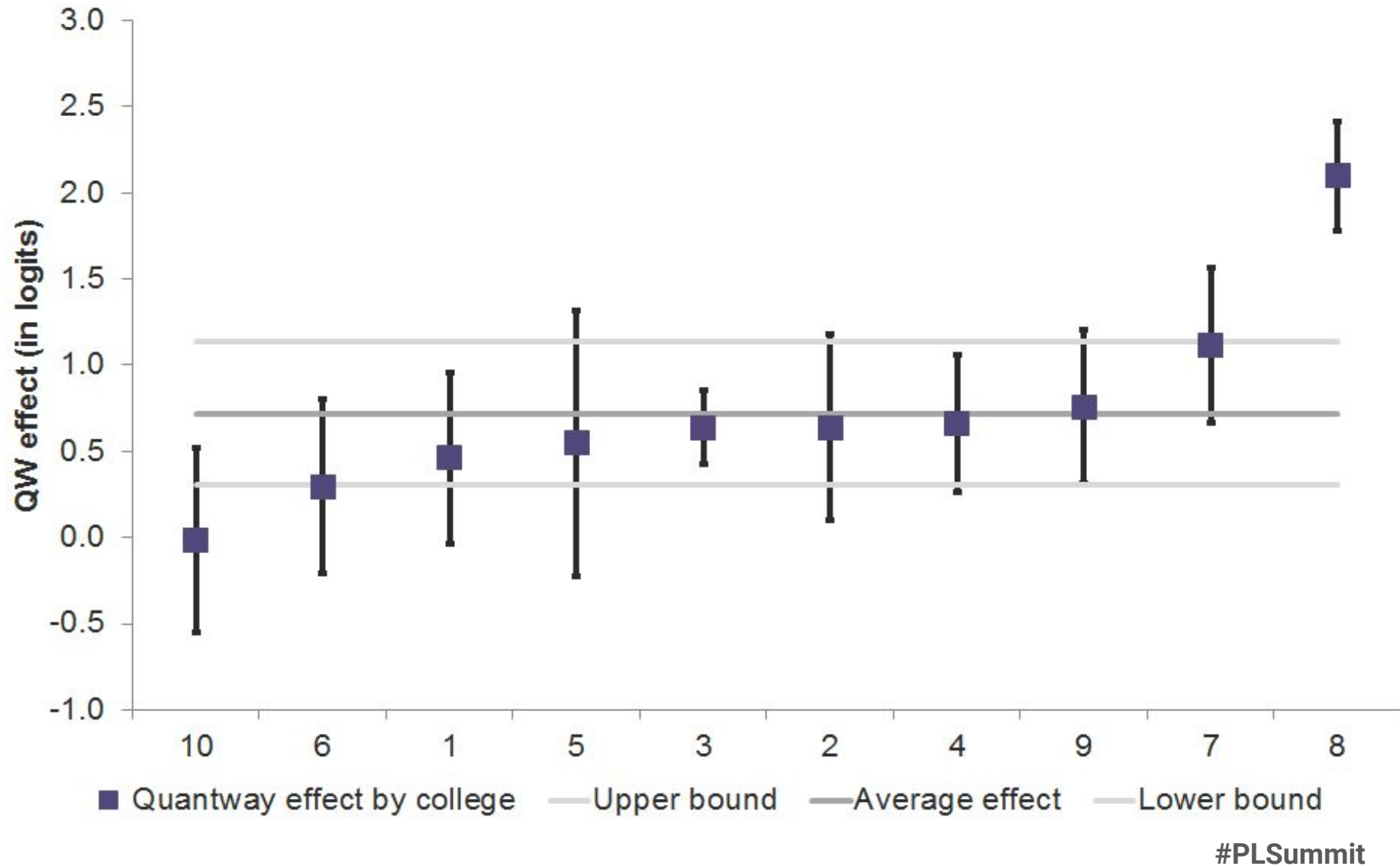
Network engagement and improvement
(Network Improvement Community)

Pathways Success

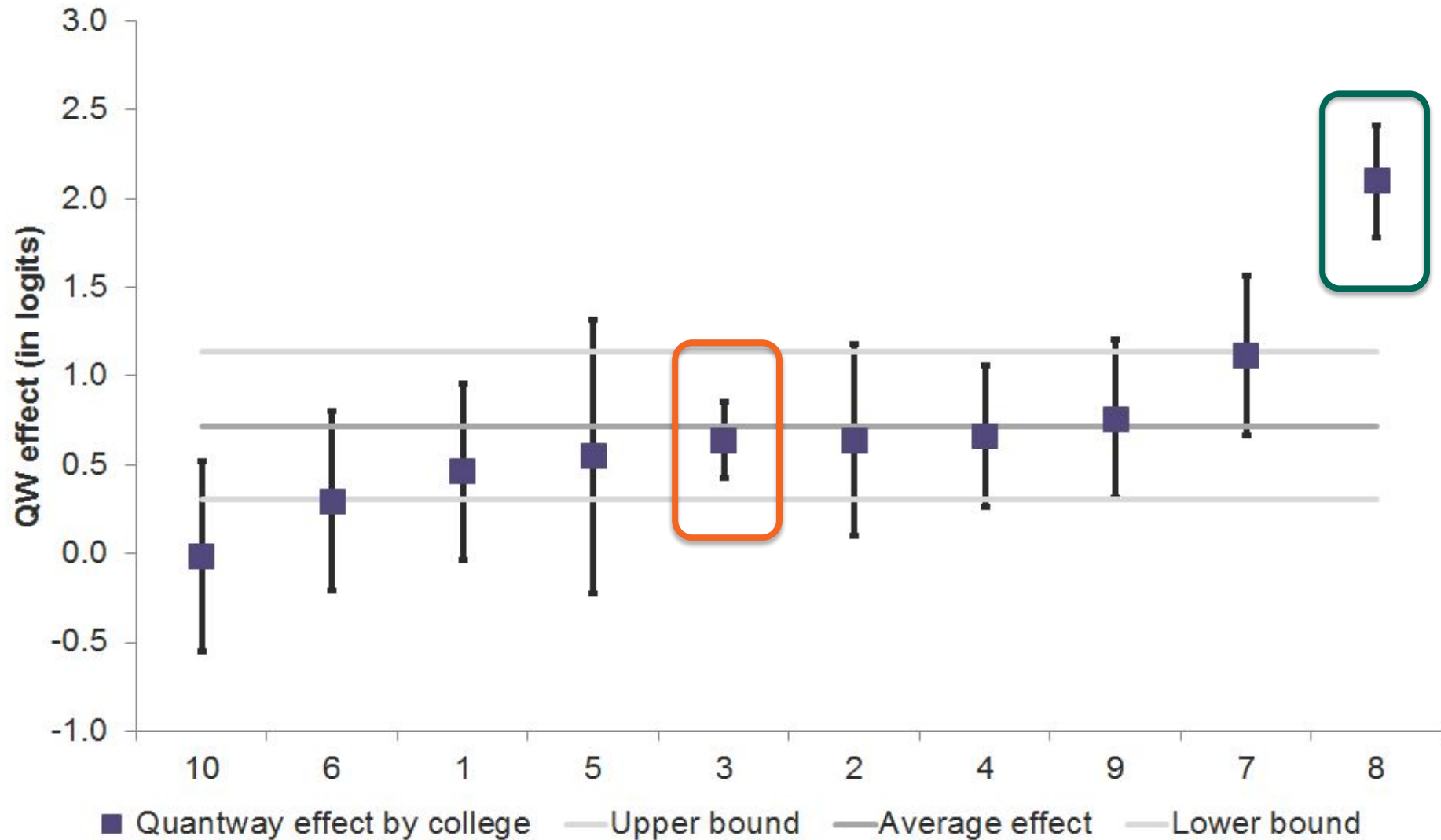


Learning from Variation

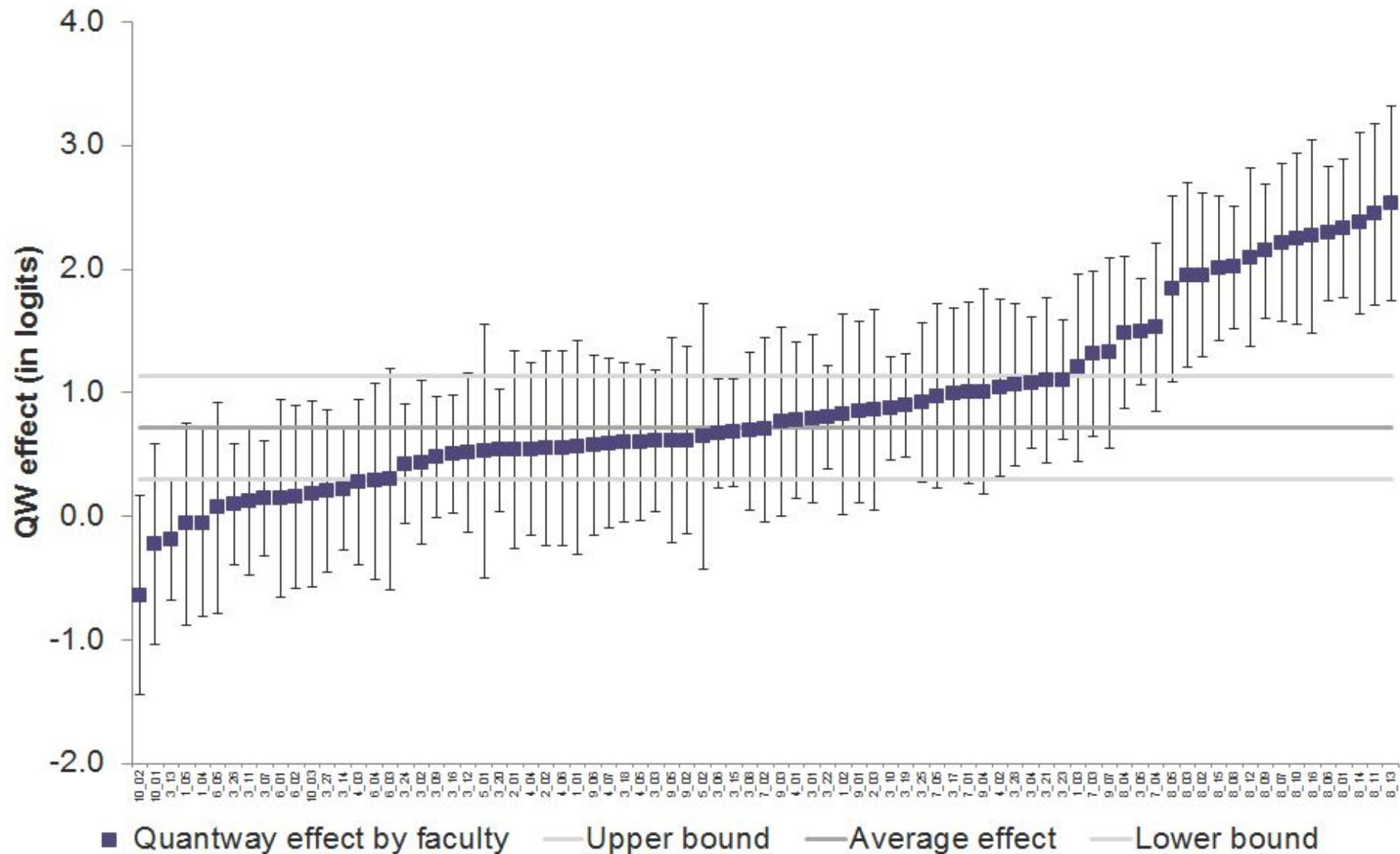
Effects Varied at College Level



Effects Varied at College Level



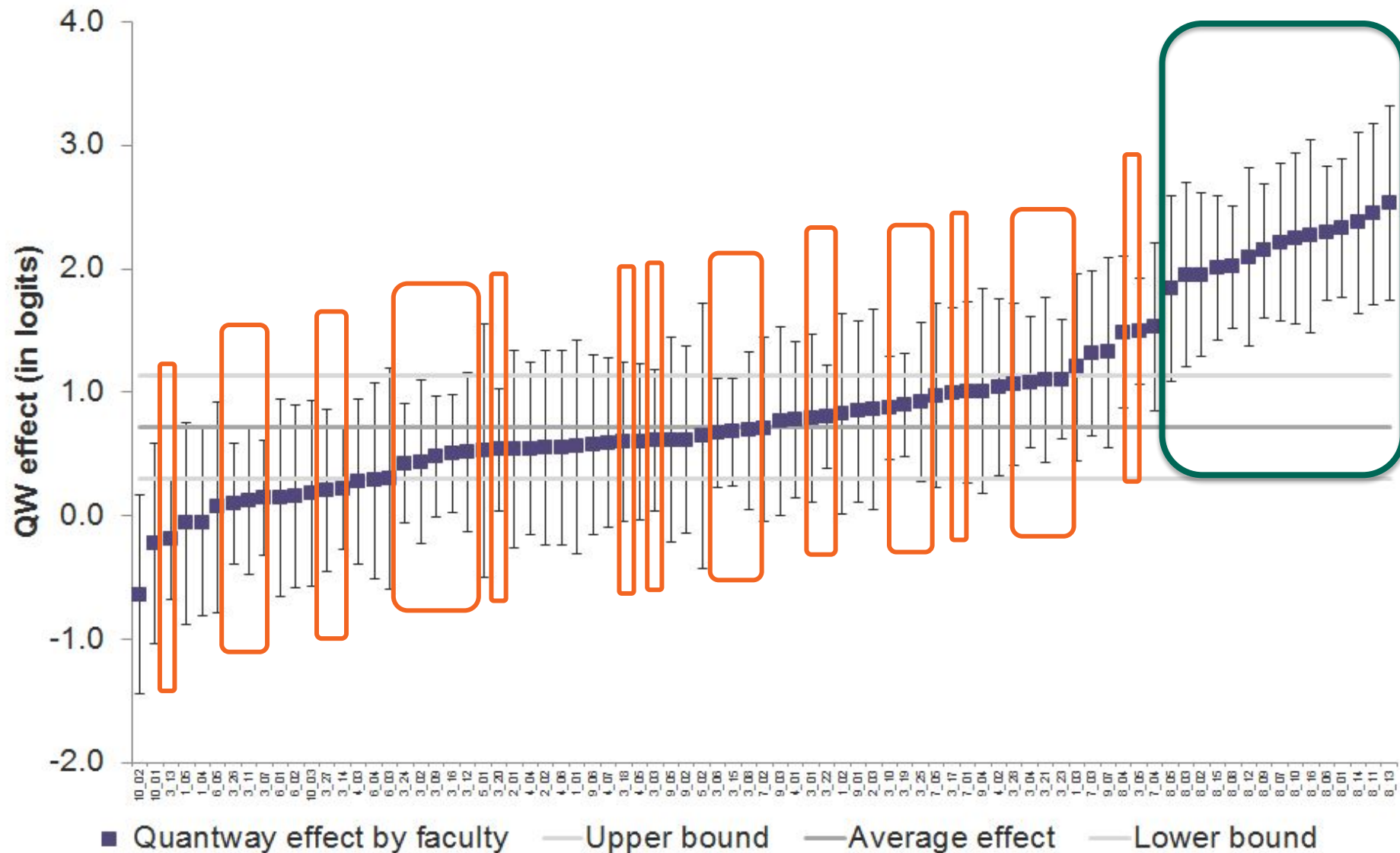
Effects Varied at Instructor Level



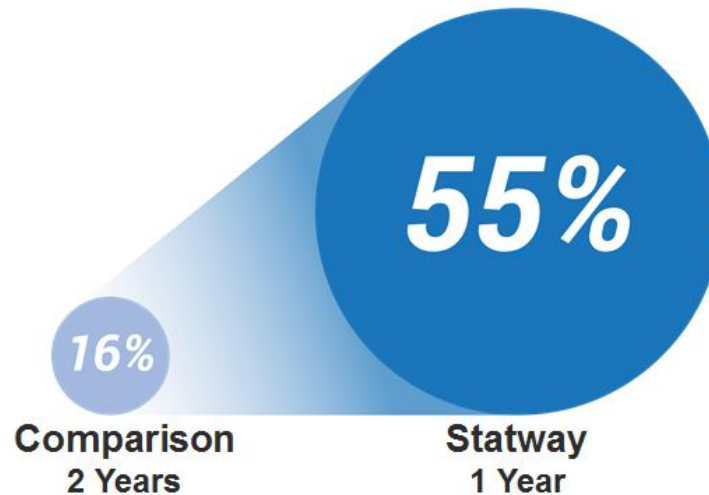
Questions to Yourself

- What do you notice?
- Any actionable insight?
- What action would you take as a next step?
- What else do you want to know to create action items?

Effects Varied at Instructor Level



Data Exercise (Statway Example)

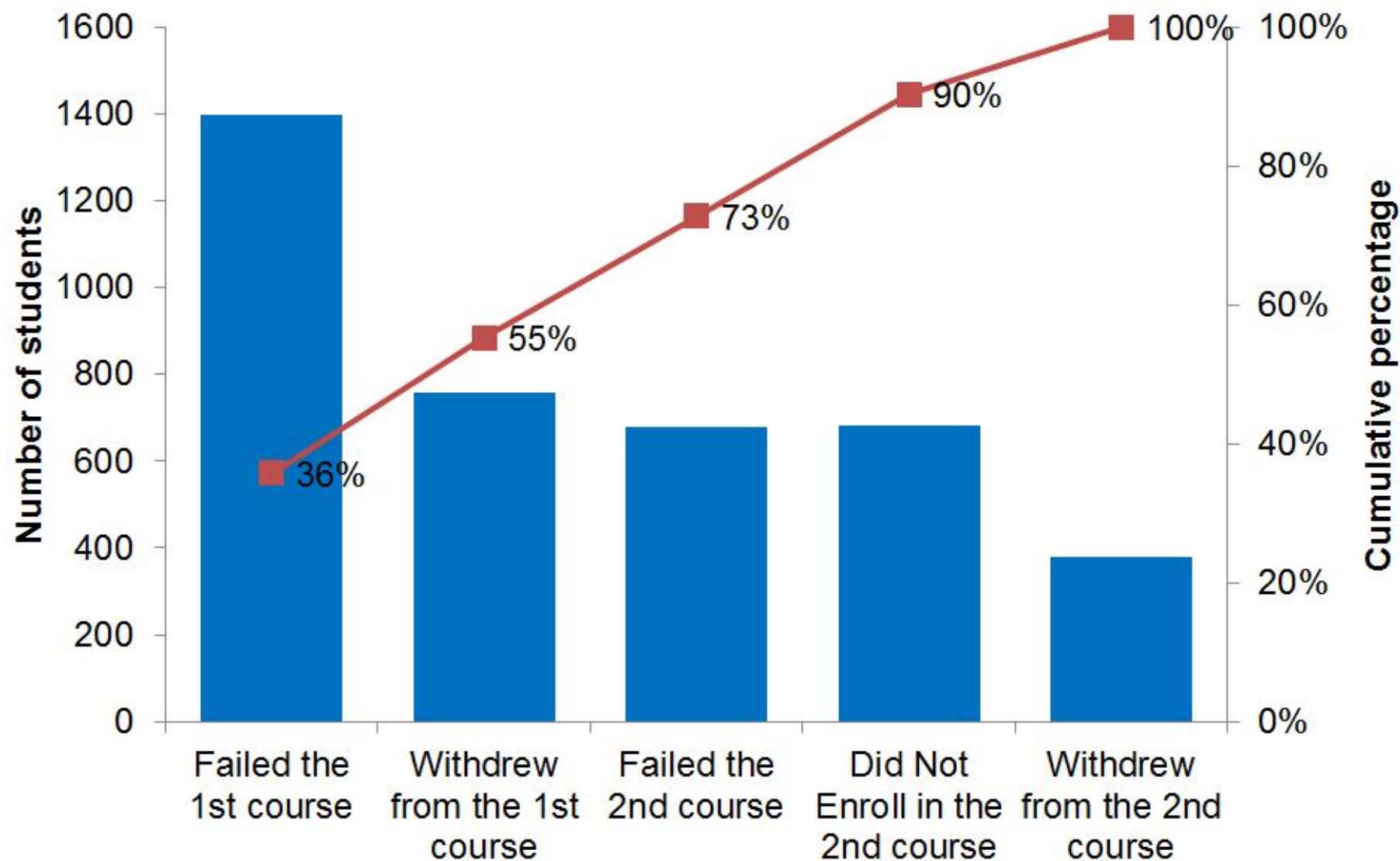


However, there is still room for improving student outcomes

Statway is designed as a 2-course sequence, one course per semester (e.g., Fall to Spring semester)

Data on the other 50% of “non-success” students to illuminate any failure patterns (go to the next slide).

Reasons for Failing the Course Sequence



Questions to Yourself

- What do you notice?
- Any actionable insight?
- What action would you take as a next step?
- What else do you want to know to create action items?



Five Stages of Grieving over Outcome Data

1. **Denial:** The data are wrong.
2. **Anger:** Why are they picking on me? Don't I have enough to do already?
3. **Bargaining:** My students are needier than everyone else's, my school is different, we have more to work on, I don't agree with the data definitions, etc.
4. **Depression:** I can't do anything about it anyway....
5. **Acceptance:** OK...what can I do to improve the outcomes?



NILS Overview



Developmental Lifecycle of a NIC

Phase 1 (3-12 mos.)

CHARTERING

1. Build initiation team
2. Build NIC relationships
3. Define and analyze problem in context
4. Define theory of practice
5. Train improvement science capacity
6. Define outcome measures and collect baseline data

Phase 2 (1-2 yrs.)

NETWORK LEARNING

1. Build analytics infrastructure
2. Build improvement science capacity
3. Build NIC collaboration infrastructure
4. NIC knowledge generation
5. Aggregate and synthesize learning
6. Dissemination of learning



Phase 3 (1-xx yrs.)

SPREAD

1. Self-driven growth
2. Content management
3. Machine learning driven recommendations and cross-NIC health report



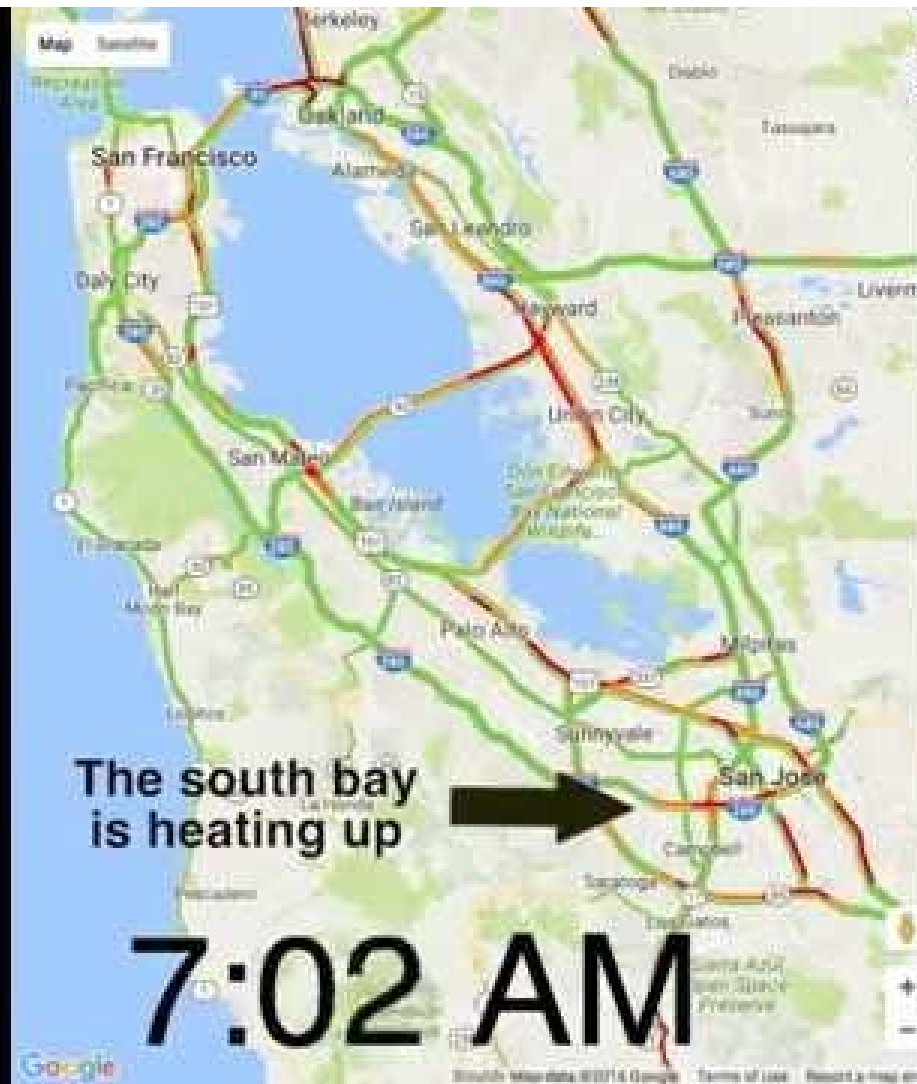


CARPOOLS
ONLY

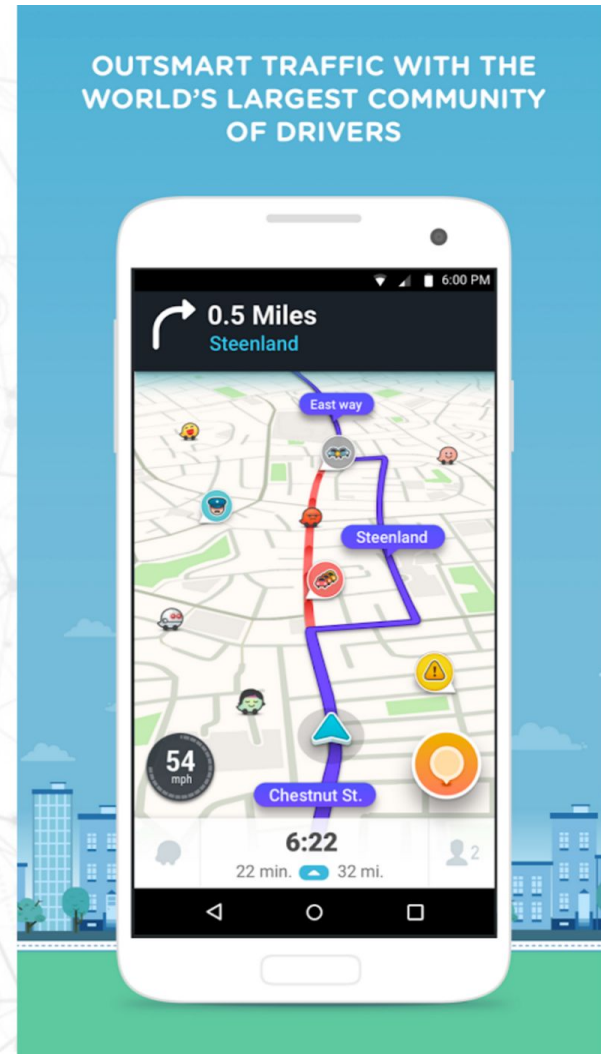
ELECTRONIC TOLL
PASS AHEAD

TOLL VIOLATIONS
\$100 MINIMUM FINE
ENFORCED BY VIDEO

ELECTRIC
PA



An Analogy





The Power of Networks Meet Penelope...

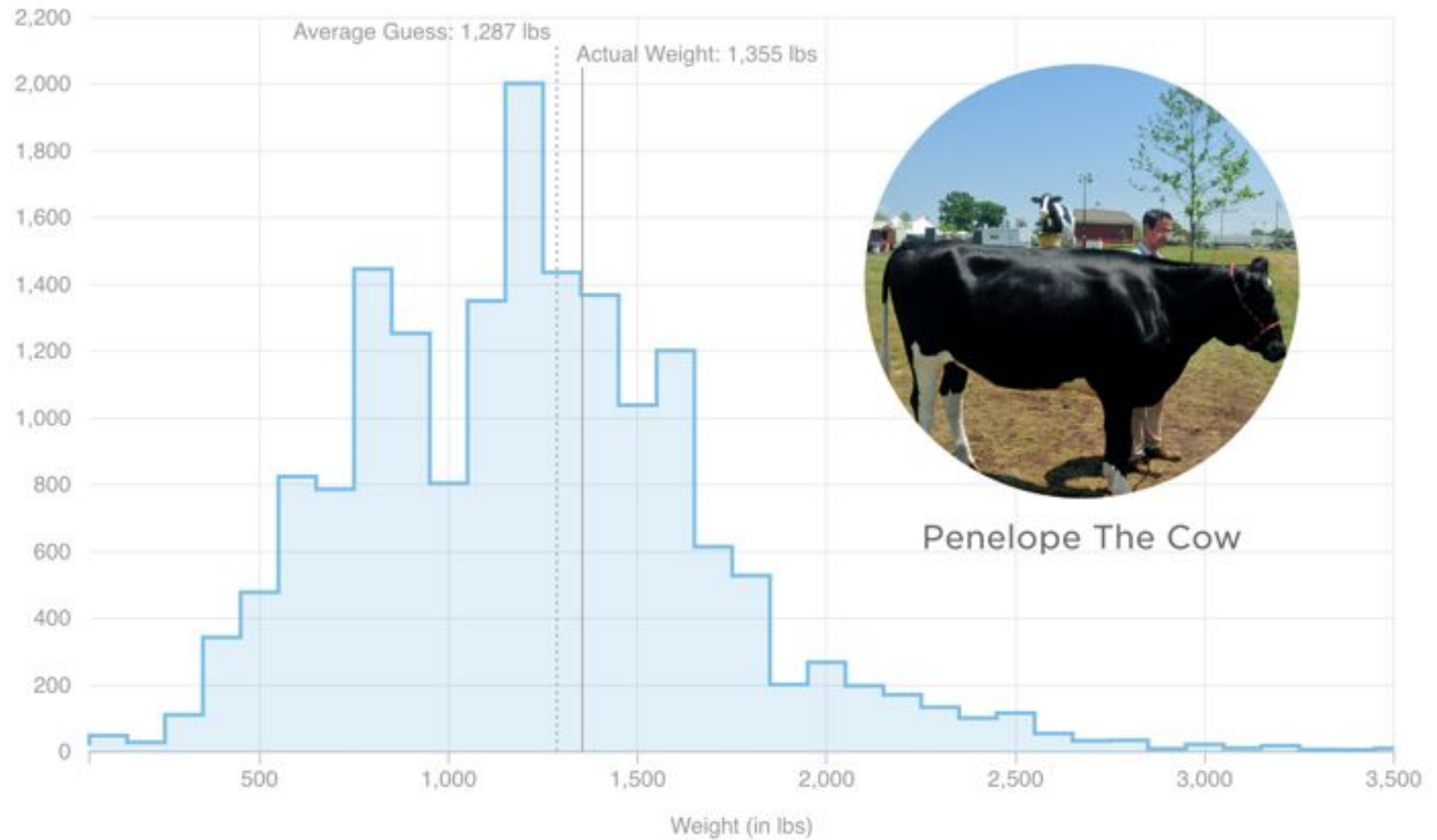


How Much Does This Cow Weigh?

**17,205 People Guessed The Weight Of A Cow.
Here's How They Did.**

(All People)

Number Of Guesses

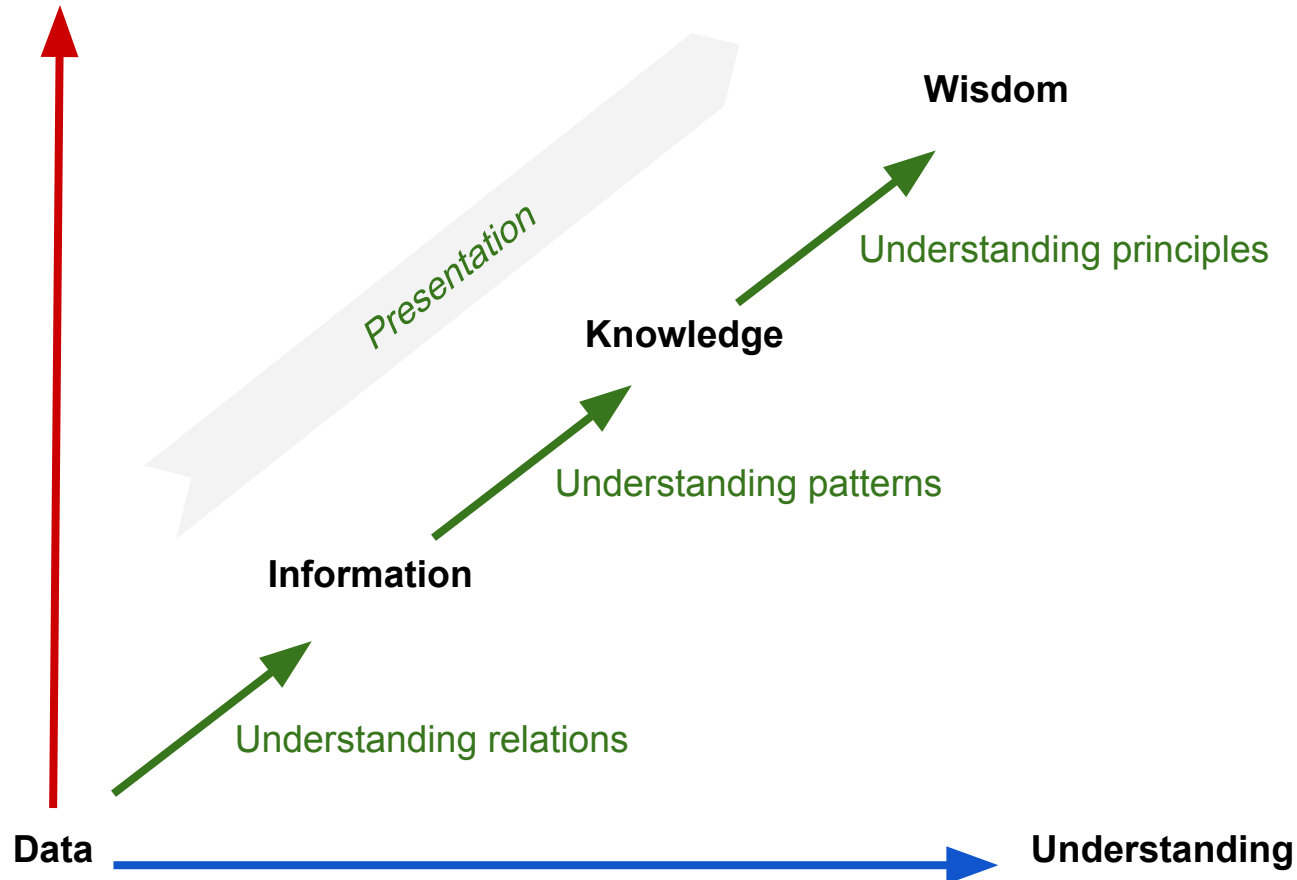


Source: The Internet.

Credit: Quoc Trung Bui/NPR

Key Learning

Connectedness



Key Learning

Data



Information



Knowledge



Presentation

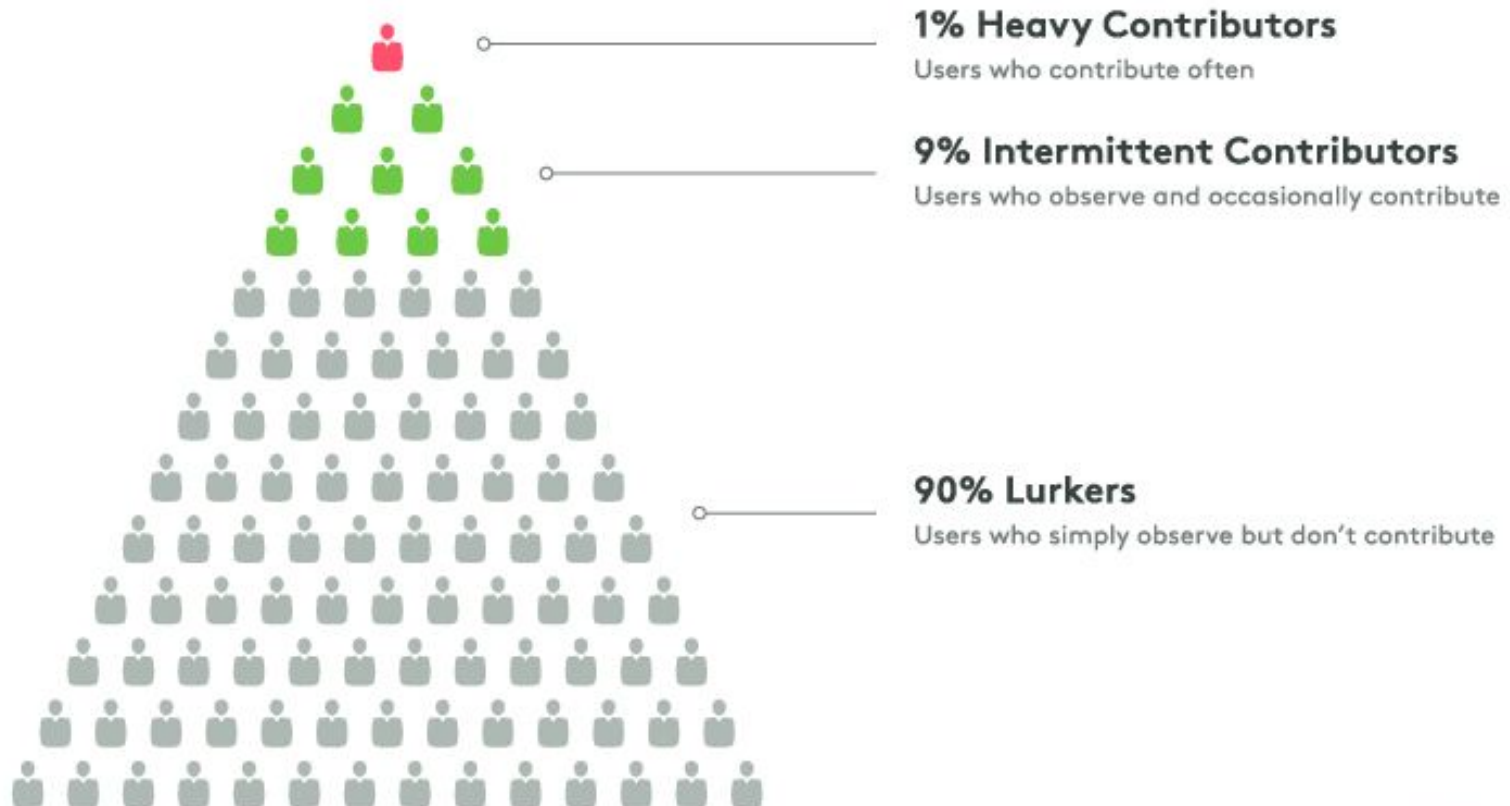


**Marie Antoinette
(1755-1793)**

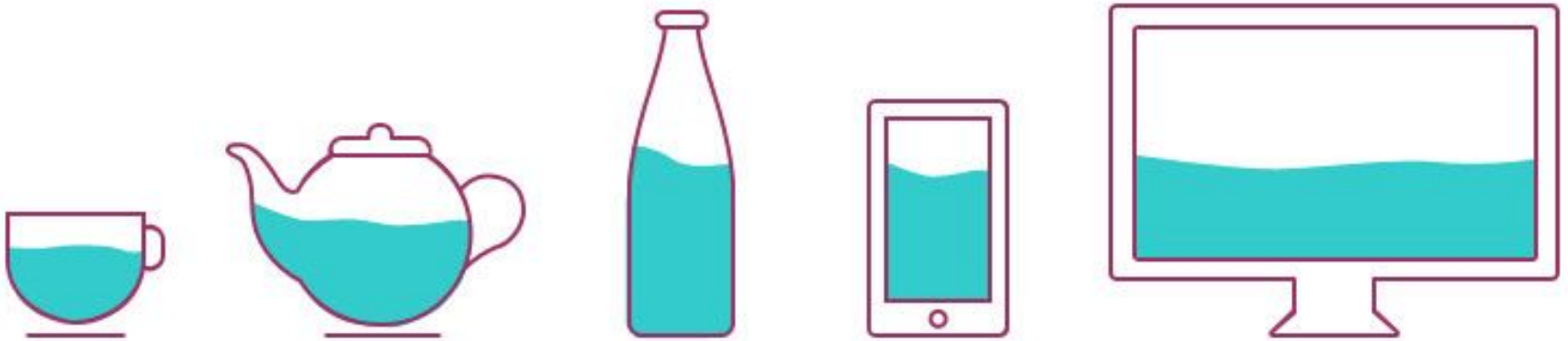


Key Learning

The 90-9-1 Rule



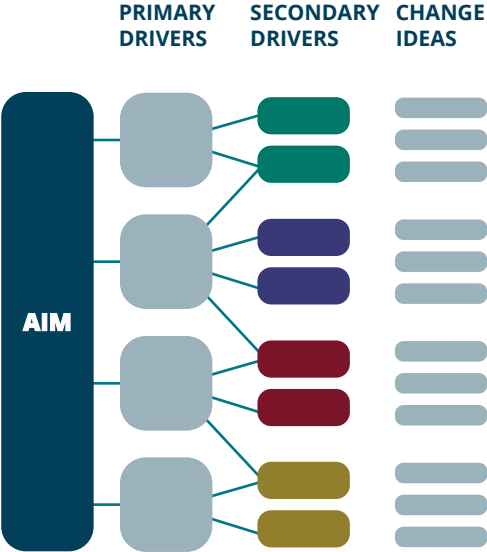
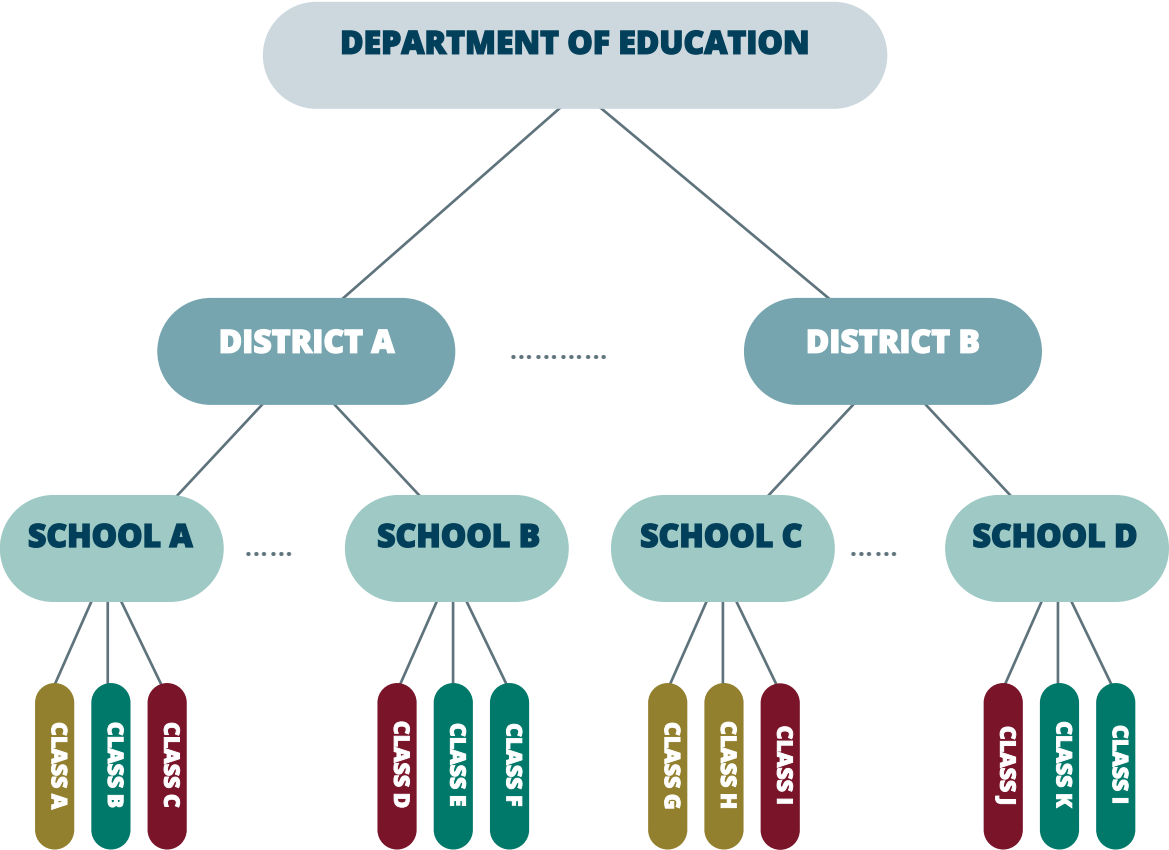
Key Learning



Frictionless Experience For Web And Mobile



Dimensions of Learning*



* Based around Driver Diagram

Networked Improvement Learning & Support Platform:

FEATURES



Collaborative



Mobile



Iterative



Intuitive

ACTIONS



Test Ideas



Collect Data

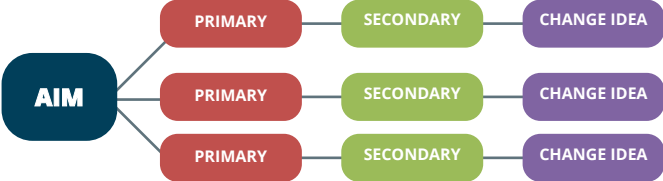
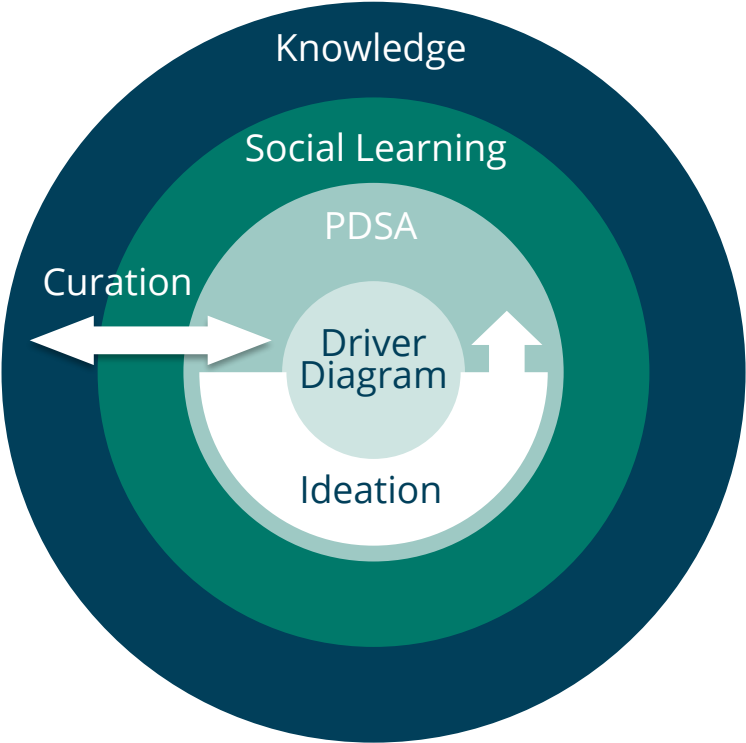


Implement Changes



Share Learning

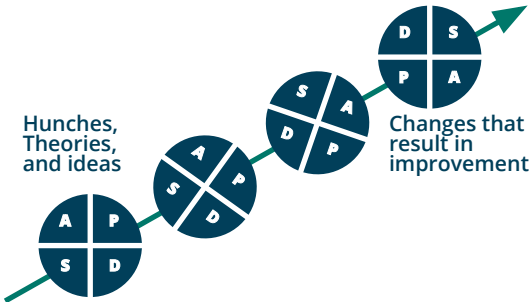
Learning from N.I.L.S



Driver Diagram



PDSA Cycles



Improvement Ramp



Social Learning



Knowledge

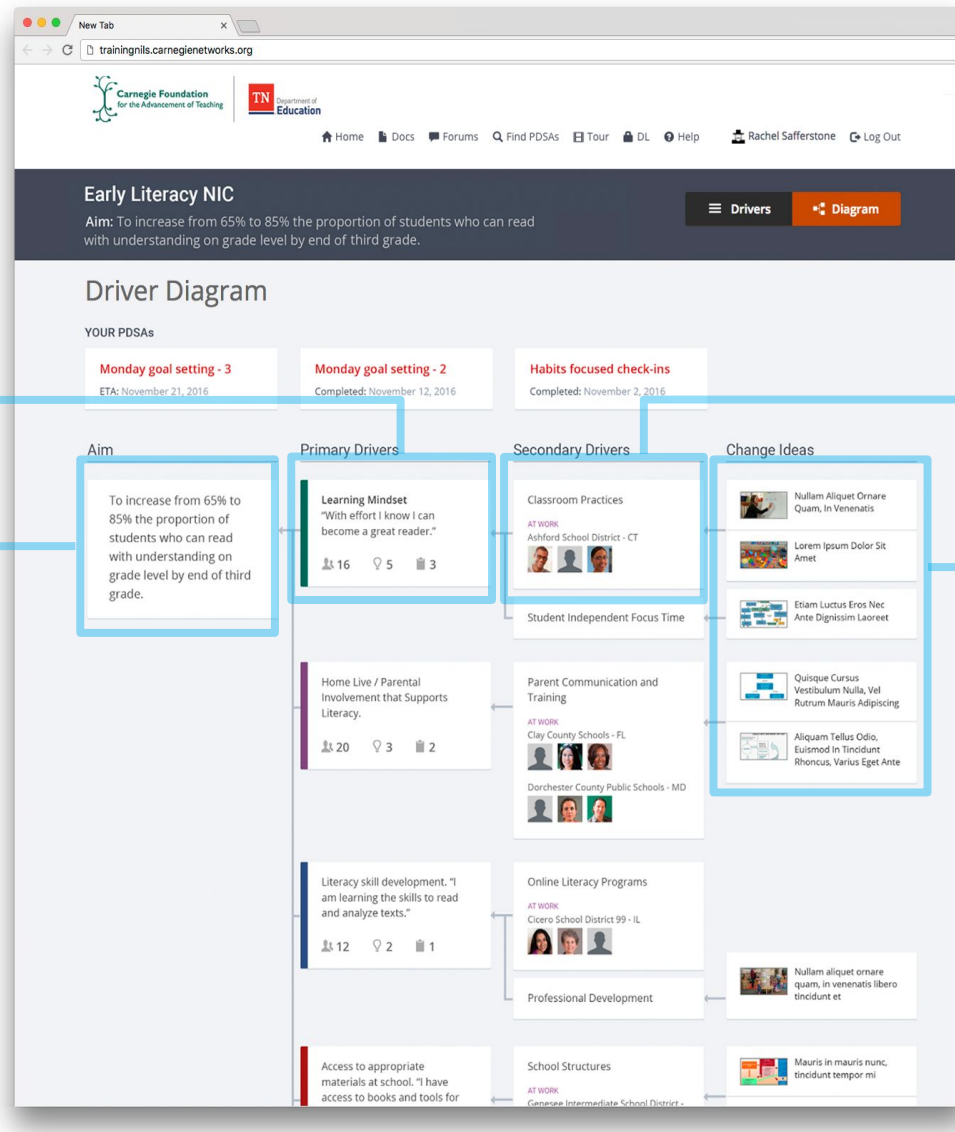


Curation



Ideation

N.I.L.S. Driver Diagram



Primary Driver

Secondary Driver

Aim Statement

Change Ideas

Aim Statement

Primary Drivers

The screenshot shows the Tennessee Early Literacy Network website. The header includes the Carnegie Foundation logo, the Tennessee Department of Education logo, and navigation links: Home, Docs, Forums, Find PDSAs, Tour, DL, Help, Rachel Safferstone, and Log Out. The main content area is titled "Tennessee Early Literacy Network" with the aim: "Improve literacy proficiency for Tennessee's third grade students". Below this, there are sections for "Your PDSAs" (Student Journey Map, PDS... and Literacy Behavior Proto...), "Primary Drivers" (1 Standards-aligned instruction, 2 Support for struggling stud..., 3 Schools, families, and com..., 4 Coherent state guidance), "Resource People" (Rachel McManus, Amy Shealy, Fred Johnson), "Resource Materials" (Learning Mindset Primer, Convening presentation, Intro to Learning Mindset for Literacy), "1.1 Strengthen mindsets", "CHANGE IDEAS" (Student Journey Map, Habits focused check-ins, Earn my buddy a candy bar), and a "Join Forum" button. A sidebar on the right contains links to "Student Journey Maps.docx", "SAMPLE Student Journey Map", "Research Base", "Supporting Principles", "Student Progress Graph", and "More Resources".

Tennessee Early Literacy Network
► Aim: Improve literacy proficiency for Tennessee's third grade students

Your PDSAs

- Student Journey Map, PDS...
ETA: March 23, 2017
- Literacy Behavior Proto...
ETA: March 24, 2017

Primary Drivers

- 1 Standards-aligned instruction
- 2 Support for struggling stud...
- 3 Schools, families, and com...
- 4 Coherent state guidance

Resource People

- Rachelle McManus
Improvement Coach
- Amy Shealy
Academic Support Coordinator
- Fred Johnson
Improvement Coach

Resource Materials

- Learning Mindset Primer
- Convening presentation, 10/29/2015
- Intro to Learning Mindset for Literacy

1.1 Strengthen mindsets

CHANGE IDEAS

- Student Journey Map**
A feature of improvement work is its user-centered, empathetic design. When we consider student learning, this design encourages us to take
- Habits focused check-ins**
Each mentee selects an academic habit to work on for the next three weeks (asking for help, organization, working outside of school, goal)
- Earn my buddy a candy bar**
Mentee sets academic goal for the week. At the end of the week, if the mentee meets the goal the "buddy" will get a candy bar of their choice.

Join Forum

Contribute a Change Idea

Student Journey Maps.docx

SAMPLE Student Journey Map

Research Base

Supporting Principles

Student Progress Graph

More Resources

Experts

Resources

Secondary Drivers

Forums

Change Ideas

N.I.L.S. - Change Idea

Tennessee Early Literacy Network
Aim: Improve literacy proficiency for Tennessee's third grade students

1.1 Strengthen mindsets Student Journey Map

Goal
A feature of improvement work is its user-centered, empathetic design. When we consider student learning, this design encourages us to take children's experiences as a starting point, and try to see and solve problems from their perspectives. Shifting our lens in this way challenges our typical approach, which is to see things from an adult perspective and/or the implementation demands of a program. One objective is to develop an understanding of the many factors that shape a student's experiences as a developing reader. A second objective is to build empathy with our children and their families.

Details
This change idea has been tested by the District Leads. Our effort now is to scale the change to additional educators in TELN schools. Toward that end each of them will need to identify a third-grade child in their school who has struggled to learn to read and develop a journey map for that child.

Experts
Rachelle McManus

Resource Materials
Resource-SAMPLE Student Journey Map.docx
Change Idea Explanation-Student Journey Maps.docx

Start PDSA

PDSA (4)

PDSA#	Tester	PDSA	Status
3	Jennifer Jones Morgan County	Student Journey Map, PDSA #3 We actually started this PDSA in November with completing it by this week's TELN School Team meeting.	Completed December 14, 2016
4	Jennifer Jones Morgan County	Student Journey Map, PDSA #4 During a TELN School Team meeting, we will discuss the questions that need to be asked at the different grade	Completed January 13, 2017
4	Jennifer Jones Morgan County	Student Journey Map, PDSA #4	In progress January 20, 2017
4	Susan Haynes Carnegie Foundation	Student Journey Map, PDSA #4	In progress March 23, 2017

More Change Ideas
DRIVER
1.1 Strengthen mindsets
CHANGE IDEAS
Student Journey Map
A feature of improvement work is its user-centered, empathetic
2 PDSAs Completed

DISCUSSIONS
Jennifer Herrera
Orange County Schools
Great article, thanks for sharing. We should add this to our discussion in our upcoming meeting. It would touch several points that are important to our current projects. I will prepare some sample from my classroom.
Like Reply
Rachelle McManus
Tennessee DOE
Great article, thanks for sharing. We should add this to our discussion in our upcoming meeting. It would touch several points that are important to our current projects.
Like Reply

Aim Statement

Primary Drivers

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Improvement Coach
- Amy Shealy
Academic Support Coordinator
- Fred Johnson
Improvement Coach

Resource Materials

- Learning Mindset Primer
- Convening presentation, 10/29/2015
- Intro to Learning Mindset for Literacy

1.1 Strengthen mindsets

Resource People

- Rachelle McManus
Improvement Coach
- Amy Shealy
Academic Support Coordinator

CHANGE IDEAS

- Student Journey Map**
A feature of improvement work is its user-centered, empathetic design. When we consider student learning, this design encourages us to take
- Habits focused check-ins**
Each mentee selects an academic habit to work on for the next three weeks (asking for help, organization, working outside of school, goal)
- Earn my buddy a candy bar**
Mentee sets academic goal for the week. At the end of the week, if the mentee meets the goal the "buddy" will get a candy bar of their choice.

Join Forum

Contribute a Change Idea

- Student Journey Maps.docx
- SAMPLE Student Journey Map
- Research Base
- Supporting Principles
- Student Progress Graph
- More Resources

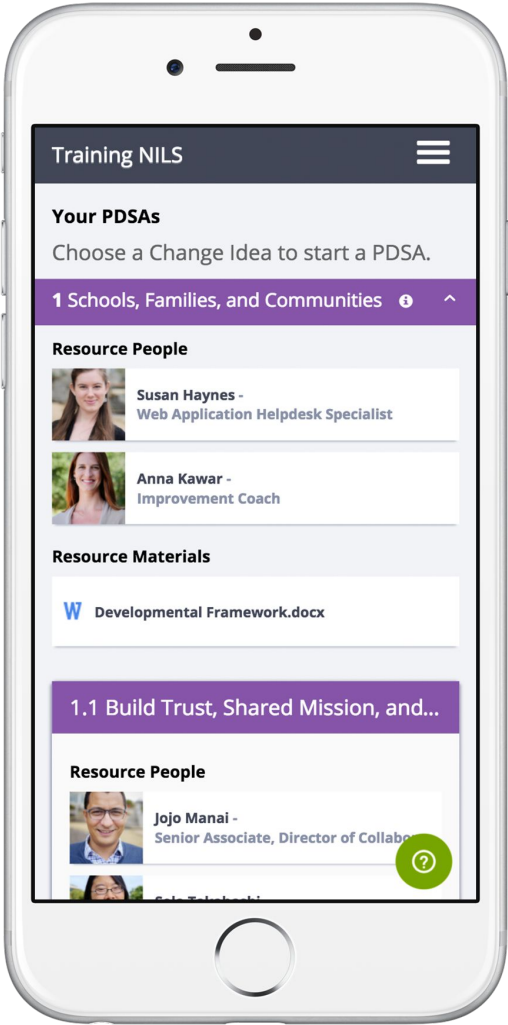
Experts

Resources

Secondary Drivers

Forums

Change Ideas



Plan-Do-Study-Act Cycle (PDSA)

A PDSA cycle is the basic method of inquiry in improvement research. It's a pragmatic scientific method for iterative testing of changes in complex systems.

Running a PDSA

Home > Family Communication Inquiry > Family Communication Inquiry, PDSA #1

Plan Do Study Act

< PREV Step 3 of 3 NEXT >

Family Communication Inquiry, PDSA #1

You've completed your plan!

Share your Plan

<https://trainingnls.carnegienetworks.org/pdsa/223/>

Enter email to sharing

[Share via email](#)

Get Feedback

Interested in feedback from coaches?

[Send plan to an expert](#)

< PREV Step 3 of 3 NEXT >

[Next: Do >](#)

- Learning questions
- Predictions
- Data requirements
- Completion date
- Logistics
- Uploading artifacts
- Sharing PDSAs

Running a PDSA

Home > Family Communication Inquiry > Family Communication Inquiry, PDSA #1

✓ Plan Do Study Act


Do Your PDSA

Collect Data View Data

Question 1

Is family communication occurs frequently, and does it have a positive impact on students' learning?


Entry date

Mar 23, 2017 

Data

Observations

Attachments (photos, videos, documents, etc.)

 Upload

Clear Save

Next: Study >

Collecting Data

Describe what happened during the test, especially if it differed from your plan. Also, describe anything that was unexpected, difficulties you had with the test or data collection, or general observations you have about what happened during the test.

- Observations
- Uploading artifacts

Running a PDSA

Home > Family Communication Inquiry > Family Communication Inquiry, PDSA #1

✓ Plan ✓ Do **Study** Act

Study Your PDSA

Question 1

Question

Is family communication occurs frequently, and does it have a positive impact on students' learning?

Prediction

Good line of communications between teachers and parents ensure good supports for students.

In reviewing your results from the Do section, how do they compare to your predictions?

Cancel Save

Please summarize what you have learned from this test.

Next: Act >

Study

For each question and prediction that you made, describe "what happened" in the first text box. Was each prediction correct or not? This helps you check if your overall theory is correct. In the second text box, briefly describe any other observations about what you learned as you ran this test.

•Comparing predictions to observed results

Running a PDSA

Home > Family Communication Inquiry > Family Communication Inquiry, PDSA #1

✓ Plan ✓ Do ✓ Study **Act**

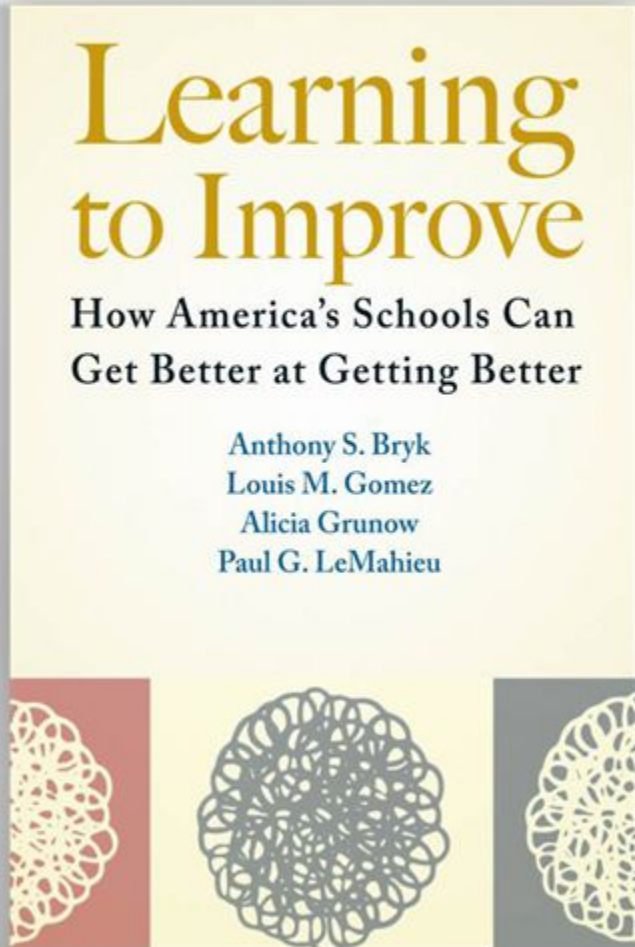
Act

Which action will you take?

 Adopt	 Adapt	 Abandon
<i>I want to continue with this Change Idea</i>	<i>I will adjust and try again</i>	<i>I will not try this again</i>

- Adopt a change idea
- Adapt a change idea
- Abandon a change idea

Learn more about Improvement in Action!



<http://pathways.carnegiehub.org/events>



#PLSummit

What questions do you have?



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THANK YOU

bit.ly/PLSWorkshopSurvey