Tapping Teachers' Talents

Suzanne Donovan, Executive Director
Strategic Education Research Partnership

National Academies
June 6, 2014


Once upon a time...


HYBRID

Are you or have you ever been a teacher?

Text a **CODE** to 22333

Yes	**390247**
No	**390248**

Results

For teachers: To achieve a high functioning K-12 education system, what portion of the challenge can be addressed through policies that address incentives and accountability?

Text a **CODE** to **22333**

0	**390236**
1-25	**390239**
26-50	**390246**
51-75	**477655**
76-100	**478908**

Results

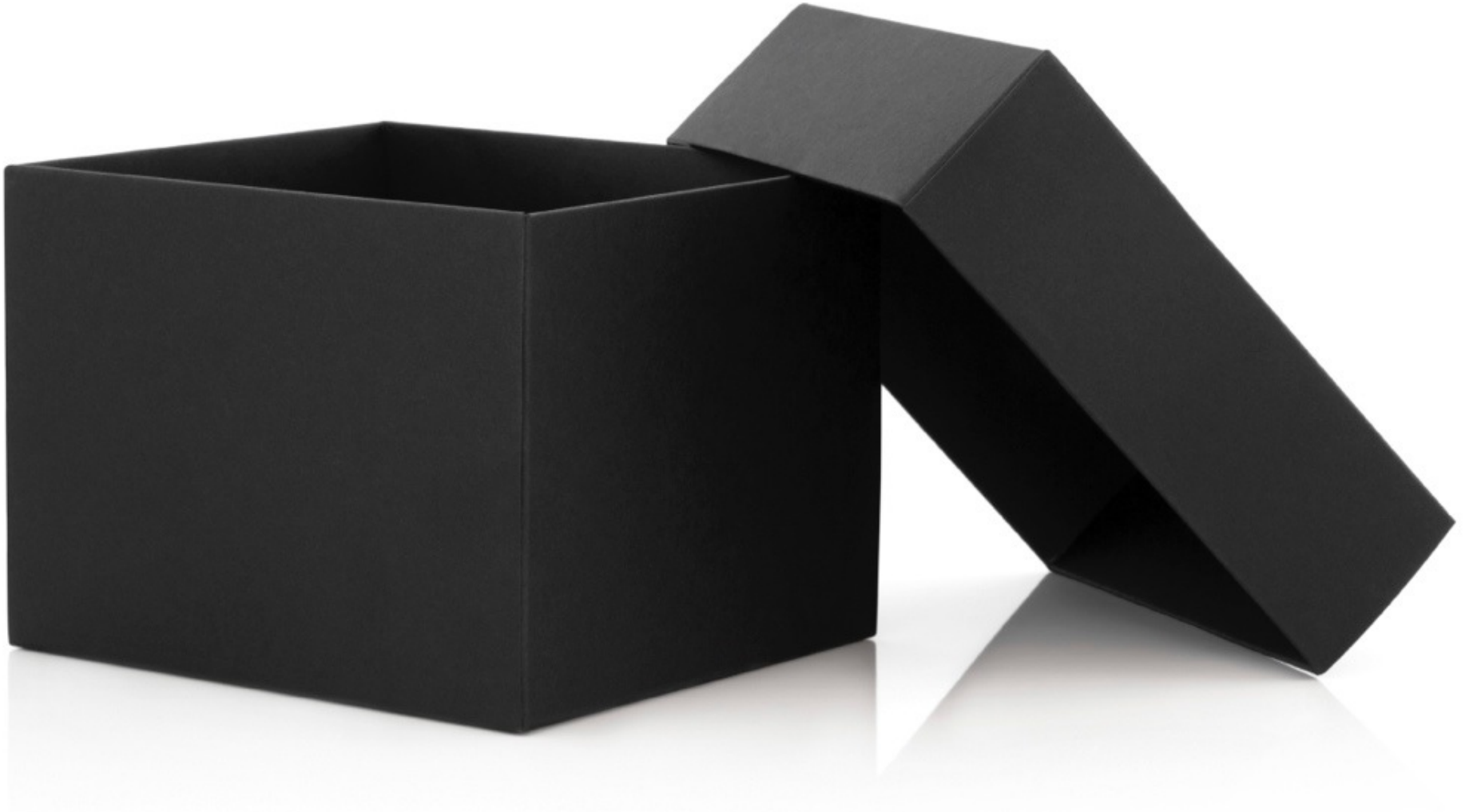
For non-teachers: To achieve a high functioning K-12 education system, what portion of the challenge can be addressed through policies that address incentives and accountability?

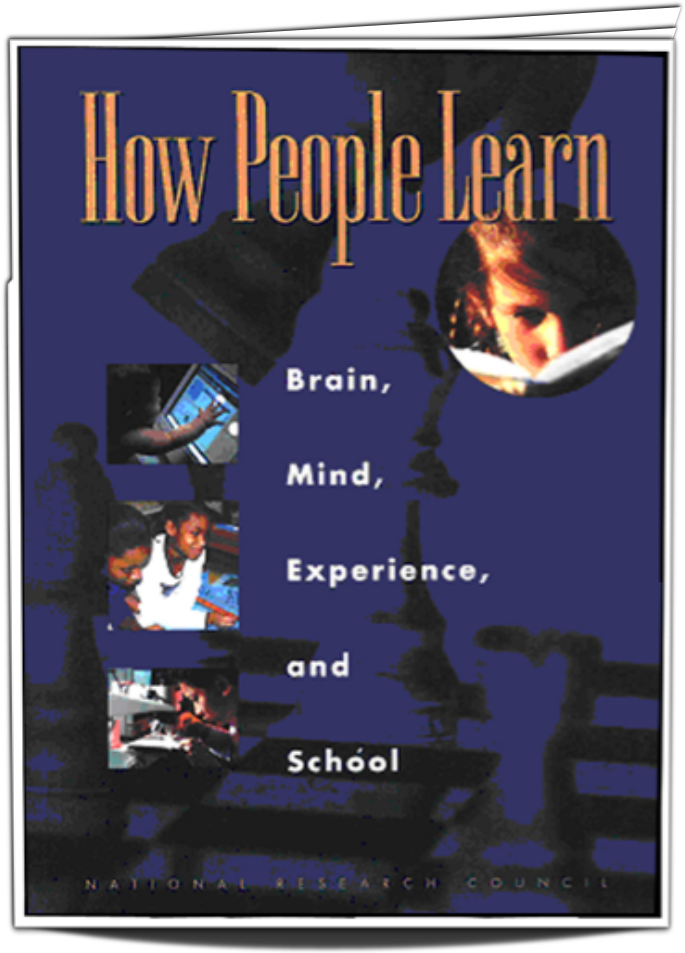
Text a **CODE** to 22333

0	**478937**
1-25	**478939**
26-50	**478942**
51-75	**478943**
76-100	**478944**

Results

Incentives approaches treat teachers as targets for changed behavior



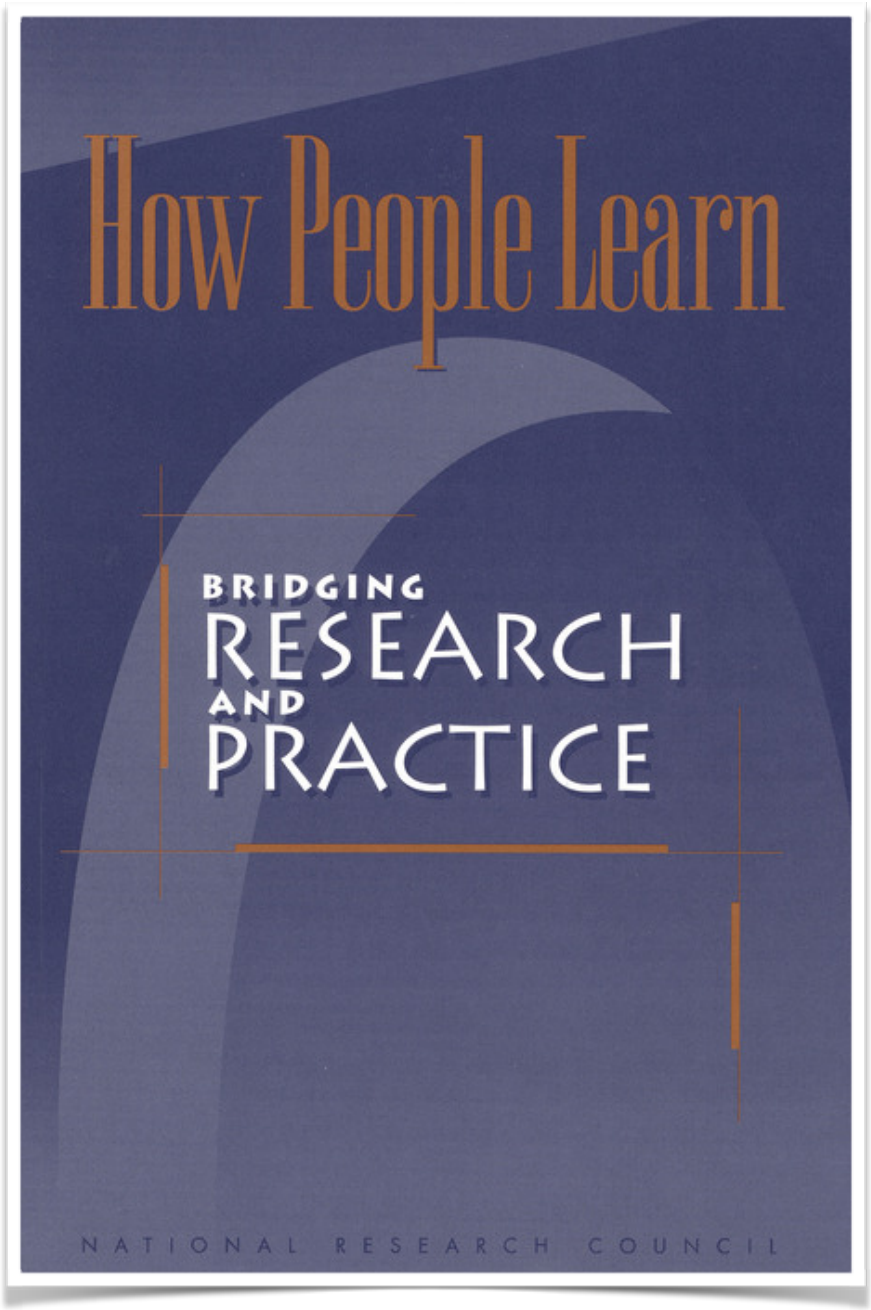

How People Learn
Brain,
Mind,
Experience,
and
School
NATIONAL RESEARCH COUNCIL

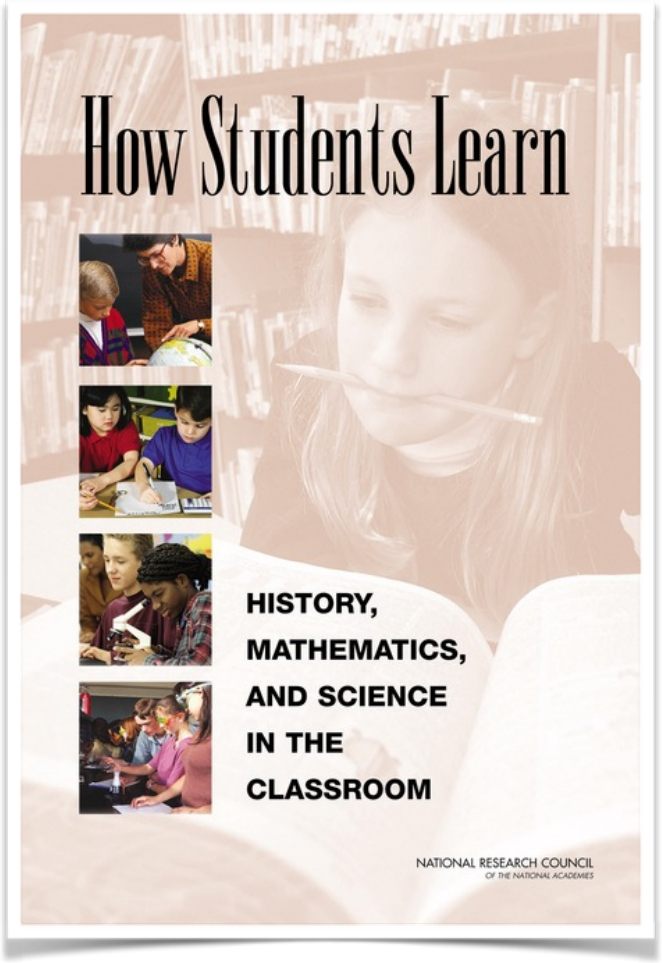
Fish is Fish

Leo Lionni

Three principles

- Elicit and engage students' thinking so they can construct the targeted understanding
- Organize knowledge in a conceptual framework/ link to big ideas
- Build metacognitive skills


How People Learn
BRIDGING
RESEARCH
AND
PRACTICE
NATIONAL RESEARCH COUNCIL



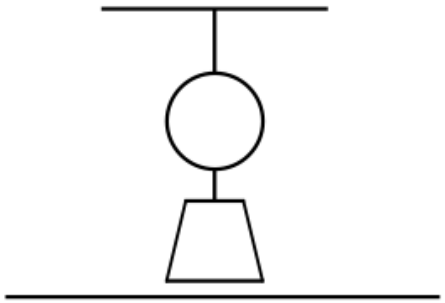
11

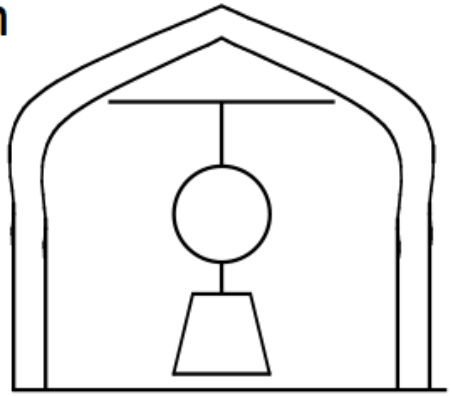
Guided Inquiry in the Science Classroom

James Minstrell and Pamela Kraus

- Vacuum inside a bell jar

Nature and Effects of Gravity
Diagnostic Question





Glass dome with
air removed

Scale reading = 10.0 lbs

Scale reading = _____lbs

Guided Inquiry in the Science Classroom

James Minstrell and Pamela Kraus

For non-teachers: What percentage of teachers can benefit from this kind of "translational" work?

Text a **CODE** to 22333

0	**479793**
1-25	**479803**
26-50	**479813**
51-75	**479814**
76-100	**479815**

Results

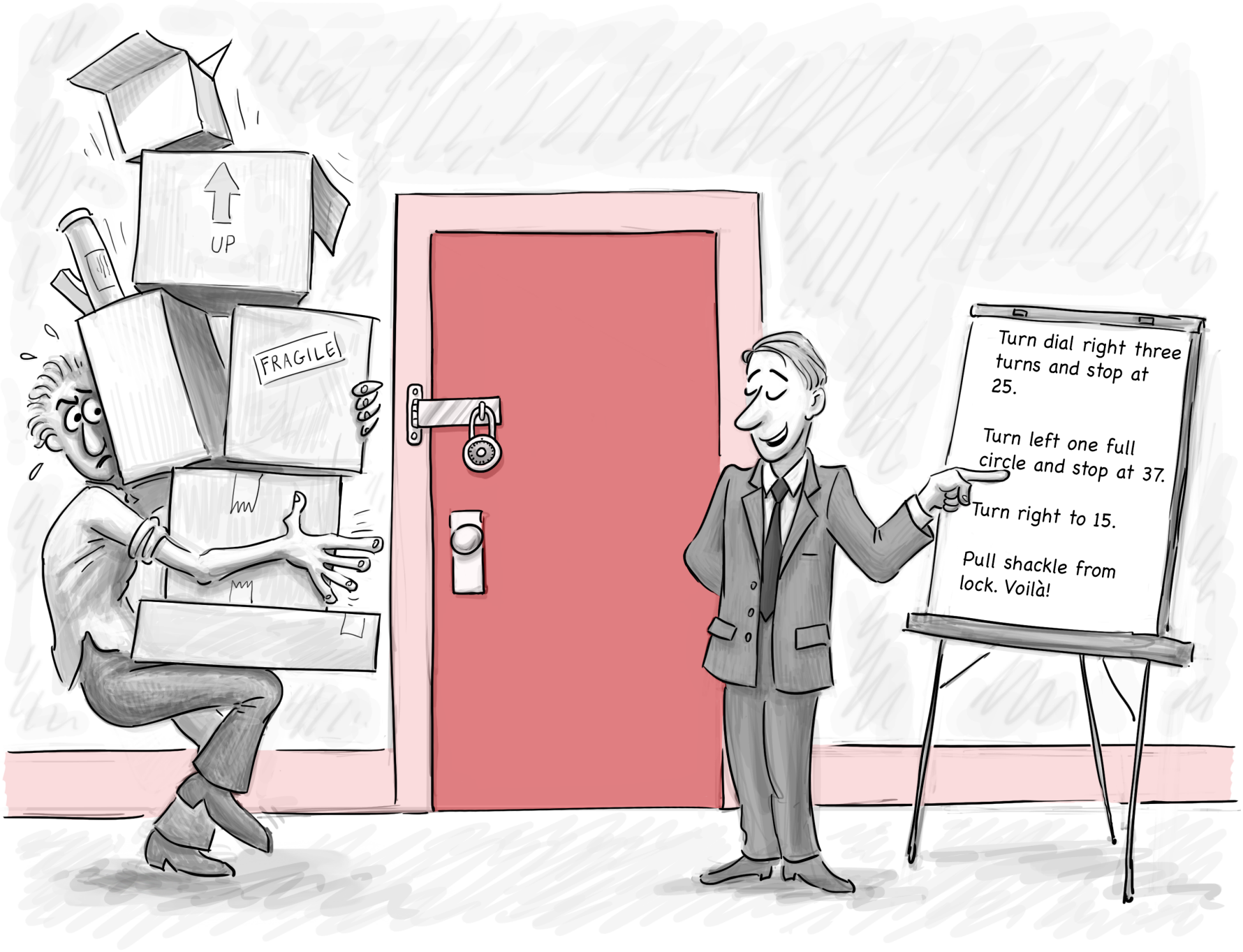
For teachers: What percentage of teachers can benefit from this kind of "translational" work?

Text a **CODE** to 22333

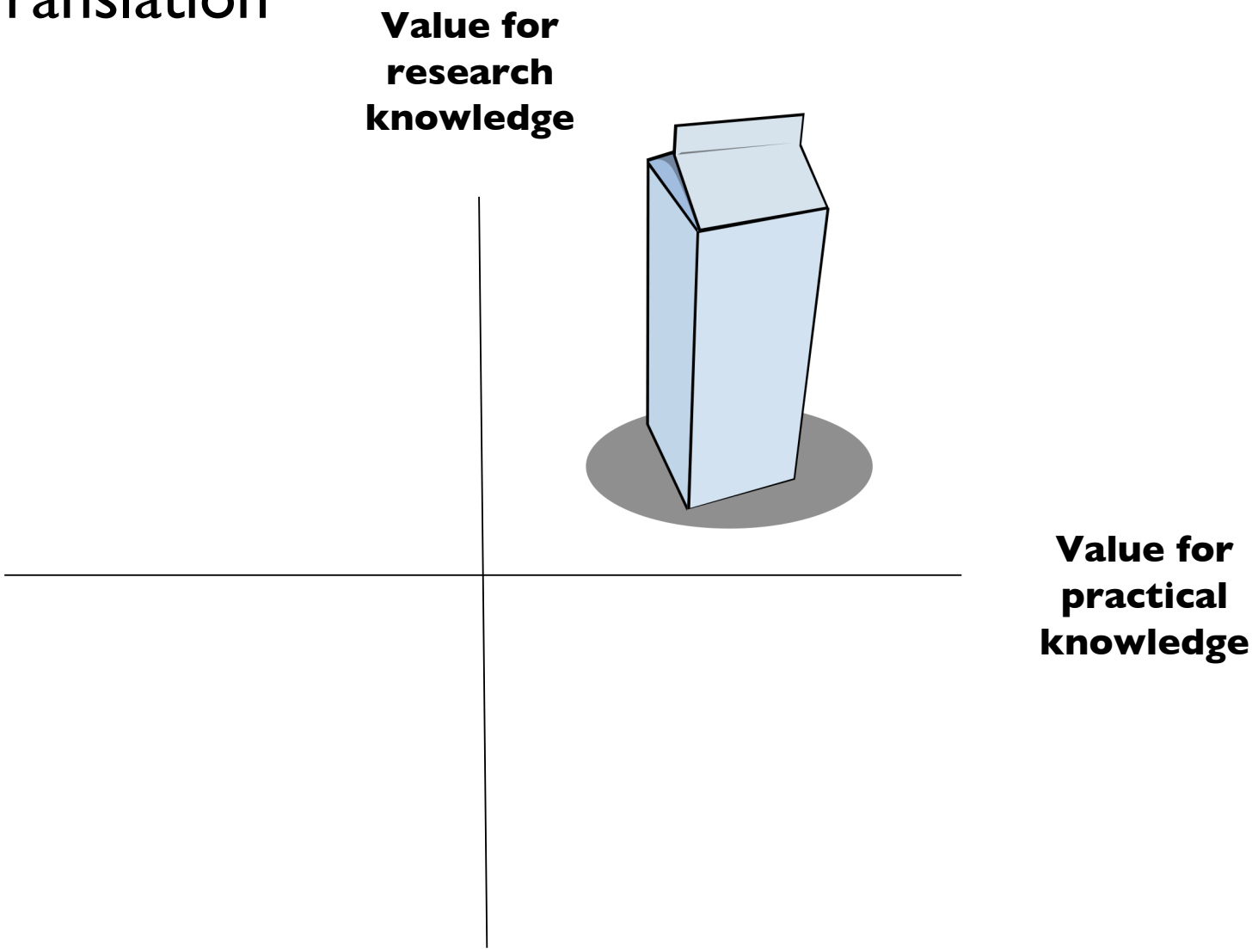
0	**479786**
1-25	**479788**
26-50	**479789**
51-75	**479790**
76-100	**479791**

Results

Translational Research treats teachers as targets for learning

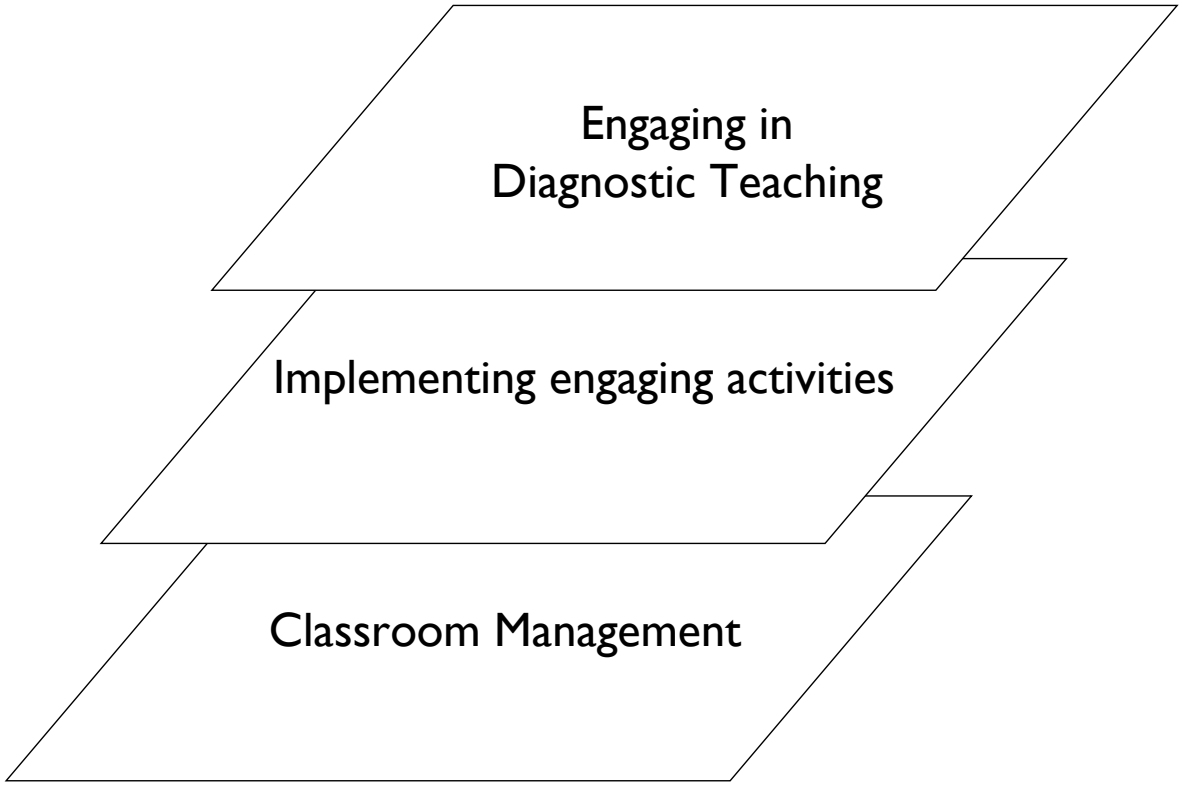

UP
FRAGILE
Turn dial right three turns and stop at 25.
Turn left one full circle and stop at 37.
Turn right to 15.
Pull shackle from lock. Voilà!

Lost in Translation

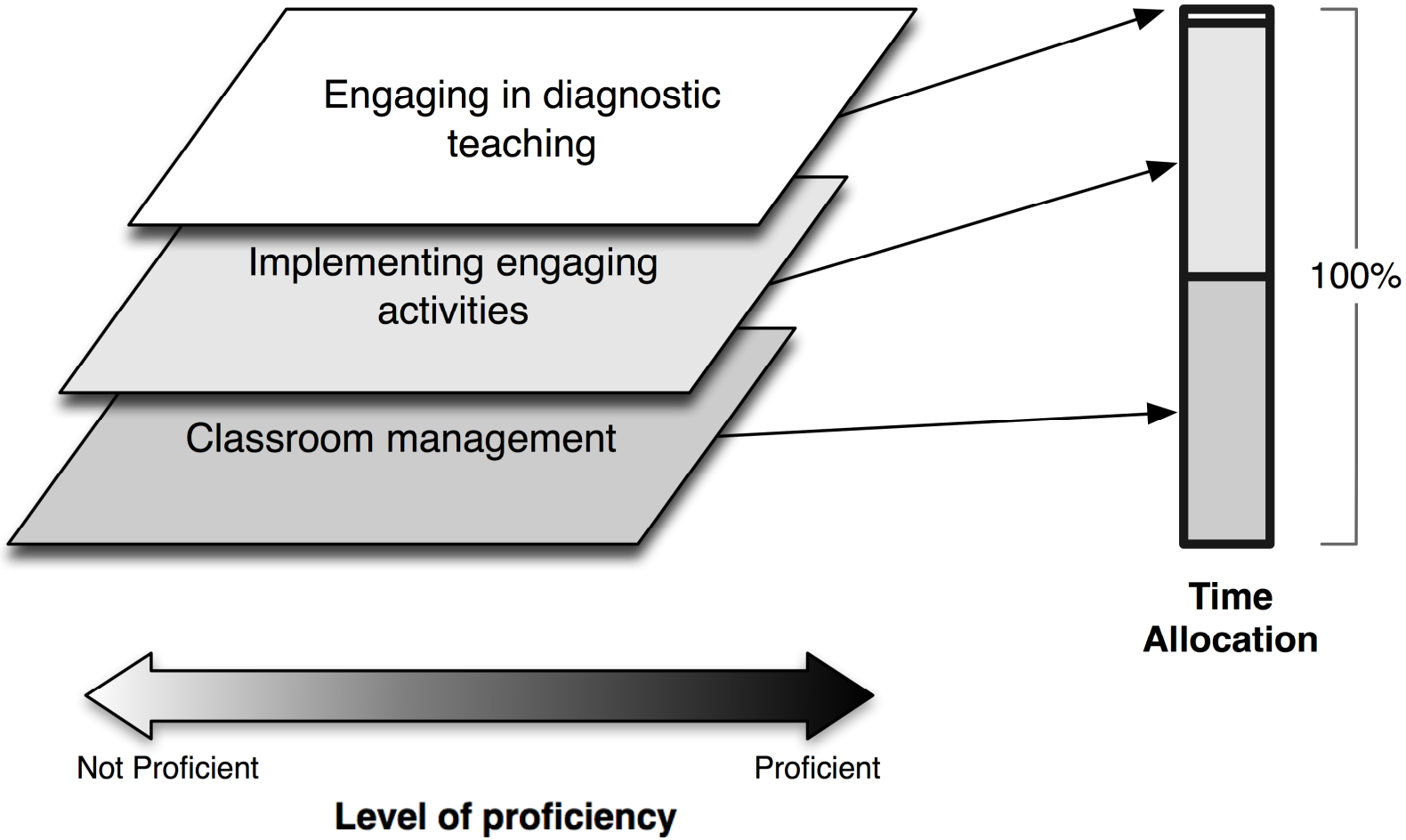


Pasteur's Quadrant

Alan Schoenfeld's Three Planes of Teaching Activity

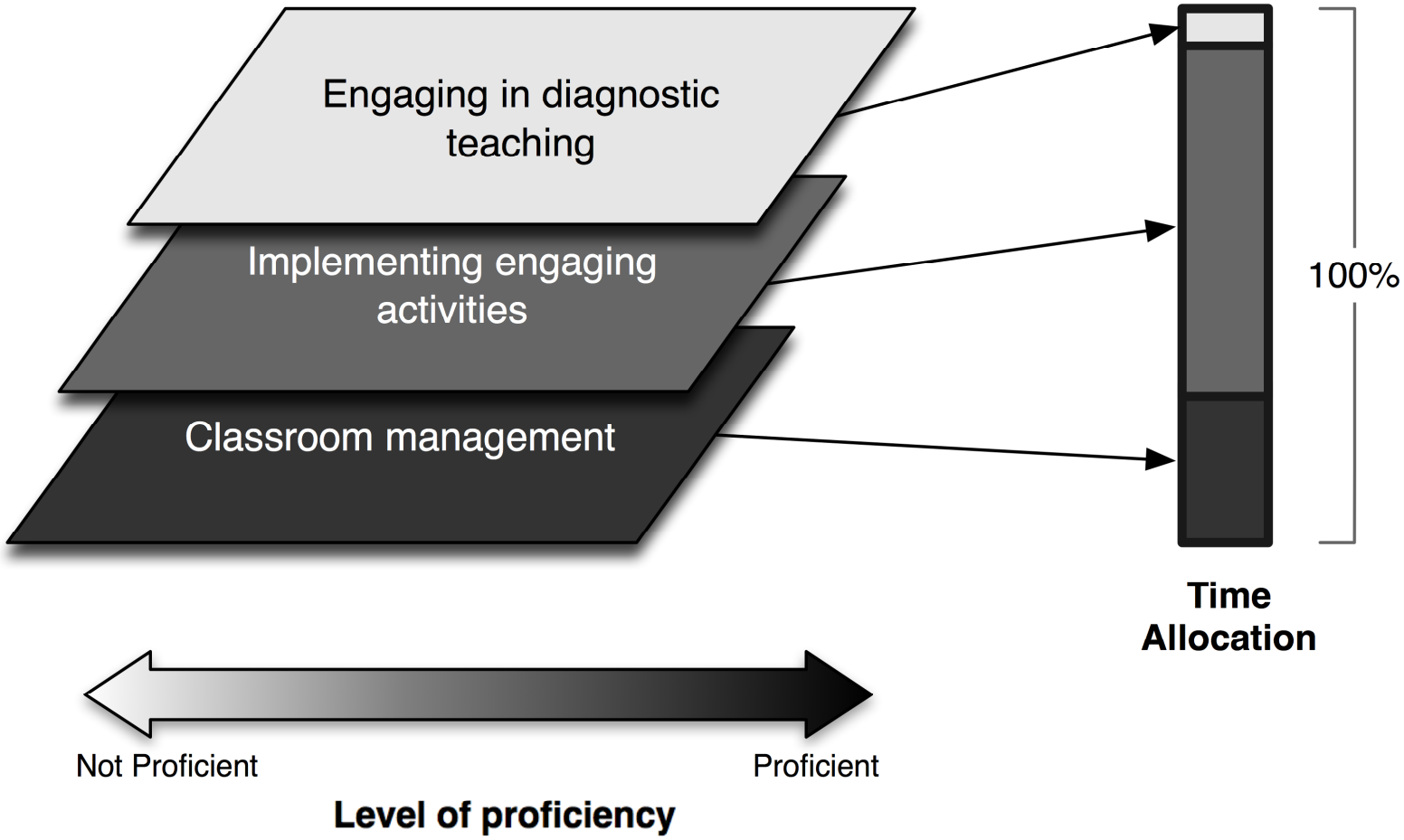


A Typical Beginning Teacher Profile



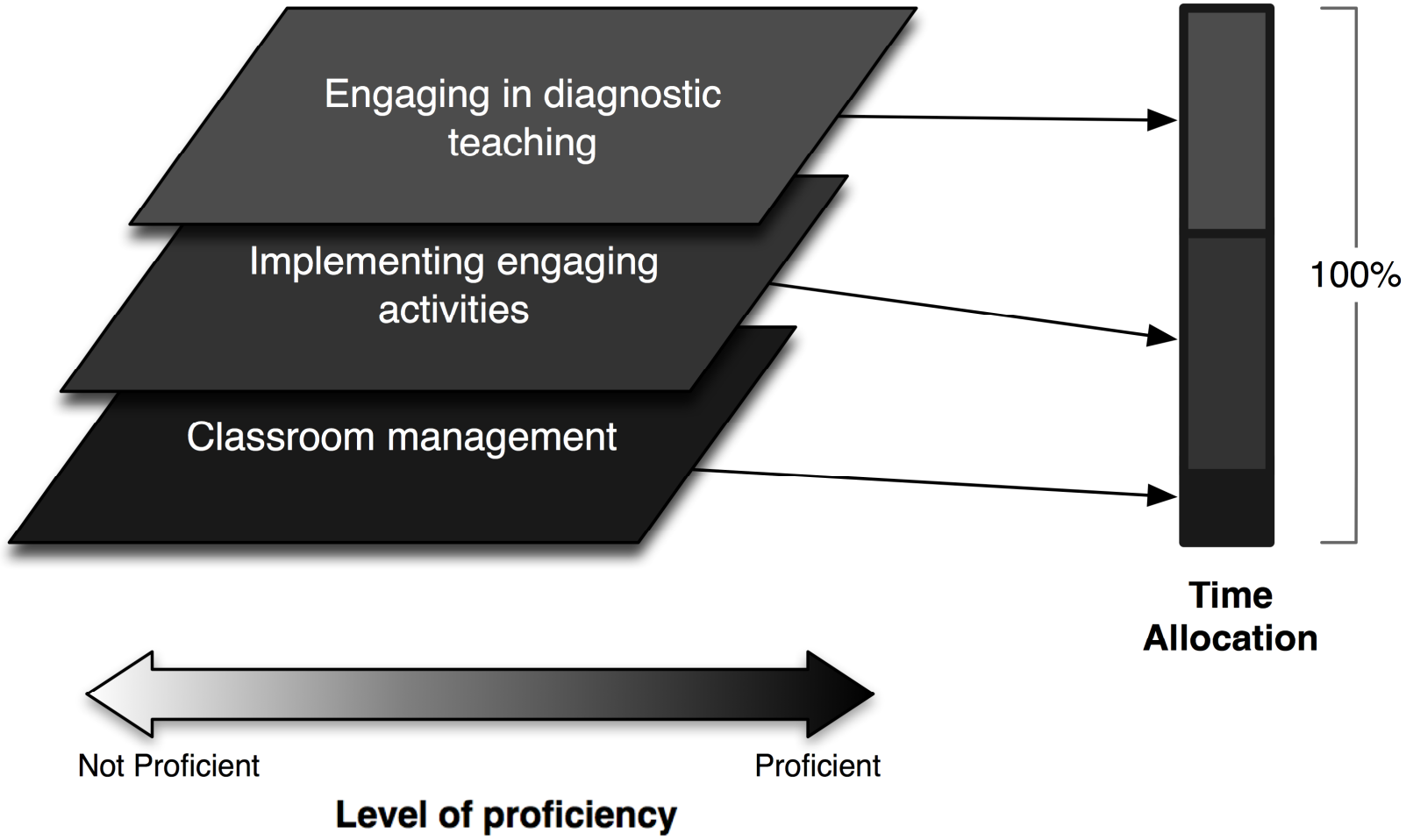
Courtesy of Alan Schoenfeld

A Typical Accomplished Teacher Profile

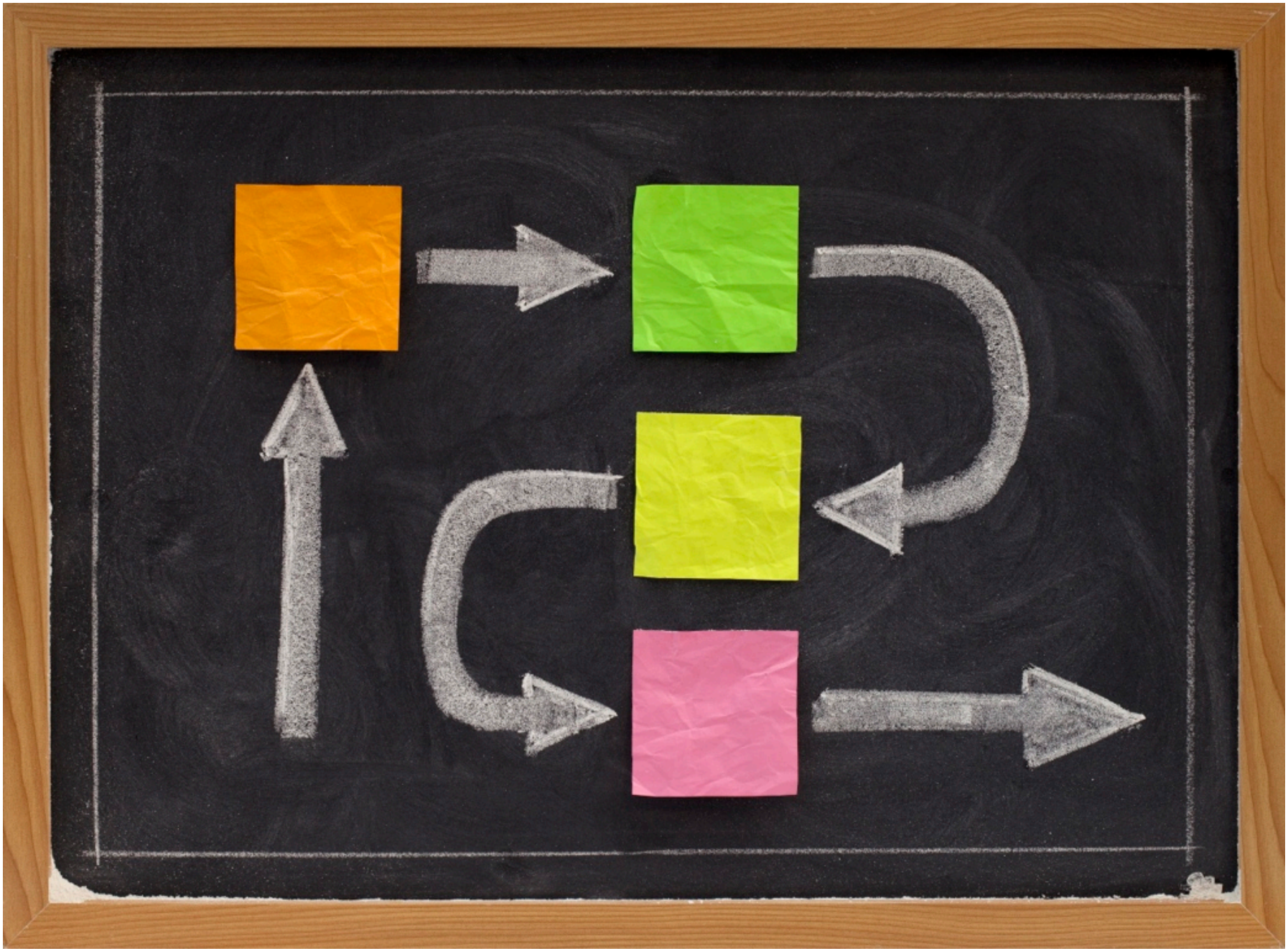


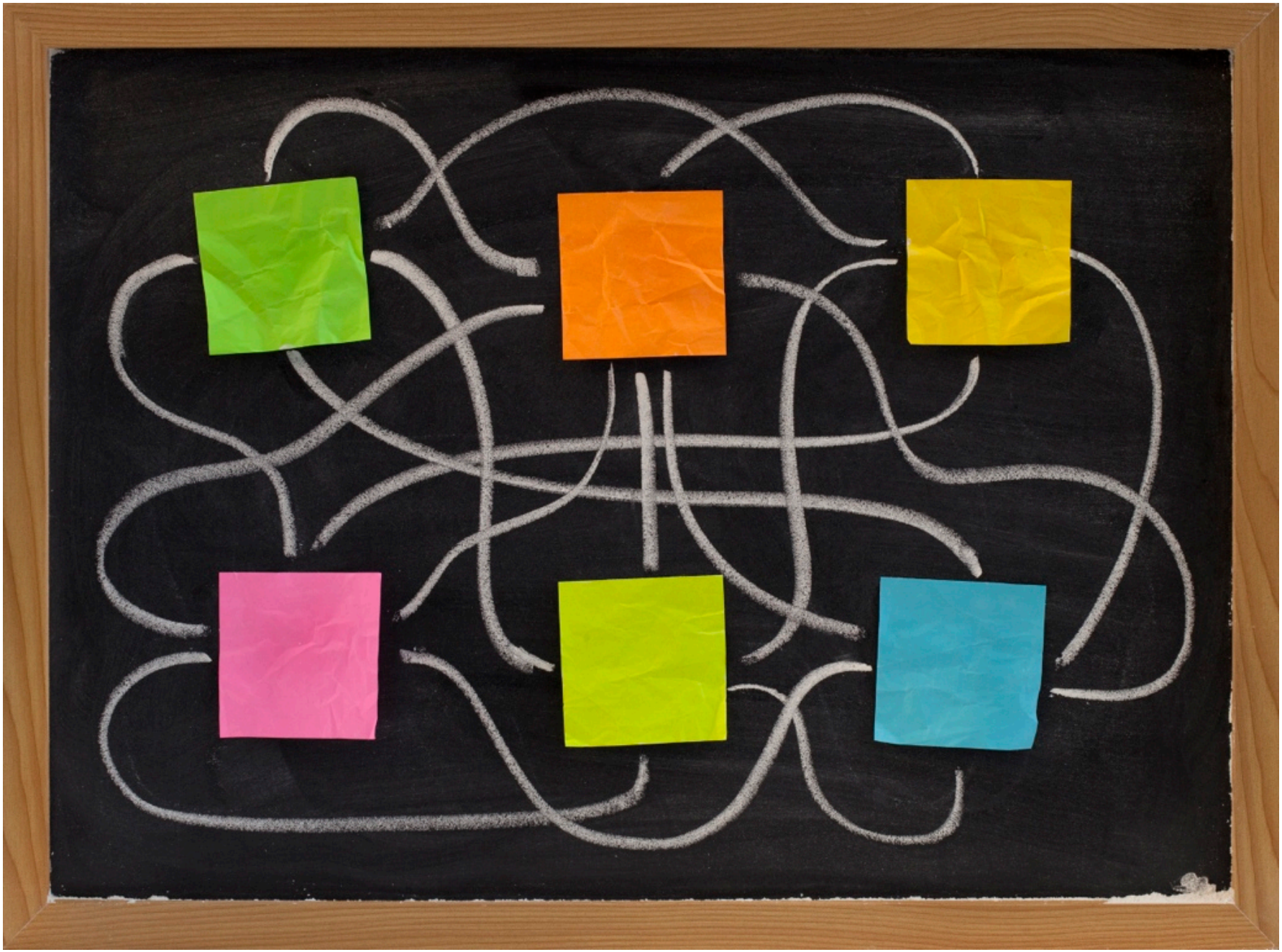
Courtesy of Alan Schoenfeld

A Typical Expert Teacher Profile



Courtesy of Alan Schoenfeld





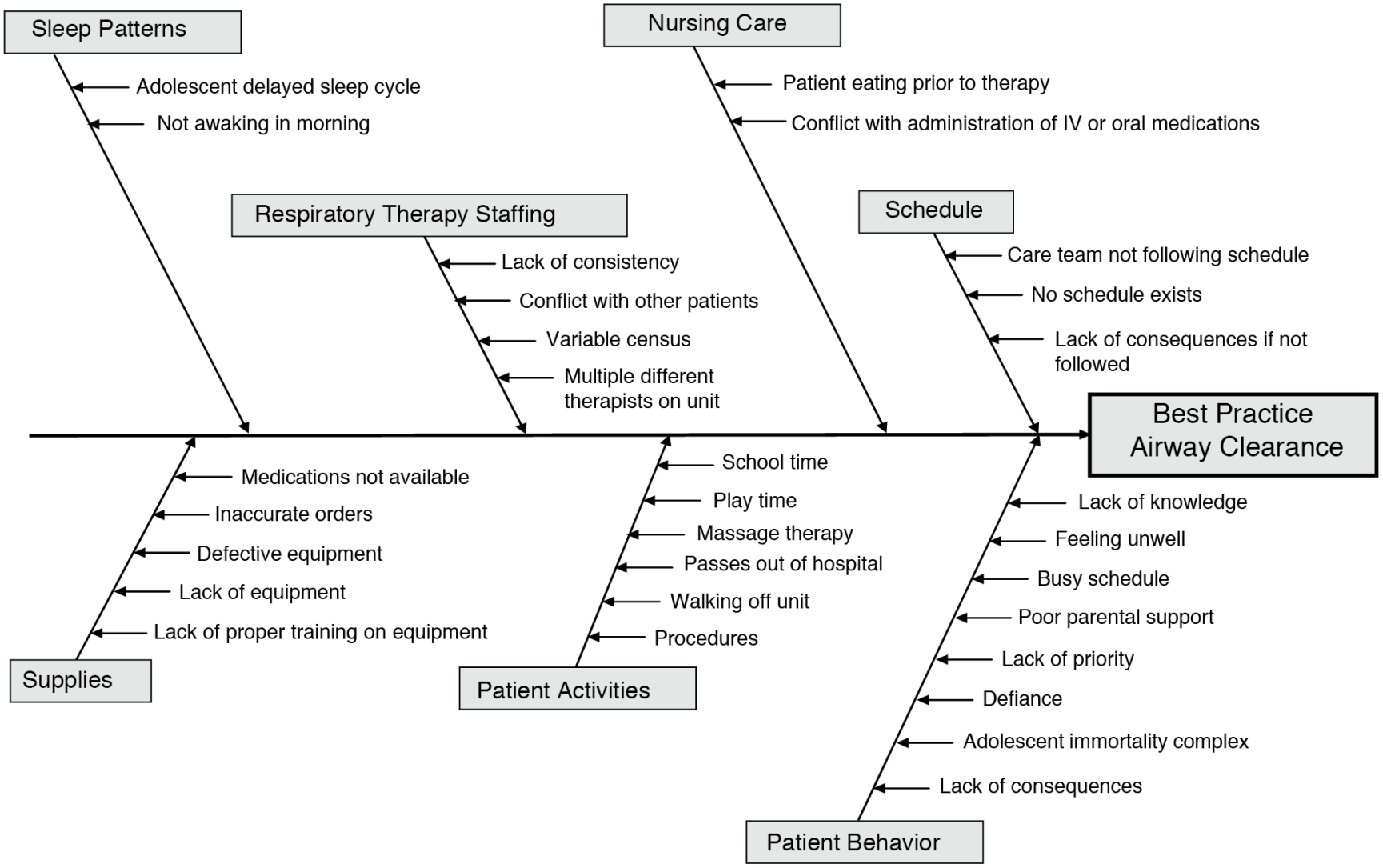
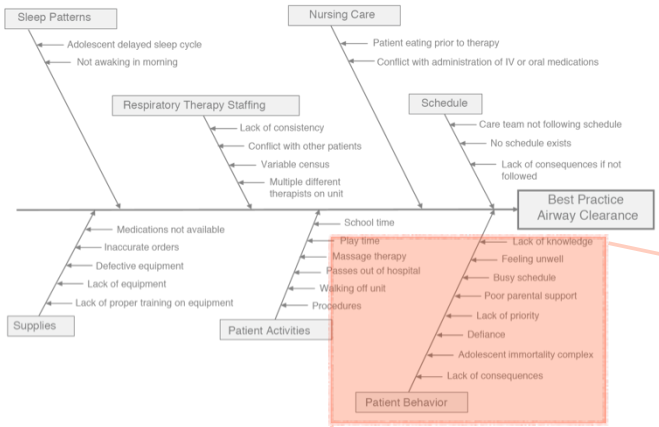
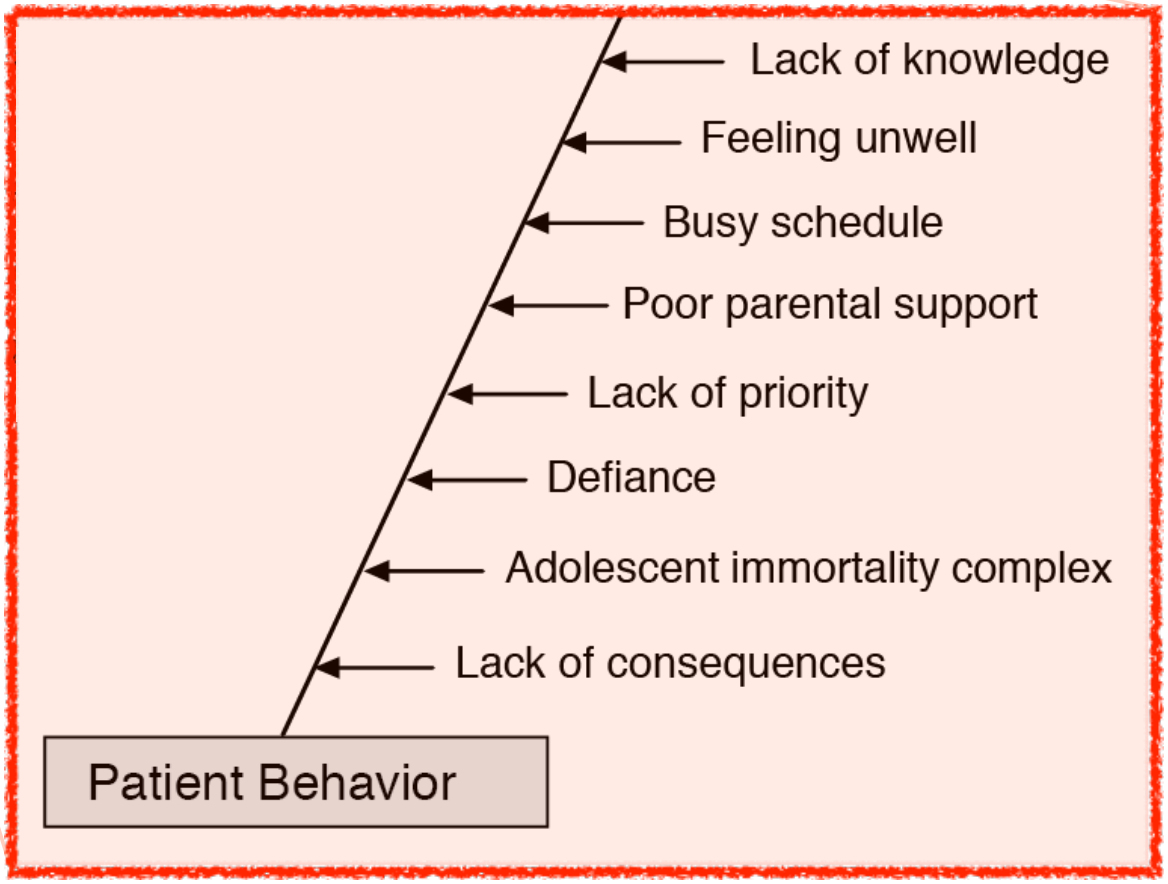


Figure 1. Fishbone diagram reflecting the team-identified 30 barriers to best practice ACT organized into key drivers.


Sleep Patterns
Adolescent delayed sleep cycle
Not awaking in morning
Nursing Care
Patient eating prior to therapy
Conflict with administration of IV or oral medications
Respiratory Therapy Staffing
Lack of consistency
Conflict with other patients
Variable census
Multiple different therapists on unit
Schedule
Care team not following schedule
No schedule exists
Lack of consequences if not followed
Best Practice Airway Clearance
Medications not available
Inaccurate orders
Defective equipment
Lack of equipment
Lack of proper training on equipment
Supplies
School time
Play time
Massage therapy
Passes out of hospital
Walking off unit
Procedures
Patient Activities
Lack of knowledge
Feeling unwell
Busy schedule
Poor parental support
Lack of priority
Defiance
Adolescent immortality complex
Lack of consequences
Patient Behavior


Lack of knowledge
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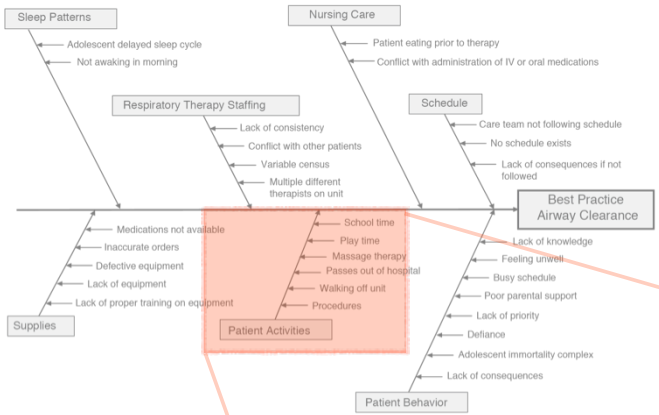
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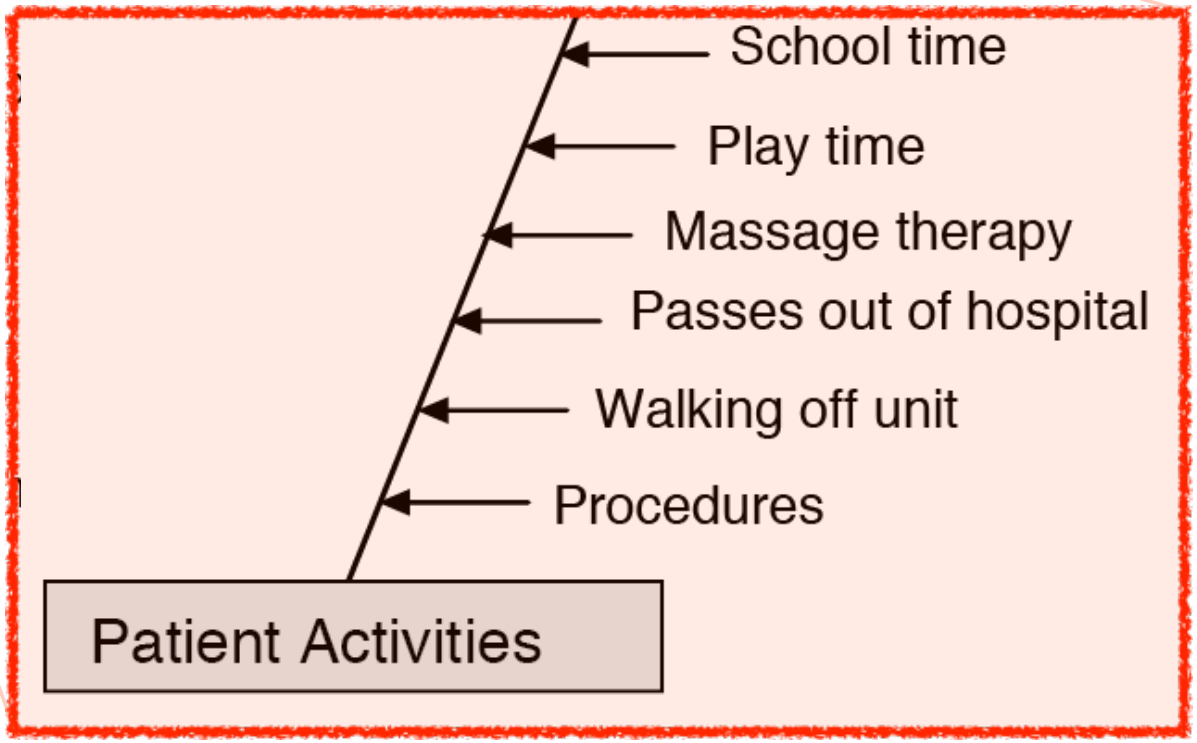
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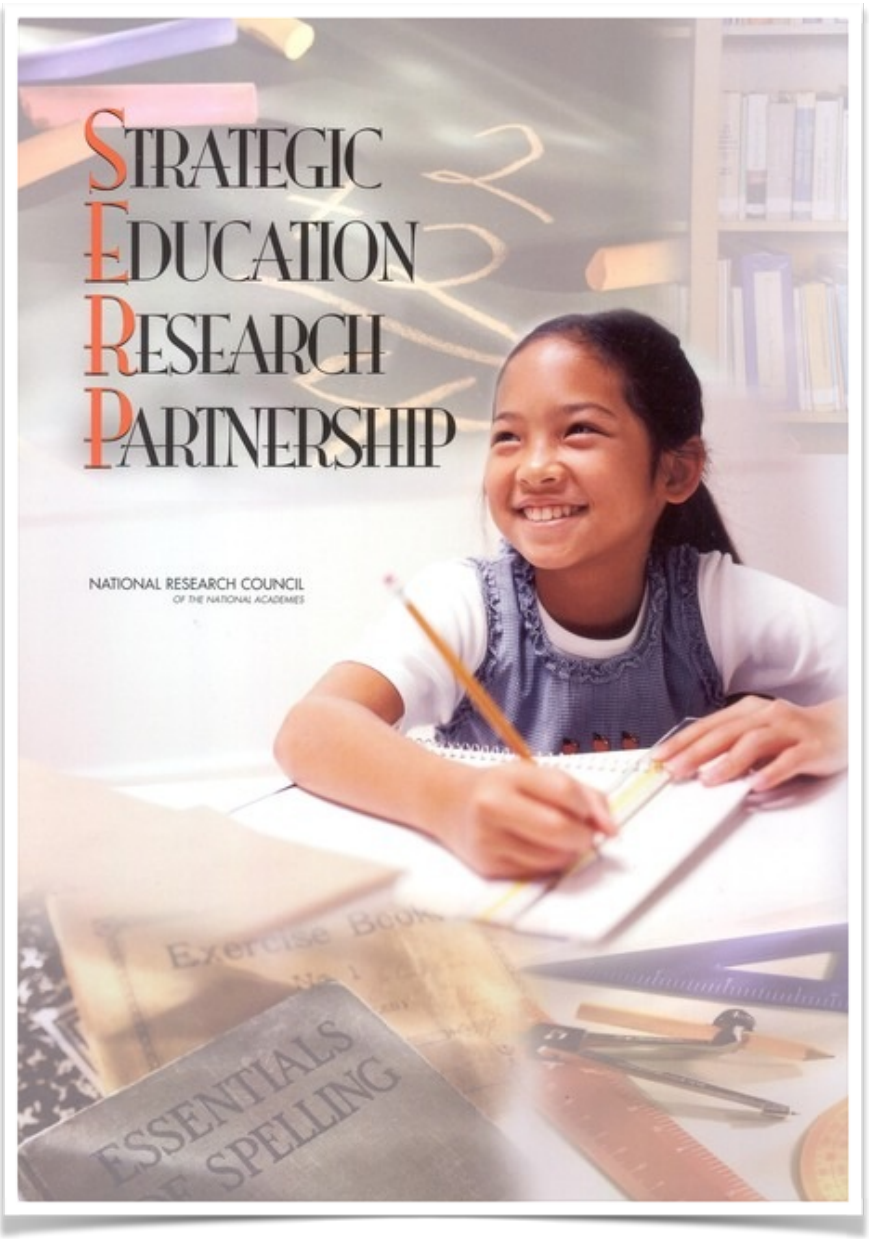
Passes out of hospital
Walking off unit
Procedures
Patient Activities


STRATEGIC
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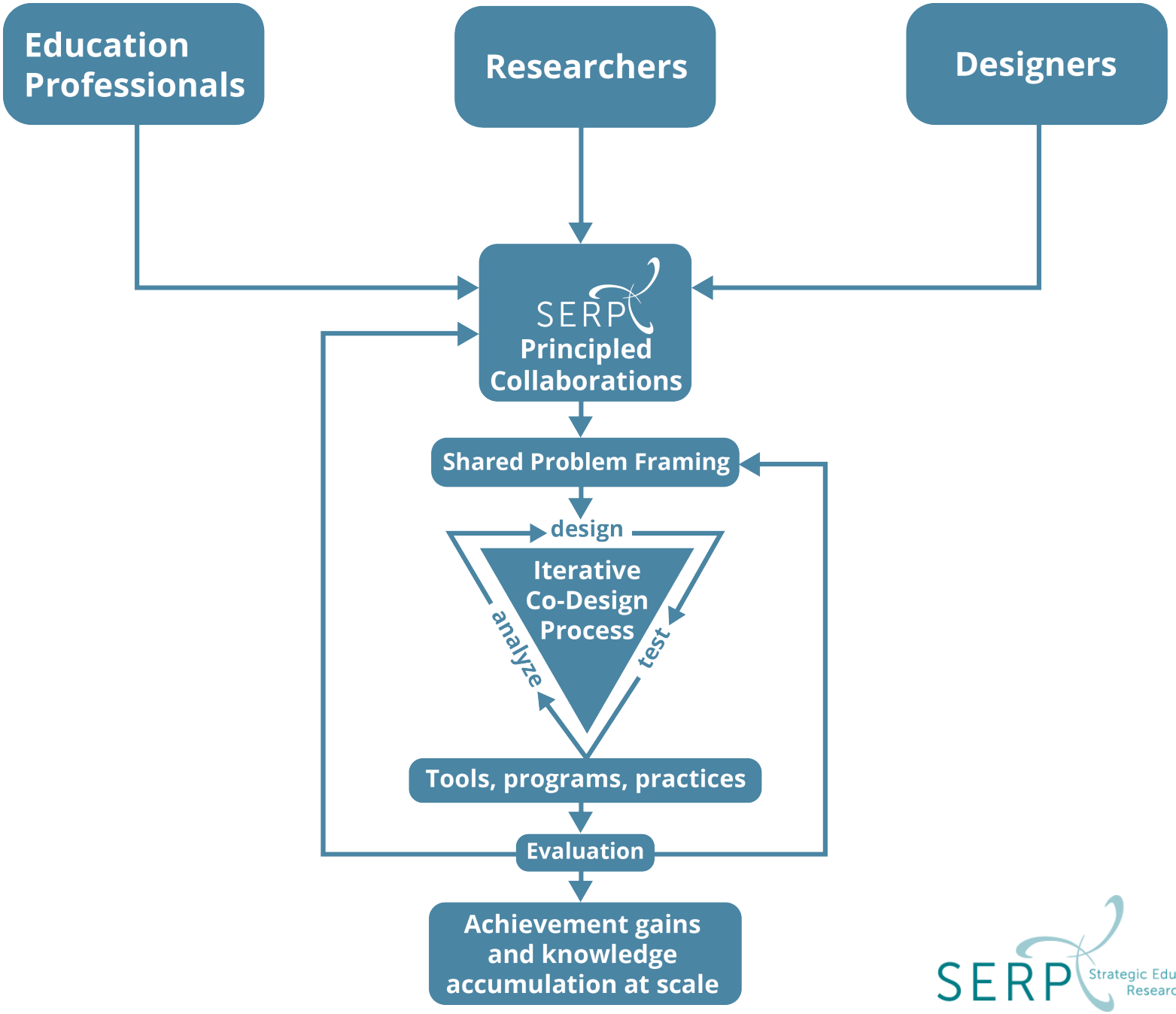
OF THE NATIONAL ACADEMIES
Exercise Book
ESSENTIALS
SPELLING


SERP
Strategic Education
Research Partnership



SERP Strategic Education Research Partnership

What's it look like?

STEM:

A dragonfly can fly fast. It can go about 50 feet in two seconds.

QUESTION:

How long would it take for the dragonfly to go 275 feet?

SOLUTION:

50 feet/2 seconds indicates a unit rate of 25 feet per second.

275 ÷ 25 = 11

Therefore the dragonfly can fly 275 feet in 11 seconds.

STEM:

A dragonfly can fly fast. It can go about 50 feet in two seconds.

QUESTION:

How long would it take for the dragonfly to go 275 feet?

SOLUTION:

50 feet/2 seconds indicates a unit rate of 25 feet per second.

275 ÷ 25 = 11

Therefore the dragonfly can fly 275 feet in 11 seconds.

Tools for Sense-making
in Mathematics

SERP

- Stem/Question/Solution Triangles
- Using Multiple Representations
- Mathematical (and not-so-mathematical) Diagrams
- Early Stage Pilots of Diagnostic Lessons, Plus Videos

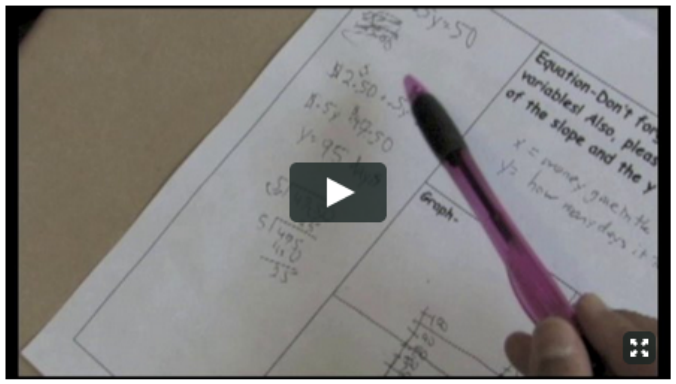
Watch this approach with eighth graders!
Teacher Alison Oliver gave two students the equation x + .5y = 50 to BEGIN their work in this lesson...

STEM:

QUESTION:

SOLUTION:

x + .5y = 50



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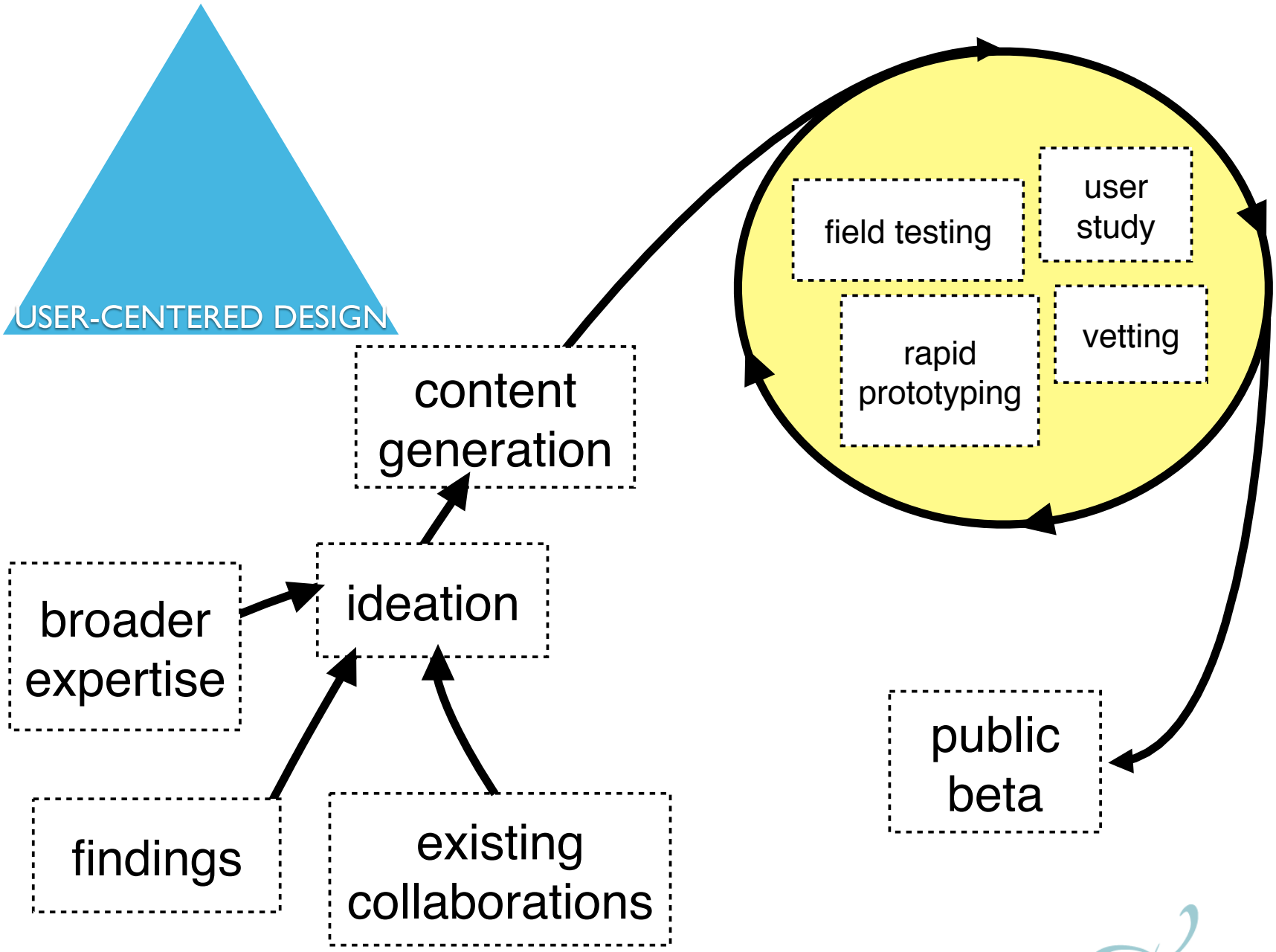
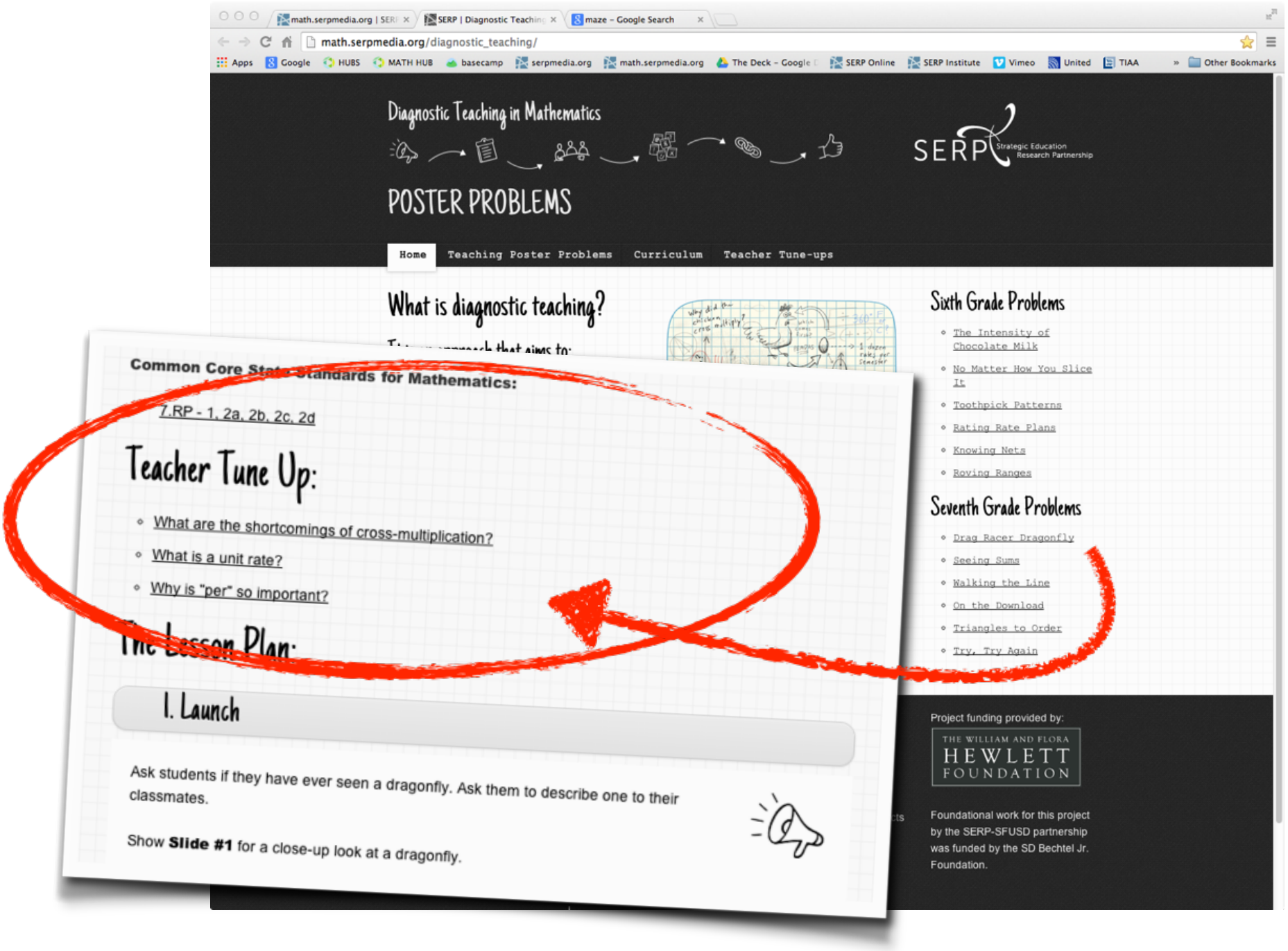


SERP Strategic Education Research Partnership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Apps
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HUBS
MATH HUB
basecamp
serpmedia.org
math.serpmedia.org
The Deck - Google
SERP Online
SERP Institute
Vimeo
United
TIAA
Other Bookmarks
Diagnostic Teaching in Mathematics
POSTER PROBLEMS
SERP
Strategic Education Research Partnership
Home
Teaching Poster Problems
Curriculum
Teacher Tune-ups
What is diagnostic teaching?
Sixth Grade Problems
The Intensity of Chocolate Milk
No Matter How You Slice It
Toothpick Patterns
Rating Rate Plans
Knowing Nets
Roving Ranges
Seventh Grade Problems
Drag Racer Dragonfly
Seeing Sums
Walking the Line
On the Download
Triangles to Order
Try, Try Again
Common Core State Standards for Mathematics:
7.RP - 1, 2a, 2b, 2c, 2d
Teacher Tune Up:
What are the shortcomings of cross-multiplication?
What is a unit rate?
Why is "per" so important?
The Lesson Plan:
I. Launch
Ask students if they have ever seen a dragonfly. Ask them to describe one to their classmates.
Show Slide #1 for a close-up look at a dragonfly.
Project funding provided by:
THE WILLIAM AND FLORA HEWLETT FOUNDATION
Foundational work for this project by the SERP-SFUSD partnership was funded by the SD Bechtel Jr. Foundation.

Looking for Standards in the Mathematics Classroom

The Common Core State Standards (CCSS) define eight standards for students' Mathematical Practice. Not all standards will be evident every time, in every activity. You will find evidence of the standards that students are applying in the work and the talk of students.
(see reverse)

CCSS Standar

The Standards for

1. Make sens
2. Reason ab
3. Construc
4. Model wi
5. Use appr
6. Attend t
7. Look for
8. Look for

Coun

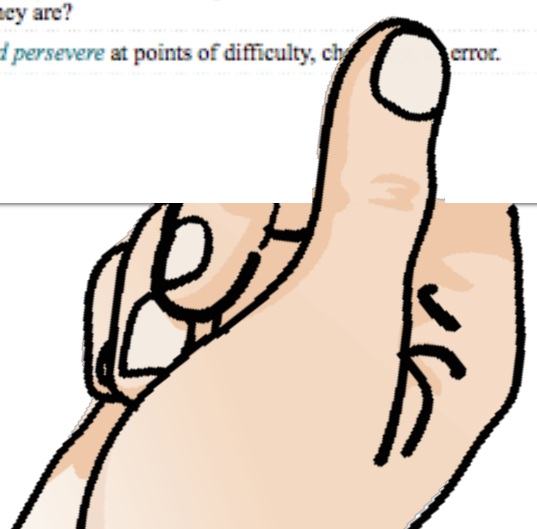
SERP

Principle	Student Vital Action
Logic connects sentences	Students *say a second sentence* (spontaneously or prompted by the teacher or another student) to explain their thinking and connect it to their first sentence. *Practices 1 | 2 | 3 | 6*
Reasoning develops when students develop viable arguments	Students *talk about each other's thinking* (not just their own). *Practices 1 | 2 | 3 | 6 | 7 | 8*
Academic success depends on academic language	Students use general and discipline-specific *academic language* in their oral and written explanations and discussions (spontaneously and/or prompted by the teacher or other students). *Practices 3 | 6*
Equity	*Which students are participating?* (e.g. boys more than girls, the same few students, ELL and special ed students?) Are they volunteering? Called on to do math? Talking about math in their group? Off task? All students ask math questions.
ELLs develop language through content	*English learners produce language* that communicates ideas and reasoning, even when that language is imperfect. They take advantage of available language supports and resources: peer support, sentence frames, multiple choice oral responses, visual representation, graphic organizers, home language, cognates, etc. *Practices 1 | 2 | 3 | 6*
Students write explanations	Students revise their thinking, and their written work includes *revised explanations* and justifications. *Practices 1 | 2 | 3 | 4*
A growth mindset matters	*Do students believe that they can learn to be good at math* by learning more math, by working hard, and by persevering to make sense of problems? Or do students think they cannot change how good at math they are?
Productive struggle, persistence	Students *engage and persevere* at points of difficulty, ch error.

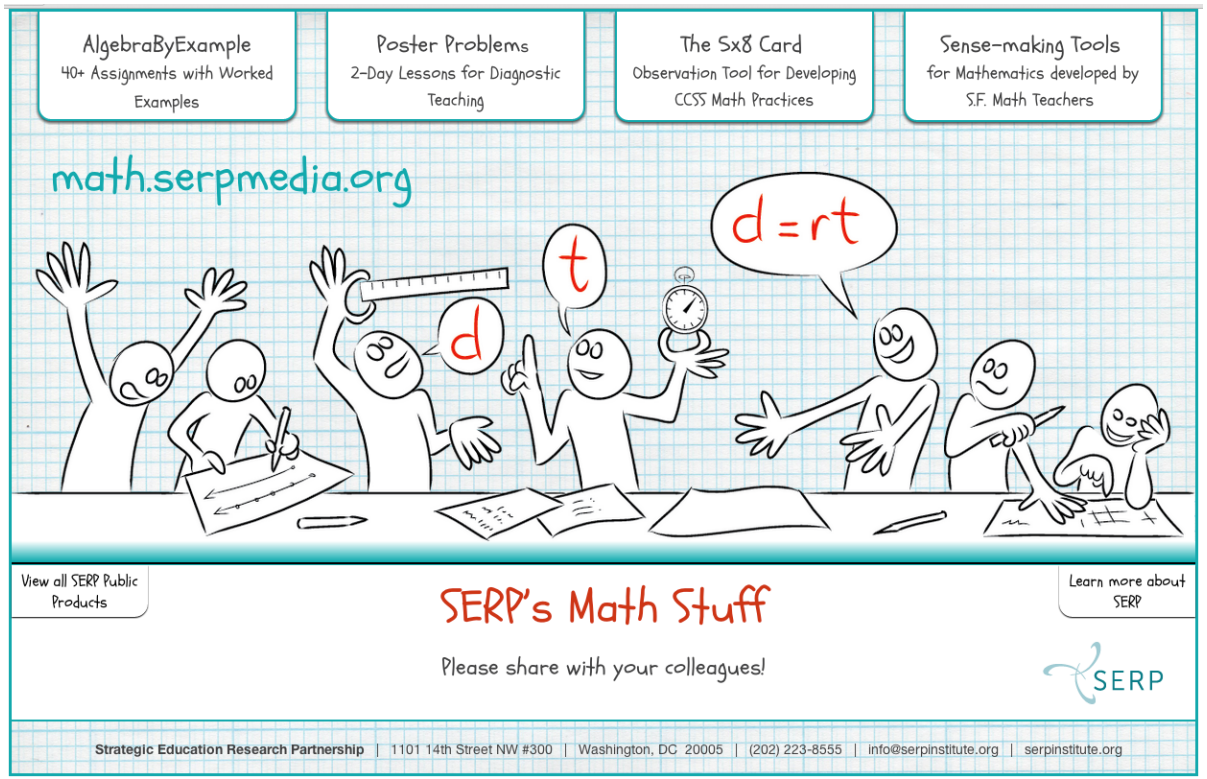
5x8 Evidence-Gathering Card

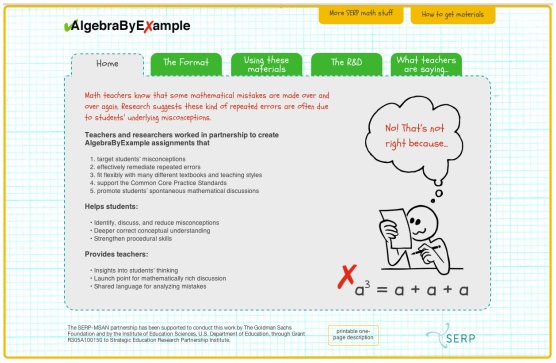
OAKLAND UNIFIED SCHOOL DISTRICT
Community Schools, Thriving Students

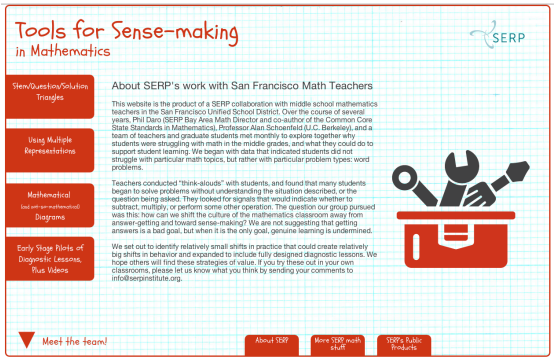
SFUSD SAN FRANCISCO PUBLIC SCHOOLS



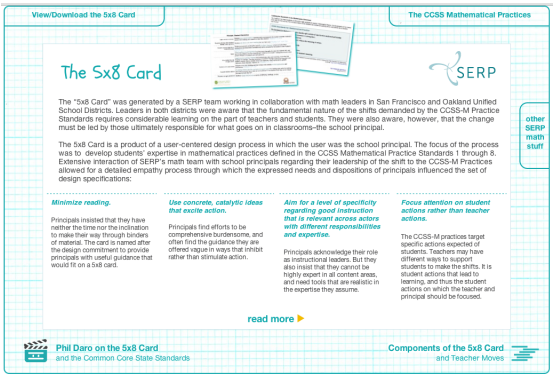
Principle	Student Vital Action
Logic connects sentences	Students *say a second sentence* (spontaneously or prompted by the teacher or another student) to explain their thinking and connect it to their first sentence. *Practices 1 | 2 | 3 | 6*







math.serpmedia.org



The problem-solving partnership approach treats teachers as essential members of the team & as clients

For teachers: To achieve a high functioning K-12 education system, what portion of the challenge can be addressed through site-based problem-solving partnerships (research, practice, design)?

Text a **CODE** to 22333

0	**430424**
1-25	**430430**
26-50	**430431**
51-75	**479746**
76-100	**480219**

Results

For non-teachers: To achieve a high functioning K-12 education system, what portion of the challenge can be addressed through site-based problem-solving partnerships (research, practice, design)?

Text a **CODE** to 22333

0	**479908**
1-25	**479909**
26-50	**479911**
51-75	**480220**
76-100	**480226**

Results