MAKING THE CASE FOR COMPETENCY-BASED EDUCATION

Evaluation for Improvement

THE "MAKING THE CASE" WEBINAR SERIES

This is the second of four webinars in a series about *Making the Case for Competency-Based Education*, designed to help institutions use data to demonstrate the value of CBE programs for their students and continuously improve program quality.

Produced by American Institutes for Research and Public Agenda, in partnership with C-BEN (Competency-Based Education Network), *Making the Case* is made possible by the generous support of Lumina Foundation and other partners.

THE "MAKING THE CASE" WEBINAR SERIES

1 Getting Started with Evaluation

2 Evaluation for Improvement

3 Using Learning Assessment in Evaluation (February 8th)

4 Communicating Evaluation Findings (March 29th)

YOUR HOSTS

Kelle Parsons
American Institutes
for Research

Matt Soldner
American Institutes
for Research

Erin Knepler
Public Agenda

HOUSEKEEPING

- We're glad you – and more than 90 of your closest friends – registered!

- The webinar is being recorded for those who couldn't attend.

- Your telephone lines are muted, so don't worry about having lunch.

- Have a question? Just type it in the "Questions" box.

- Materials should be available by the end of the week at http://bit.ly/cbe-at-air

WHAT YOU'LL LEARN

- How to get ready for, and implement, the Plan-Do-Study-Act (PDSA) Method

- How PDSA can help solve problems of practice relevant to CBE

- How you can be proactive, rather than reactive, with improvement efforts

- Update from Competency-Based Education Network (C-BEN)

A Focus on Improvement

Getting Ready for Continuous Quality Improvement

THREE REASONS TO FOCUS ON IMPROVEMENT

1. Your programs were designed to improve the lives of learners and help your institutions meet their mission, so many feel an **educational responsibility** to improve practice.

2. Improvement science research and practical experience consistently demonstrate that **execution matters,** so being able to identify sticking points is critical to improving outcomes.

3. As we noted in Webinar 1, you've worked hard to design and implement your program! A focus on improvement helps you **maximize your return on that investment.**

WHY WE ARE HIGHLIGHTING PDSA CYCLE

1. The PDSA cycle is one of a handful of models that is very well known throughout education, business, and industry; the approach is **road-tested and credible**.

2. It is **simple to understand and use**, and it can be applied to a wide range of real problems CBE educators experience every day.

BEFORE YOU BEGIN:
GETTING READY FOR PDSA

Identifying the Specific Problem

Typically, we react to the **symptoms** of a problem to be solved, not the problem itself.

Being clear on the problem is a critical first step in continuous quality improvement, and precedes the PDSA cycle.

AIR recommends Root Cause Analysis as a way to distinguish symptoms from problems, and to gather data that will be used in the first stage in the PDSA cycle, Planning.

SYMPTOMS VERSUS PROBLEMS (1/2)

Observable Symptom	Underlying Problem and Root Cause
An institution noticed a spike in the number of students failing competency demonstrations on how to factor quadratic expressions in a recently revised on-line *Introduction to College Algebra* course.	An important piece of instructional content was erroneously excluded. The prior course relied upon a set of resources, including Open Educational Resources. A concept introduced only in an OER had been changed by the developer, but instructional designers and faculty hadn't noticed the omission. Quality assurance needed to be re-evaluated. (And a new resource developed!)

SYMPTOMS VERSUS PROBLEMS (2/2)

Observable Symptom	Underlying Problem and Root Cause
Fall-to-spring retention rates for an institution offering a range of hybrid and face-to-face CBE programs had begun to wane several years after a seemingly successful implementation.	An increasing number of students had their registrations blocked due to "holds." When the institution (and individual programs) were smaller, advisors and program staff could message—and informally monitor—student registration more closely. As campus enrollment grew, bandwidth was limited, allowing more students to "slip through the cracks." An explicit outreach protocol was developed to proactively problem-solve with students with holds and blocks.

ROOT CAUSE ANALYSIS MADE SIMPLE(R)

1   Specify challenge, indicated by one or more symptoms, to be addressed

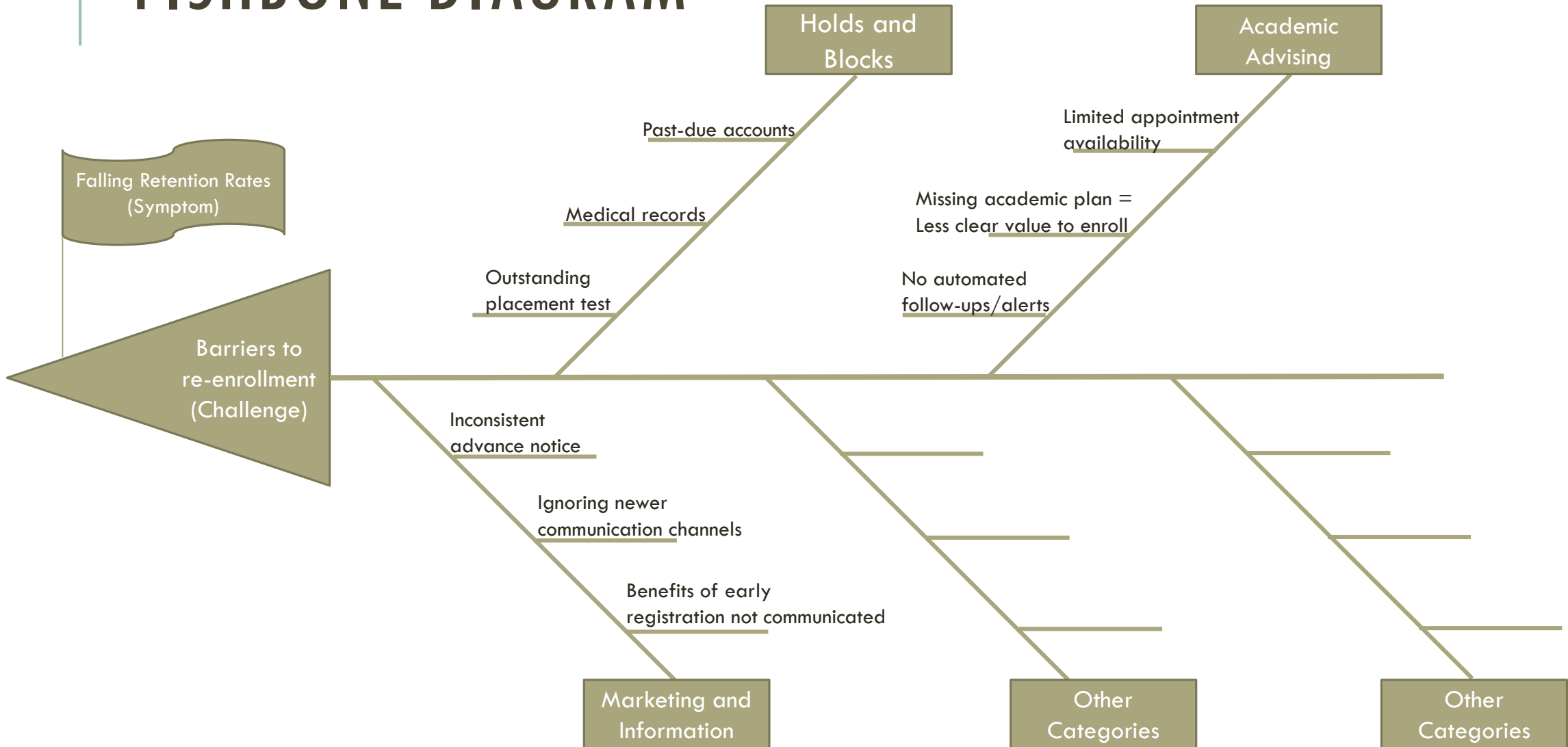2   Generate possible explanations (root causes), and drill-down by repeatedly asking "Why?"

3   Group root causes into broad categories

4   Prioritize causes for action using the PDSA cycle

FISHBONE DIAGRAM

Falling Retention Rates (Symptom)

Barriers to re-enrollment (Challenge)

Holds and Blocks

Past-due accounts

Medical records

Outstanding placement test

Academic Advising

Limited appointment availability

Missing academic plan = Less clear value to enroll

No automated follow-ups/alerts

Inconsistent advance notice

Ignoring newer communication channels

Benefits of early registration not communicated

Marketing and Information

Other Categories

Other Categories

A REMINDER ABOUT STAKEHOLDER INVOLVEMENT:
HARKENING BACK TO WEBINAR 1

Role	Helpful In …		
	Evaluation, generally	Root Cause Analysis	CQI Processes
Champion	✓	?	✓
Sponsor	✓	?	✓
Project Manager	✓	✓	✓
Subject Matter Expert	✓	✓	✓
Institutional Researcher	✓	✓	✓
Data/Information Technology Expert	✓	✓	✓
Data Analyst	✓	✓	✓
Communications Lead	✓	?	?
Students	?	✓	?

The Plan-Do-Study-Act Cycle

A Gentle Introduction

KICKING OFF THE PDSA CYCLE:
IMPROVEMENT GOALS

✓ Stakeholder group formed

✓ Challenge and at least one root cause identified

❑ Identifying a goal for the PDSA effort, which guides the **Plan** you develop, the metrics you **Study**, and guide how you **Act** next.

SETTING AN IMPROVEMENT GOAL (1/2)

Systems Challenge

Students face meaningful barriers in the enrollment process.

Focal Root Cause

Students who have registration blocks, including financial holds, records holds, or academic holds, resolve them too late (if at all) to participate in early enrollment, decreasing the likelihood they will return the next term.

Improvement Goal

All students with any form of registration holds will receive proactive outreach in the month preceding the end of early enrollment.

SETTING AN IMPROVEMENT GOAL (2/2)

All students with any form of registration holds will receive proactive outreach in the month preceding the end of early enrollment.

Specific?	**YES.** We know who is affected, what is meant to occur, and when it is meant to happen.
Measurable?	**YES.** We can know who has a registration hold, and we can track who has been contacted when.
Achievable?	**MAYBE.** Reaching "all students" may be difficult, depending on resources.
Relevant?	**YES.** Our analysis establishes a clear link between a systems challenge and a root cause.
Time-bound?	**MAYBE.** Goal does not specify the length of the improvement cycle or when results should be expected.

PLAN

WHAT is the proposed change, and what data are needed to measure it effectively?

WHEN will we enact the change, and WHEN will we measure results?

WHO is needed at each step of the change process?

(The WHY has been established: to achieve your improvement goal, resolve your root cause, and eliminate the symptom.)

A PLAN FOR REDUCING BARRIERS TO STUDENT ENROLLMENT

Task Name	Start Date	End Date	Assigned To	Q3 Jun	Jul	Aug	Sep	Q4 Oct	Nov	Dec	Q1 Jan	Feb	Mar	Q2 Apr	May	Jun	Q3 Jul	Aug	Sep	Q4 Oct	Nov	Dec
Identifying students for outreach																						
Kickoff meeting: Enrollment Management, Registrar, Bursar, Health Services, IR, IT	07/06/15	07/06/15	EM		Kickoff meeting: Enrollment Management, Registrar, Bursar, Health Services, IR, IT																	
Deadline for placing blocks	10/30/15	10/30/15	R, B, HS						Deadline for placing blocks													
Block list run and distributed to EM	11/02/15	11/04/15	IR						Block list run and distributed to EM													
Developing outreach plans																						
Recruit volunteers from Student Success teams	08/31/15	09/04/15	VP-SS			Recruit volunteers from Student Success teams																
Develop intervention script and resource list	09/07/15	10/09/15	EM, R, B,			Develop intervention script and resource list																
Hold in-person training for volunteers	10/12/15	10/16/15	VP-SS					Hold in-person training for volunteers														
Provide training for volunteers			EM					Provide training for volunteers														
Load lists into BlackBoard	11/05/15	11/06/15	EM					Load lists into BlackBoard														
Monitoring progress																						
Add tracking flag to (PLATFORM)			IT																			
Provide specification to IT	08/01/15	08/01/15	All		Provide specification to IT																	
Review IT solution	09/28/15	10/02/15	All				Review IT solution															
Test new flag	10/12/15	10/16/15	IR					Test new flag														
Run Week 1 statistics (attempted, reached, referred, unresolved)	11/09/15	11/13/15	IR						Run Week 1 statistics (attempted, reached, referred, unresolved)													
Run Week 2 statistics	11/16/15	11/20/15	IR						Run Week 2 statistics													
Run Week 3 statistics	11/23/15	11/27/15	IR						Run Week 3 statistics													
Run Week 4 statistics	11/30/15	12/04/15	IR						Run Week 4 statistics													
Verify registration status of identified students	12/14/15	12/15/15	IR						Verify registration status of identified students													
Verify retention of identified students	01/18/16	01/22/16	IR							Verify retention of identified students												
Debriefing meeting	01/29/16		All							Debriefing meeting												

✓ WHAT

✓ WHEN

✓ WHO

Task Name	Start Date	End Date	Assigned To	Timeline
Identifying students for outreach				
Kickoff meeting: Enrollment Management, Registrar, Bursar, Health Services, IR, IT	07/06/15	07/06/15	EM	Kickoff meeting: Enrollment Management, Registrar, Bursar, Health Services, IR, IT
Deadline for placing blocks	10/30/15	10/30/15	R, B, HS	Deadline for placing blocks
Block list run and distributed to EM	11/02/15	11/04/15	IR	Block list run and distributed to EM
Developing outreach plans				
Recruit volunteers from Student Success teams	08/31/15	09/04/15	VP-SS	Recruit volunteers from Student Success teams
Develop intervention script and resource list	09/07/15	10/09/15	EM, R, B,	Develop intervention script and resource list
Hold in-person training for volunteers	10/12/15	10/16/15	VP-SS	Hold in-person training for volunteers
Divide list among volunteers	11/04/15	11/05/15	EM	Divide list among volunteers
Load lists into BlackBoard	11/05/15	11/06/15	EM	Load lists into BlackBoard
Monitoring progress				
Add tracking flag to (PLATFORM)			IT	
Provide specification to IT	08/01/15	08/01/15	All	Provide specification to IT
Review IT solution	09/28/15	10/02/15	All	Review IT solution
Test new flag	10/12/15	10/16/15	IR	Test new flag
Run Week 1 statistics (attempted, reached, referred, unresolved)	11/09/15	11/13/15	IR	Run Week 1 statistics (attempted, reached, referred, unresolved)
Run Week 2 statistics	11/16/15	11/20/15	IR	Run Week 2 statistics
Run Week 3 statistics	11/23/15	11/27/15	IR	Run Week 3 statistics
Run Week 4 statistics	11/30/15	12/04/15	IR	Run Week 4 statistics
Verify registration status of identified students	12/14/15	12/15/15	IR	Verify registration status of identified students
Verify retention of identified students	01/18/16	01/22/16	IR	Verify retention of identified students
Debriefing meeting	01/29/16		All	Debriefing meeting

Timeline header: Q3 (Jun Jul Aug Sep) Q4 (Oct Nov Dec) Q1 (Jan Feb Mar) Q2 (Apr May Jun) Q3 (Jul Aug Sep) Q4 (Oct Nov Dec)

DO

Detailed planning makes the "doing" easier, but barriers still arise. Common examples include:

- Incomplete buy-in among high-level partners
- Emergent priorities delay or displace plan
- Problems with follow-through on the ground
- Failure to explicitly plan for measurement
- Gaps in data or analysis capacity

OVERCOMING IMPLEMENTATION BARRIERS

Challenge	Possible Solution
Incomplete buy-in among high-level partners	▪ Develop project charter at outset of activity that is signed by all key stakeholders and approved by Champion (e.g., President, Provost, or VP) and refer to it as needed.
Emergent priorities delay or displace plan	▪ Leverage Champion investment in activity. ▪ Built sufficient slack in project schedule to mitigate risk. ▪ Distribute and regularly review Gantt chart with team.
Problems with follow-through on the ground	▪ Articulate a compelling value proposition for effort. ▪ Have visible Champion involvement throughout implementation. ▪ Acknowledge and reward staff at implementation-level.
Failure to explicitly plan for measurement	▪ Involve IR, IT, and analysts at outset of project.
Gaps in data or analysis capacity	▪ Develop analysis plan before intervention begins, to ensure all necessary components are accessible.

STUDY

- **What happened?**

- Understanding the results of most continuous quality efforts do not require complex statistics.

- The success of most interventions can usually be characterized by simple counts or percentages.

- However, meaningful process and outcome metrics are critical!

PROACTIVE OUTREACH: MEASURING OUTPUTS

- Simple tables can quantify important outputs.

- More could have been learned if types of blocks or contacts were tracked.

- Outputs do not always help you tell story about the "impact" of your intervention.

Week	Blocked At Start Of Period	Reached That Week	Of Reached, Made Referral
1	112	94	87
2	100	60	54
3	88	40	22
4	71	15	14

PROACTIVE OUTREACH: COMPARING TO HISTORICAL TRENDS

- When available, comparisons to prior years are helpful in understanding impact.
- The percentage decline between Week 1 to the end of the intervention was greater in the intervention year than prior years.
- Improved term-to-term retention, though still not at prior baseline level.
- This could be viewed as a success, particularly in the face of growing enrollments.

Week	Percentage of Students Blocked In Weeks Prior to Pre-Registration		
	Fall 2013 (N = 1,970)	Fall 2014 (N = 2,110)	Fall 2015 (N = 2,560)
1	1.9 %	3.0 %	4.4 %
2	1.5 %	2.5 %	3.9 %
3	1.5 %	2.0 %	3.4 %
4	1.4 %	2.0 %	2.7 %
Final	1.4 %	2.0 %	2.3 %

Year	Fall-to-Spring Retention Rate
2013	75.5 %
2014	71.1 %
2015	73.4 %

GATHERING MORE RIGOROUS EVIDENCE FOR IMPACT

- We cannot be entirely sure that our improvement intervention caused the change.

- Maybe the students reached would have gotten themselves unblocked anyway!

- One method for increasing our confidence that the intervention made the change we are interested in is an *experiment*.

- In an experiment, we randomly assign our intervention to students, staff, or others. This helps us ensure no outside, unmeasured factor is at work.

- Experiments are comparatively rare: not providing a potentially useful intervention to someone who might benefit can raise concerns.

WHAT MIGHT HAVE AN EXPERIMENT LOOKED LIKE?

In our enrollment example …

- All students with registration blocks would have been identified.

- Half of those would have been slated to receive outreach (treatment); half would have received business as usual (control).

- The "unblocked" and "retained" rates of the two groups would have been compared at the end of the experiment.

In our QA process example …

- All courses slated for redesign would be identified.

- Half would have used an enhanced QA procedure that included a re-mapping of all content to assessments (treatment); half would have received business as usual (control).

- Mastery rates of the two groups would have been compared at the end of the experiment.

ACT

- **What's next?**

- If *this* root cause has been resolved, which is next in our priority list to address?

- If this root cause *has not* been resolved, how should we change our PLAN to increase our chances of success next cycle?

- What did we learn about the process of continuous quality improvement itself, and how should we change our approach?

AN OBSERVATION FROM THE FIELD:
THE IMPORTANCE OF KEEPING PEOPLE AT THE CENTER OF CQI

- Continuous quality improvement work is can challenge institutional structures and dynamics. **Devote time and resources to building a cohesive team.**

- Continuous quality improvement is hard work, and usually no one's "primary" role. **Build ownership by aligning CQI with on-going efforts and activities.**

- Continuous quality requires collaboration and the formation of new ways of working. **Reduce friction by honoring campus norms, developing incentives for participation, and capitalizing on existing structures.**

From Reactive to Proactive

Embedding CQI In Your Processes

GETTING AHEAD OF THE CQI CURVE

- Whenever you are building a new process, you have an opportunity to "bake in" CQI strategies.

- In our experience, adaptations of well-known management techniques like Six Sigma can serve as helpful guides.

A THREE (AND A HALF) STEP PROCESS

1. Clearly define the process you are trying to implement, including:
   - Outputs: Immediate, visible results of the process being implemented; and
   - Outcomes: Important, long-term ends that outputs contribute to.

2. Develop mechanisms to measure both outputs and outcomes of interest.

3. Once the process has been put in place and has been through its first cycle, analyze your results.

4. If things didn't go as planned: use an approach like PDSA!

THE APPROACH IN ACTION:
A NEW TAKE ON ORIENTATION

For several years, a regional college had relied upon a fully on-line orientation program for its distance education learners.

Developers of a new on-line CBE program targeting displaced adult learners in a set of counties near the institution worried that a fully on-line orientation might not meet learners needs and that some in-person component needed to be developed. However, doing so would cost both time and money.

The program intended to enroll 120 students in its first year. The decision was made to randomly offer 60 students the opportunity for in-person orientation.

STEP 1: DEFINING OUTPUTS AND OUTCOMES

After participating in orientation, **regardless of mode,** students will:

Outputs	Outcomes
▪ Update profile in LMS within 5 business days	▪ Percentage of students meeting competency completion milestones at the end of the fall quarter
▪ Meet with support coach to review course map and discuss prior learning assessment options within 20 business days	▪ Quarter-to-quarter retention
▪ Demonstrate competency in a least one module within 20 business days	▪ "On-time" completion of program
▪ Participate in a career planning workshop within the first 30 business days	▪ Completion of program within 1.5x of "on-time"

STEP 2: MEASURE

Throughout the fall quarter, and then again at the spring enrollment cut-off, the institution tracked both outputs and outcomes for three groups. For example:

Group	% Meeting LMS Target	% Meeting Career Advising Target	% Retained In Spring Quarter
All on-line orientation (n = 60)	70%	38%	65%
Offered in-person orientation			
Attended (n = 47)	85%	41%	88%
Did not attend (n = 13)	72%	42%	69%

STEP 3: ANALYZE

Attending in-person orientation is associated with a greater likelihood that students will create their LMS profile within 5 business days and be retained to the next quarter.

However, it seems to have had no effect on meeting the program's career advising target. What's going on?

To find out, consider a technique like PDSA!
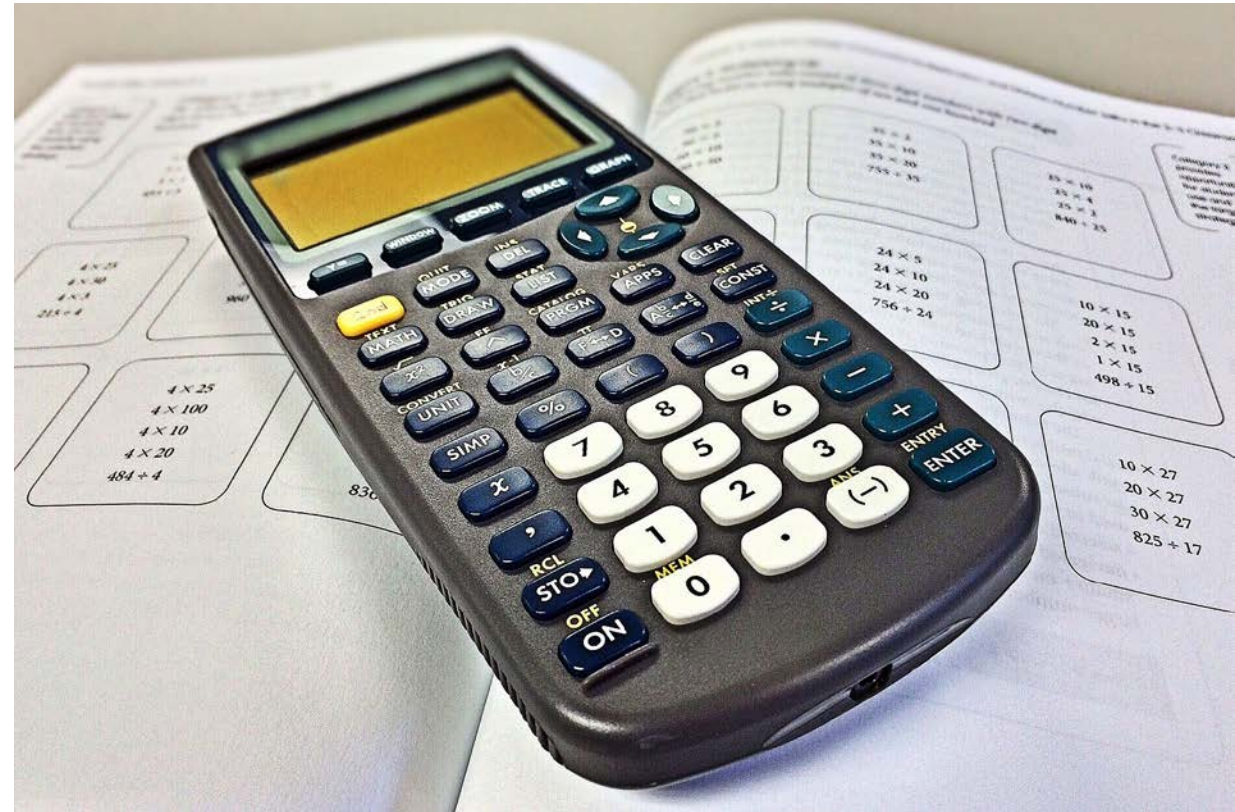
C-BEN Update, and Additional Q&A

Q&A

Erin Knepler

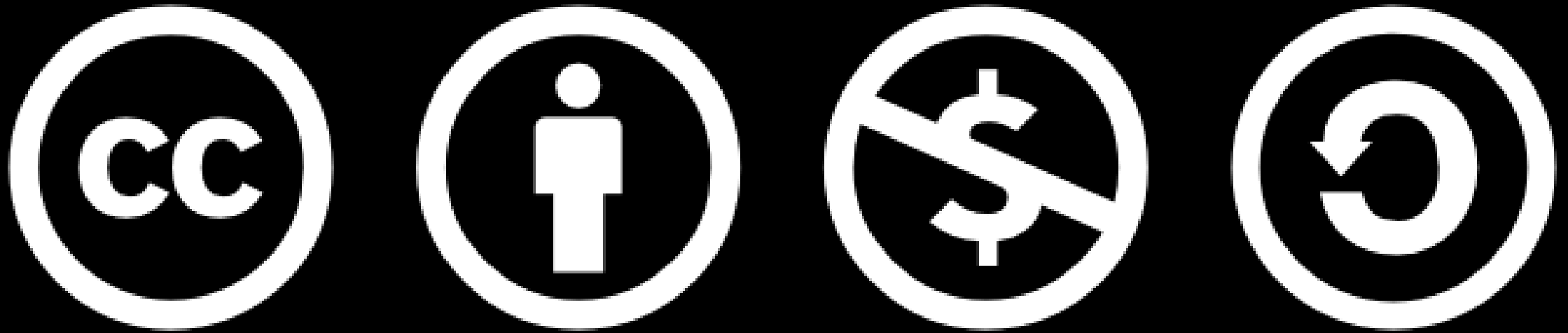Kelle Parsons

Matt Soldner

THANK YOU!

Questions after today? Email us at PostSecCBE@air.org

CONTENT CREDITS

Slide	Source
10	REL Midwest, administered by American Institutes for Research. *Improvement Communities in Action.*
10, 13, 14	The Center on Great Teachers and Leaders, administered by American Institutes for Research. *Moving Toward Equity Root Cause Analysis Workbook.*
31	REL Midwest, administered by American Institutes for Research. *Initiating and Sustaining State-Led Networked Improvement Communities: Lessons Learned from Michigan and Minnesota.*
33	American Society for Quality. What is Six Sigma, available at http://asq.org/learn-about-quality/six-sigma/overview/overview.html

ART CREDITS

Slide	Source
8	U.S. Archives, available at http://research.archives.gov/description/535413
10	Pixabay, CC0, available at https://pixabay.com/en/light-bulb-idea-consider-know-1002783/
15	Wikimedia Commons, CC0, available at https://commons.wikimedia.org/wiki/File:Crowd-Ideas-300x199.jpg
35	Wikimedia Commons, CC SA 3.0, available at https://commons.wikimedia.org/wiki/File:Kompas_Sofia.JPG
38	Pixabay, CC0, available at https://pixabay.com/en/calculator-math-mathematics-988017/