Beyond the Visit: Making the Continuous Improvement Process Matter

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Canadian Engineering
Accreditation Board

Bureau canadien d'agrément
des programmes de génie

2017 Accreditation Criteria and Procedures • Normes et procédures d'agrément 2017

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Maintain the high standard for licensure &
continually improve education

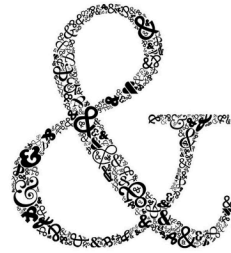https://engineerscanada.ca/accreditation/about-accreditation

Goal: Improved **education** for students

GA & CI

Graduate Attributes & **Continuous Improvement**

What is the **value** of outcomes-based assessment ?

A study synthesizing:

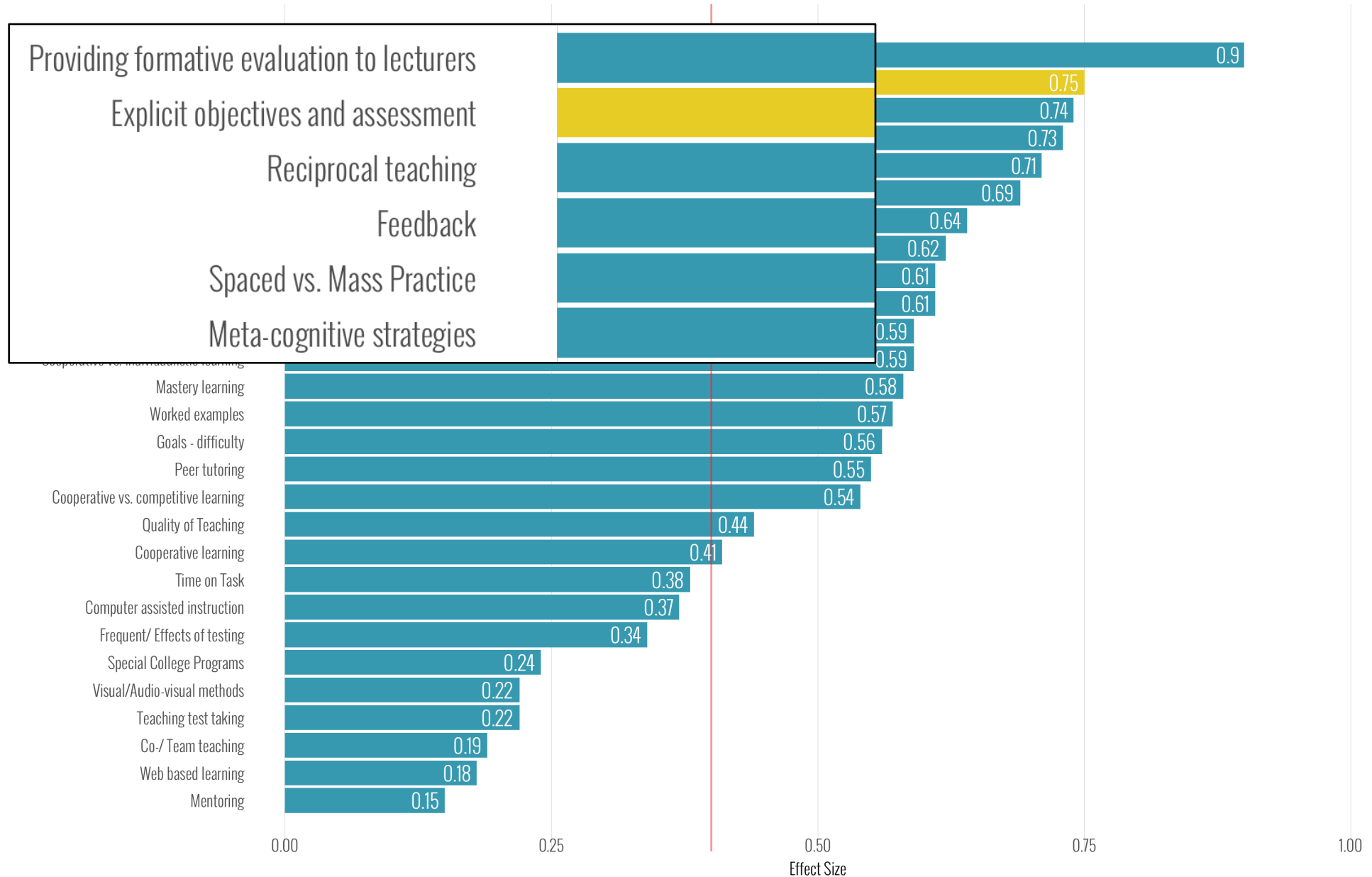800 meta-analyses

50,000+ studies

200+ million students

found that explicit outcomes and assessment has one of the largest effects on learning...

Hattie, J. (2009). The Black Box of Tertiary Assessment: An Impending Revolution. In L. H.
Meyer, S. Davidson, H. Anderson, R. Fletcher, P.M. Johnston, & M. Rees (Eds.), Tertiary Assessment & Higher Education Student Outcomes: Policy, Practice & Research
(pp.259-275). Wellington, New Zealand: Ako Aotearoa

Teaching influences on student learning

Influence by Effect Size (gain in SD)

Influence	Effect Size
Providing formative evaluation to lecturers	0.9
	0.75
Explicit objectives and assessment	0.74
	0.73
Reciprocal teaching	0.71
	0.69
Feedback	0.64
	0.62
Spaced vs. Mass Practice	0.61
	0.61
Meta-cognitive strategies	0.59
Cooperative vs. individualistic learning	0.59
Mastery learning	0.58
Worked examples	0.57
Goals - difficulty	0.56
Peer tutoring	0.55
Cooperative vs. competitive learning	0.54
Quality of Teaching	0.44
Cooperative learning	0.41
Time on Task	0.38
Computer assisted instruction	0.37
Frequent/ Effects of testing	0.34
Special College Programs	0.24
Visual/Audio-visual methods	0.22
Teaching test taking	0.22
Co-/ Team teaching	0.19
Web based learning	0.18
Mentoring	0.15

Effect Size

Hattie, J. (2013). Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement. Routledge.

Good assessment practices — Providing formative evaluation to lecturers

Indicators and outcomes — Explicit objectives and assessment

Reciprocal teaching

Feedback from assessment — Feedback

Spaced vs. Mass Practice

Research-based pedagogy — Meta-cognitive strategies
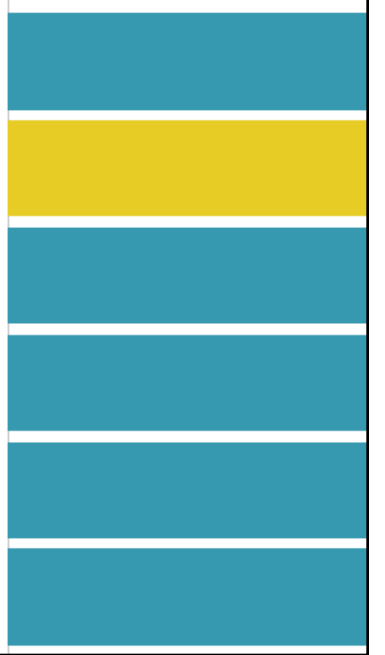
Goal: Improved education for students

Means to that end:

GA & CI

Graduate Attributes

Continuous Improvement

Organization & Engagement
Indicators
Mapping
Assessment tools
Assessment results
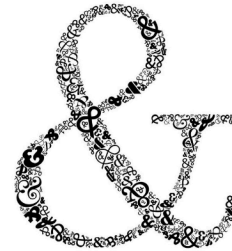
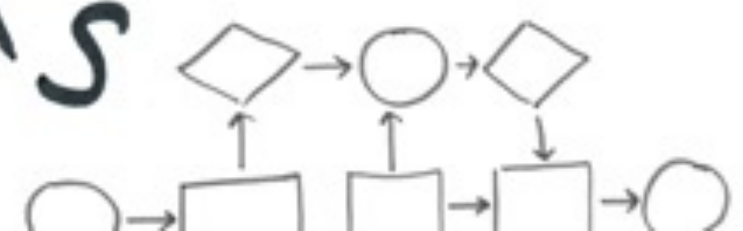Improvement process
Stakeholder engagement
Improvement actions

CEAB can **make** programs do those steps.

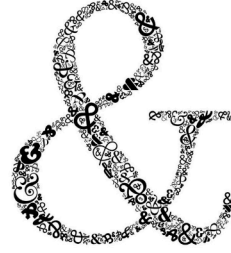# Only we can make those steps **meaningful**.

By **reframing the objectives** of accreditation

Outcomes-based focused on attributes

GA & CI

Graduate Attributes & **Continuous Improvement**

Focusing on improving a single program using data

Wide array of data, including graduate attributes

DD. CCD

Data-driven **Collaborative Curriculum Development**

Multi-unit collaborative discussion of data, process and practice to improve curriculum

ESSENTIAL QUESTIONS & DATA SOURCES

FOR CONTINUOUS IMPROVEMENT OF UNDERGRADUATE STEM TEACHING AND LEARNING

Association of American Universities

http://bit.ly/2Ak44pI

PEDAGOGY

SCAFFOLDING

CULTURAL CHANGE

SCHOOLS/COLLEGES

▶ How has the school/college assured that all departments have made dedicated efforts to define core competencies and skills and to connect these outcomes to learning goals?

▶ How much do departments within the school/college vary in the amount of time instructors are spending on various kinds of activities in the classroom? Is there a relationship between these activities and student success?

▶ How well are students doing in their progression/retention/completion in STEM courses? How does this success rate compare across groups, over time, and with similar programs at peer institutions? How do the progression/retention/ completion rates for students broken out by relevant demographic categories vary between departments and with peer institutions?

▶ What resources support instructional improvements and what effects do these efforts have on reducing the gap in student achievement across demographic groups? What is the relationship between student achievement data and instructional practices, and how can these data further inform changes in instructional practices?

▶ In what ways do deans use data on student progression/retention/completion to inform discussions with department chairs and instructors to facilitate program improvement?

▶ How do deans make clear that they expect evidence-based pedagogy from potential new faculty hires?

Requires:

Coordination
Data strategy
Collective decisions

DEPARTMENTS

- ▶ Do all of the courses in the department have articulated learning goals, and are these made clear to students? What process exists to ensure that individual course learning goals connect to learning goals for the program, major, and department?

- ▶ What are the demographics of students in the department? What are the progression/retention/completion rates for students in the department or major broken out by relevant demographic categories? How do these compare with other departments and what steps are being taken to improve these rates?

- ▶ What actions has the department chair taken to encourage instructors to take advantage of both on-campus and off-campus (e.g., through relevant disciplinary societies) resources and professional development related to pedagogy? How many instructors have taken advantage of these resources and what notable improvements have occurred as the result?

- ▶ What resources are available to instructors in the department for encouraging all students to succeed, and what steps have been taken to ensure all instructors take advantage of these resources?

- ▶ To what extent do departmental instructors have access to learning spaces that support evidence-based pedagogy? What training in the use of those facilities is available to instructors in the department?

- ▶ What is the department chair's and distinguished faculty members' support of evidence-based pedagogy? How well-known is this support to instructors and students?

- ▶ What are the biggest barriers to evidence-based pedagogy for instructors in the department and how is the chair working to address them? How often does the chair discuss these issues with the dean or other institutional leaders?

PEDAGOGY

SCAFFOLDING

CULTURAL CHANGE

Requires:

Objectives
Resources
Leadership

COURSE LEVEL

▶ Are learning goals clearly stated on the syllabus? To what extent do students in the class understand the course learning goals? What steps has the instructor taken to ensure that class activities and assignments are linked to learning goals?

▶ How much time does the instructor spend on various kinds of activities in the classroom? How are these activities assessed?

▶ To what extent does the instructor understand the biases he/she may bring to the classroom, and what steps has the instructor taken to mitigate these to ensure that all students are succeeding?

▶ To what extent does the instructor take advantage of both on-campus and off-campus resources and professional development related to pedagogy?

▶ To what extent does the instructor participate in discussions about using data to help drive program improvement? To what extent are they aware of data about their students and courses?

▶ Does the instructor believe that meaningful measures of teaching will factor into their own performance, promotion, and tenure reviews? If so, do they have a clear understanding of how teaching fits into the overall review process? How frequently are these measures discussed with peers and those who will be evaluating performance?

PEDAGOGY

SCAFFOLDING

CULTURAL CHANGE

Requires:

Alignment
Dialogue
Collaboration

Sunshine and lollipops

Mordor

Positive program improvement
More skilled students
Happier faculty

No meaningful change
Wasted faculty time
Massive budget spend

You are in an open field, west of a big white house with a boarded front door.

There is a small task for you here.

1. What are the challenges to creating a data-driven, collaborative curriculum development process?

2. How do we influence the process for good?

For those playing along at home, use chat and record your responses: http://bit.ly/2zUT7GR

This is a forest, with trees in all directions, to the east there appears to be sunlight..

A wild task appears.

Take a moment to identify benefits at your program of ongoing efforts in continuous improvement, either in the past, in the present, or potential benefits down the road.   Share these with your group and select a benefit to share with the rest of the room.

Engaging faculty

Why are people **dis**engaged?

Why are people engaged?

Graduate attribute assessment & continuous improvement process

"It's for accreditation"

to

"It's for improving teaching & learning"

Data-driven, **collaborative** curriculum development process

Building **Better** Buy-in

| **Listen** | Engage, don't disseminate |
Link	Practise to research
Leverage	Existing data and experience
Lead	Clear obstacles, build capacity

Aspect of System to be Changed

	Intended Outcome	
	Prescribed	Emergent
Individuals	**I. Disseminating:** CURRICULUM & PEDAGOGY Change Agent Role: Tell/Teach individuals about new teaching conceptions and/or practices and encourage their use. *Diffusion* *Implementation*	**II. Developing:** REFLECTIVE TEACHERS Change Agent Role: Encourage/Support individuals to develop new teaching conceptions and/or practices. *Scholarly Teaching* *Faculty Learning Communities*
Environments and Structures	**III. Enacting: POLICY** Change Agent Role: Enact new environmental features that Require/Encourage new teaching conceptions and/or practices. *Quality Assurance* *Organizational Development*	**IV. Developing: SHARED VISION** Change Agent Role: Empower/Support stakeholders to collectively develop new environmental features that encourage new teaching conceptions and/or practices. *Learning Organizations* *Complexity Leadership*

Borrego, M. & Henderson, C. Increasing the Use of Evidence-Based Teaching in STEM Higher Education: A Comparison of Eight Change Strategies. *J. Eng. Educ.* **103,** 220–252 (2014).
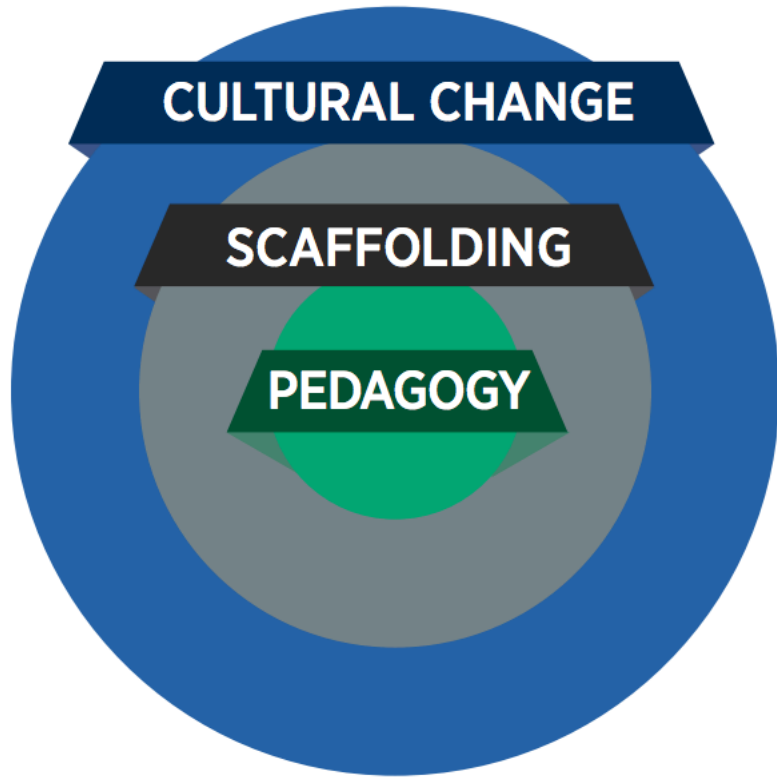
FRAMEWORK
FOR SYSTEMIC CHANGE IN UNDERGRADUATE STEM TEACHING AND LEARNING

http://bit.ly/2Aiy4CB

Culture EATS STRATEGY FOR BREAKFAST

- PETER DRUCKER -

Greetings Professor Falken

Shall we play a game?

How do you work collaboratively with staff, faculty and administration to realize potential benefits and broaden engagement? (handouts: http://bit.ly/2nEiH1m)

How do we work with the reluctant?

How do we create a sense of ownership?

For those playing along at home, use chat and record your responses: http://bit.ly/2k6umky