

New ideas for how to evaluate and improve your teaching

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Everyone wants to teach better

How well am I doing?

What can I do to get better?

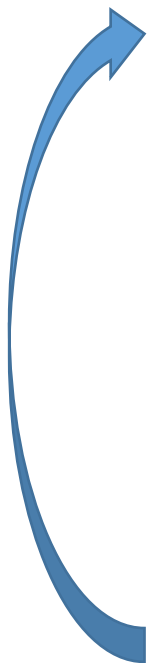
How can I show how well I am doing and how I have improved?

Student evaluations?

Like-hate, too fast-too slow, too easy-too hard... ?????

- Go to workshop
- Read books (best– *How Learning Works*, by Ambrose et al.)

still lots of uncertainty



Today--Evaluate how well you are teaching and see how to improve
Document for evaluation, promotion, and tenure.

Using new tools developed by CWSEI

- COPUS (classroom observation protocol for undergraduate science)
- Teaching practices Inventory

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The Classroom Observation Protocol for Undergraduate STEM (COPUS): A New Instrument to Characterize University STEM Classroom Practices

Michelle K. Smith, Francis H.M. Jones, Sarah L. Gilbert, and Carl E. Wieman

<http://www.cwsei.ubc.ca/resources/COPUS.htm>

Familiar with COPUS?

Has been used on your course?

min	1. Students doing													2. Instructor doing										Comments:		
	L	Ind	CG	WG	OG	AnQ	SQ	WC	Prd	SP	TQ	W	O	Lec	RtW	FUp	PQ	CQ	AnQ	MG	1o1	D/V	Adm		W	O
0-2																										
2-4																										
4-6																										

1. Students are Doing

- L** Listening to instructor/taking notes, etc.
- Ind** Individual thinking/problem solving. Only mark when an instructor explicitly asks students to think about a clicker question or another question/problem on their own.
- CG** Discuss clicker question in groups of 2 or more students
- WG** Working in groups on worksheet activity
- OG** Other assigned group activity, such as responding to instructor question
- AnQ** Student answering a question posed by the instructor with rest of class listening
- SQ** Student asks question
- WC** Engaged in whole class discussion by offering explanations, opinion, judgment, etc. to whole class, often facilitated by instructor
- Prd** Making a prediction about the outcome of demo or experiment
- SP** Presentation by student(s)
- TQ** Test or quiz
- W** Waiting (instructor late, working on fixing AV problems, instructor otherwise occupied, etc.)
- O** Other – explain in comments

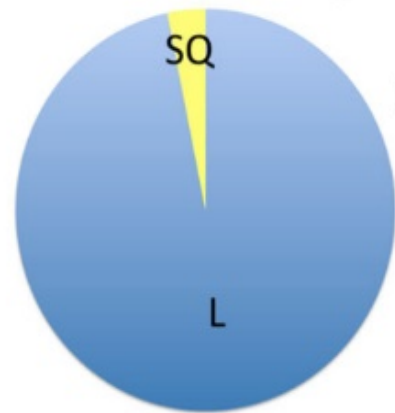
2. Instructor is Doing

- Lec** Lecturing (presenting content, deriving mathematical results, presenting a problem solution, etc.)
- RtW** Real-time writing on board, doc. projector, etc. (often checked off along with Lec)
- FUp** Follow-up/feedback on clicker question or activity to entire class
- PQ** Posing non-clicker question to students (non-rhetorical)
- CQ** Asking a clicker question (mark the entire time the instructor is using a clicker question, not just when first asked)
- AnQ** Listening to and answering student questions with entire class listening
- MG** Moving through class guiding ongoing student work during active learning task
- 1o1** One-on-one extended discussion with one or a few individuals, not paying attention to the rest of the class (can be along with MG or AnQ)
- D/V** Showing or conducting a demo, experiment, simulation, video, or animation
- Adm** Administration (assign homework, return tests, etc.)
- W** Waiting when there is an opportunity for an instructor to be interacting with or observing/listening to student or group activities and the instructor is not doing so
- O** Other – explain in comments

Every two minutes check code for what students and instructor is doing.

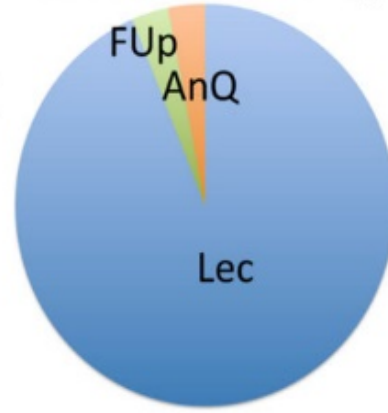
Requires little (~1hr) training for reliable results

Students are doing:



Lecture-based course

Instructors are doing:

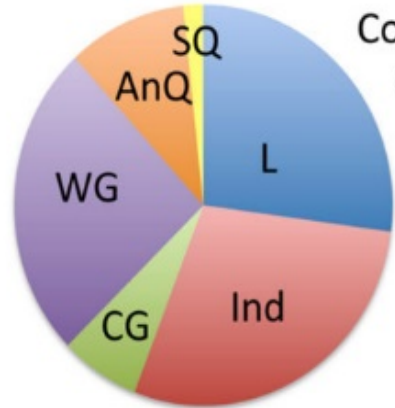


Instructor codes used:

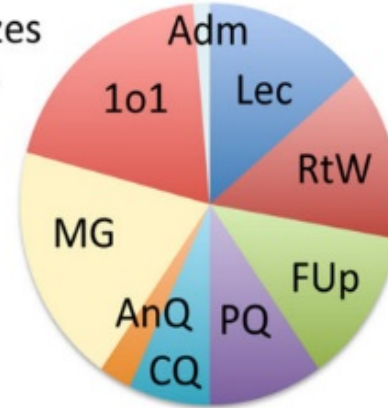
- Lec- Lecturing
- RtW- Real-time writing
- FUp- Follow-up
- PQ- Pose questions
- CQ- Clicker questions
- AnQ- Answer questions
- MG- Moving through the classroom
- 1o1- One on one discussions with students
- Adm- Administration

Student codes used:

- L-Listening
- Ind-Individual thinking
- CG- Clicker question discussion
- WG- Worksheet group work
- AnQ- Answer instructor question
- SQ- Student asks a question



Course that utilizes several active-learning instructional practices



Range of distributions observed

Instructors are usually surprised to see their distributions.

How you could use— get someone (STLF, grad, inst, ...) to do your class

See what you are doing, adjust as desired.

The Teaching Practices Inventory: A New Tool for Characterizing College and University Teaching in Mathematics and Science

Carl Wieman and Sarah Gilbert

<http://www.cwsei.ubc.ca/resources/TeachingPracticesInventory.htm>

Familiar with TP Inventory?

Have used it for your course?

Characterizes all elements of teaching a course

(except lab & seminar courses)

8 categories, 64 items.

~10 minutes per course to complete

Divided into 8 categories

I. Course information provided

Information about the courses, such as list of topics and organization of the course, and learning goals/objectives.

II. Supporting materials provided

Materials provided that support learning of the course material, such as notes, video, and targeted references or readings.

III. In-class features and activities

What is done in the classroom, including the range of different types of activities that the instructor might do or have the students do.

IV. Assignments

Nature and frequency of the homework assignments in the course.

V. Feedback and testing

Testing and grading in the course, and the feedback to students and feedback from students to instructor.

VI. Other

Assorted items covering diagnostics, assessment, new methods, and student choice and reflection.

VII. Training and guidance of teaching assistants

What selection criteria and training is used for course teaching assistants, and how their efforts are coordinated with other aspects of the course.

VIII. Collaboration or sharing, use of research, in teaching

Collaboration with other faculty, use of relevant education research literature, and use of educational materials from other sources.

(Scoring rubric points are the numbers in bold to right of each item.)

I. Course information provided to students via hard copy or course webpage. (check all that occurred in your course)^[1]

List of topics to be covered **1**

List of topic-specific competencies (skills, expertise, ...) students should achieve (what students should be able to *do*) **3**

List of competencies that are not topic related (critical thinking, problem solving, ...) **1**

Affective goals – changing students' attitudes and beliefs (interest, motivation, relevance, beliefs about their competencies, how to master the material) **1**

Other (please specify)

If you selected other, please specify _____

II. Supporting materials provided to students (check all that occurred in your course)

Student wikis or discussion boards with little or no contribution from you **0**

Student wikis or discussion boards with significant contribution from you or TA^[2] **1**

Solutions to homework assignments^[3] **1**

Worked examples (text, pencast, or other format) **1**

Practice or previous year's exams **1**

Animations, video clips, or simulations related to course material **1**

Lecture notes or course PowerPoint presentations (partial/skeletal or complete)^[4] **1**

Other instructor selected notes or supporting materials, pencasts, etc. **0**

Articles from scientific literature^[5] **1**

Other (please specify)

If you selected other, please specify _____

III. In-class features and activities

A. Various

Give approximate average number:

Average number of times per class: pause to ask for questions ____ (**1** if >3)

Average number of times per class: have small group discussions or problem solving ____ (**1** if 1, **2** if >1)

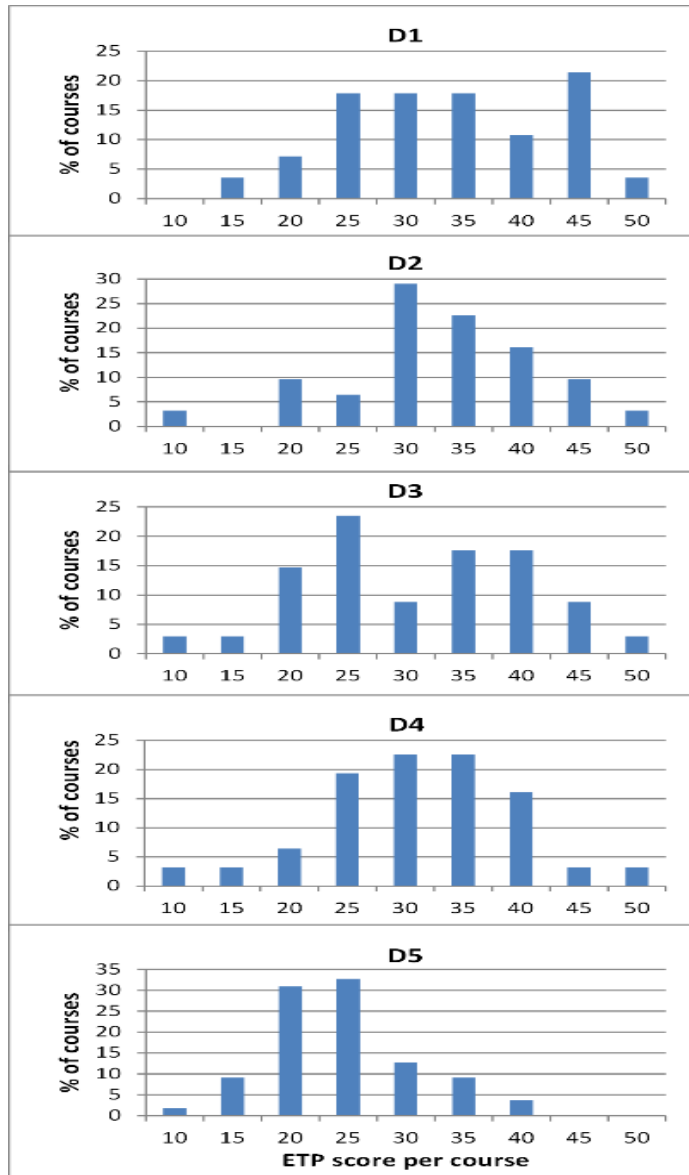
Very detailed characterization of how course is taught

Measure extent of use of teaching practices research shows produce greater learning.

(51 of the 64 items have 1,2, or 3 “effective teaching practices” points)

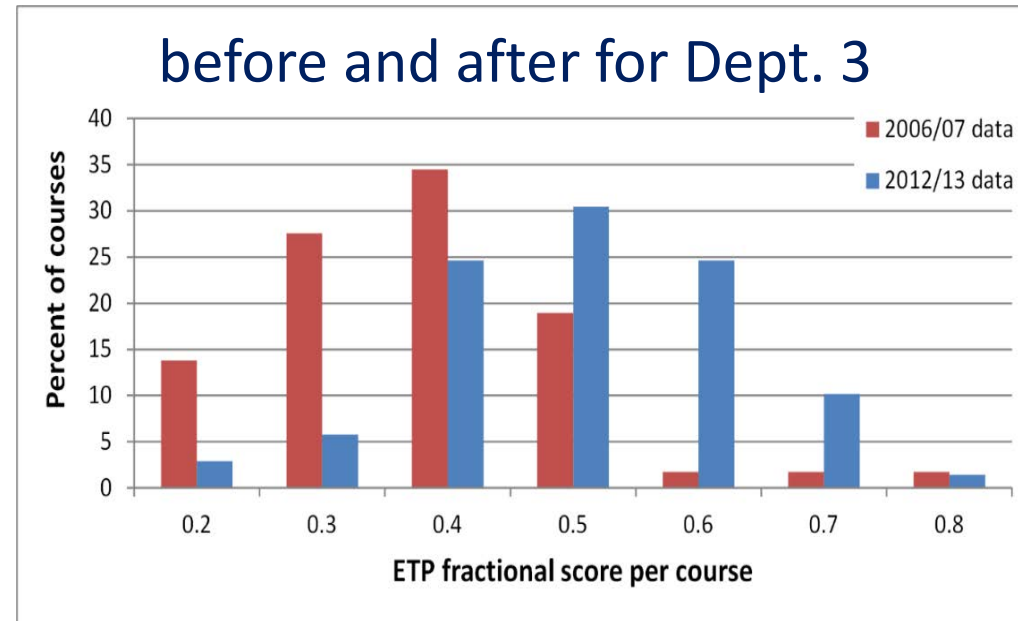
Get ETP score for each category, and overall total

Add up all your points = “Effective teaching practices (ETP)” score



Shows what you are doing that is good.
Shows what is good that you are not doing.

Track & document your improvement
40-50 good, >50 superstar



Scores for courses in various departments

COPUS & Teaching Practices Inventory

Tell you what you are doing, what things can add that would be better--
(critical--research says teaching methods used best predictor of student learning)

Not much about details of how to implement a particular method most effectively.

CWSEI website “Resources” tab—many two pagers:

“Instructor habits to keep students engaged” (particularly in large classes)

“What not to do”

“Creating and implementing in-class activities-tips”

“Effective clicker use” booklet (includes a lot on question design)

...

Great videos showing in use

Workshops today:

**Facilitating discussion, Getting the most out of demos and videos,
Practical strategies to maximize engagement**

Conclusion:

COPUS & Teaching Practices Inventory

New, useful ways to evaluate your teaching and help you see how to improve

Also can be used to document quality and improvement in your teaching

extra

TPI– not perfect way to assess quality of teaching.
Just much better than anything else available.

*“useful”= directly involves people responsible/can change outcome
shows how to improve (individually & collectively)
practical for widespread regular use
allows comparisons against a standard*

“meaningful”= proxy that research shows correlates with desired outcomes.
Amount of learning and student course completion.
Particularly learning of expert-like thinking.