

What's (Really) Happening in My Class?: Visualization of Classroom-Observation Data



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Supported by the AAU Initiative to Improve STEM Education and the Professional and Organizational Development Network in Higher Education

A Visual Approach to Helping Instructors Integrate, Document, and Refine Active Learning. *Journal of College Science Teaching*. Accepted for publication.



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WU Faculty, including Mairin Hynes (Physics) and Heather Corcoran (Design)

Additional faculty in Biology, Chemistry, CSE, Economics, EECE, Physics, Political Science, and Psychological and Brain Sciences

A Road Map for Today's Talk



Discuss objectives for creating observation protocol and visual timeline



Describe Observation Protocol for Active Learning (OPAL) Tool, with sample timeline



Discuss sample timeline: What is useful for instructors? How can it help foster reflective teaching?

Broader Framework: Reflective Teaching



Documenting instruction (and student interactions) provides data that we can use to

- See our teaching with an analytical eye
- Modify our approaches
- Continually refine those approaches to improve student learning and engagement

DeZure, D. (1993). **Opening the classroom door.** *Academe*, 79(5), 27-28.

Shulman, L. S. (1993). **Teaching as community property: Putting an end to pedagogical solitude.** *Change: The Magazine of Higher Learning*, 25(6), 6–7.

Benefits of Documentation of Instructor and Student Activities in the Classroom



- Provides data for self-review and peer-review of teaching
- Aids ability to track changes over time
- Helps instructors
 - Acquire a more accurate understanding of what's happening in a class
 - ✦ Instructors often perceive that they are integrating more active learning than is documented by observers (Ebert-May, et al, 2011).
 - See a “big picture” view of a class session
 - Target specific strong points, as well as areas they would like to refine to better meet their teaching and learning objectives

Objectives for Creation of OPAL



- To encourage, and to document, innovation in teaching supported by AAU grant to improve STEM instruction
- To create a tool that presented documentary data on teaching in a useful, intuitive format for instructors in all disciplines, so that instructors could use the data to continually refine their teaching.

Models for Observing Teaching

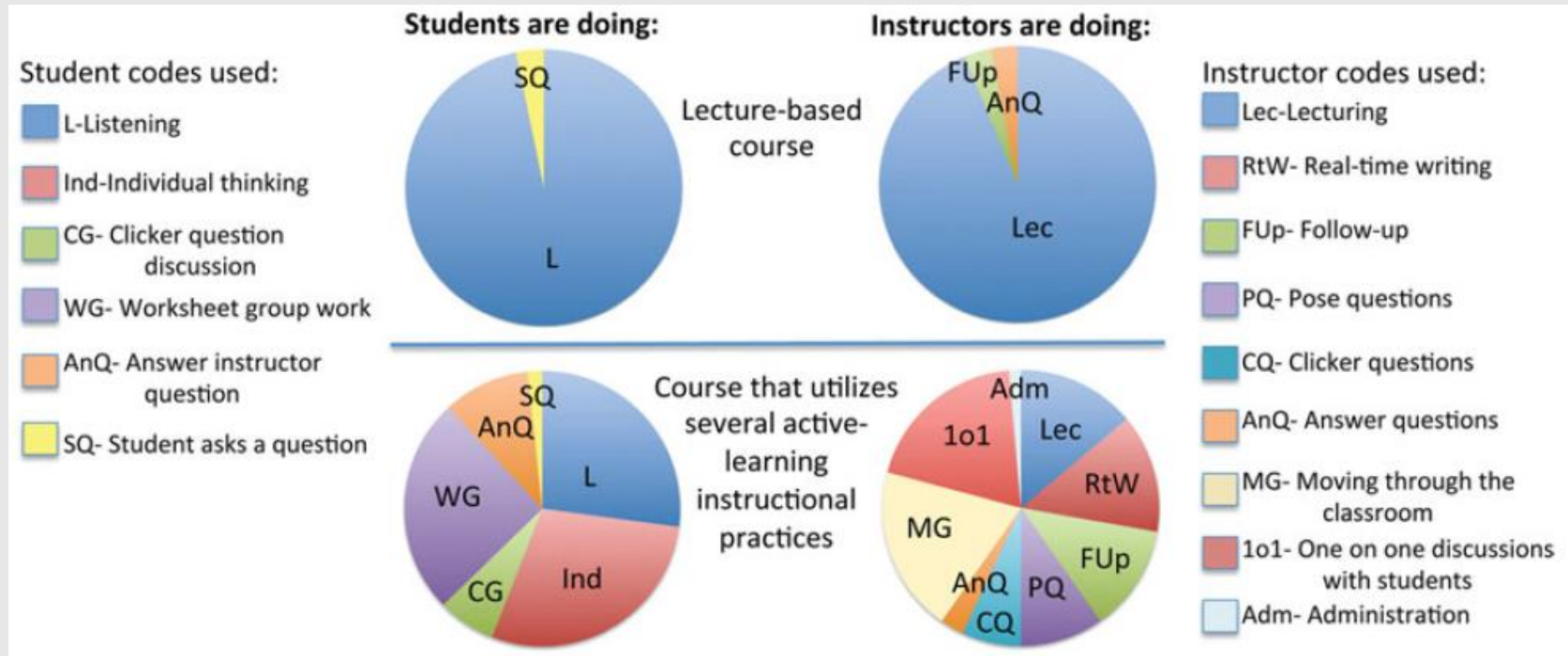


- Qualitative Review (feedback or evaluation)
 - By colleagues in the department
 - By staff from centers for teaching and learning (experienced instructors)
- Quantitative Protocols (training and evaluation)
 - Reformed Teaching Observation Protocol (RTOP)
- Quantitative Observation Protocols (documentation)
 - Classroom Observation Protocol for Undergraduate STEM (COPUS)
 - Teaching Dimensions Observation Protocol (TDOP)

Why a timeline?



- Other protocols (e.g. COPUS) use pie charts/tables to show data



- Aimed to create visual depiction of the data
 - Comprehensive, chronological session

Smith, et al. (2013). The Classroom Observation Protocol for Undergraduate STEM (COPUS): A new instrument to characterize university STEM classroom practices. *CBE-Life Sciences Education*, 12(4), 618-627.

OPAL Codes



Instructor Codes

- Admin
- Lecture
- Questions/Answers
- Activities/Problem Solving
- Demonstrations
- Follow-up

Student Codes

- Listening
- Assessment
- Questions/Answers
- Activities/Problem Solving

Note-taking

- high, medium, low, zero

Attention

- high, medium, low

OPAL training takes 5-8 hours, spread across several days.

OPAL Observations (Spring 2014 – Fall 2015)



OPAL observations	N
Total observations (including pilot testing)	257
Courses	28
Instructors	39
Departments	13

Course Characteristics	N	%
< 75 students (large)	211	82.1%
> 75 students (small)	46	17.9%
Lower-level	231	89.9%
Upper-level	26	10.1%

OPAL inter-rater reliability = .82



The next three slides featured unpublished data that has been removed from the online version of the slides.

*Questions? Please contact Beth Fisher (bfisher@wustl.edu)
or Erin Solomon (erin.solomon@wustl.edu)*

Timeline Activity



Discuss in groups of three: ~5 minutes

- Review streamlined timeline, as if you are the instructor (who aims to increase interaction in class:
 - What do you observe?
 - Which aspects of the timeline are most useful and why? For example . . .
 - ✦ Interaction between instructor and students
 - ✦ “Chunking” of instructional methods and sequence of “chunks”
 - ✦ Student note-taking or attention
 - ✦ Numbers of questions and answers
 - What questions does the timeline raise for you, as the instructor?

Comments from Faculty



“I can note the major aspects of a class (e.g., lecture, example problem, small group work, etc.), but it's almost impossible to be remember all the details of the interactions within each activity.

The OPAL data was a convenient way to see the breakdown of each in-class activity, note how and when my students responded to what I was doing, and to note what activities kept them most active and engaged.

It also helped me easily target segments of low engagement and think about how I could increase engagement and student activity during those times.”

Comments from Faculty



*“I had a **qualitative feel for how I blocked out my class session time. These data helped to quantify that apportionment and [helped me to] face the reality that there was not as much two-way interaction as I had perceived.**”*

*“It was helpful to see my class from the students' perspective. **It brought to light things I didn't realize I was doing** (both positively and negatively) that I was unaware of or that appear different from my perspective. **Now I can consciously be sure to do the good things and think of ways to improve the less positive areas.**”*

Comments from Faculty



*“The **OPAL** was a great broad view of the class, and it could also be used to easily and visibly draw attention to parts of class that were very interactive or very lecture-based.”*

*“It's **not feasible to discuss every minute of an hour long class, so the OPAL can help quickly and easily fill in those gaps.**”*

*“Reviewing multiple OPAL timelines could either **indicate trends and/or indicate if one class was an anomaly** (and then lead you to look at why)”*

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Acknowledgements



Thank you:

- Faculty participants

Funding:

- Association of American Universities STEM Education Initiative
- Professional and Organizational Development Network in Higher Education

Additional Collaborators:

- Cheryl Cohen (CIRCLE)
- Gina Frey (Chemistry, The Teaching Center, CIRCLE)
- Dylan Jew (Computer Science and Engineering)
- Denise Leonard (The Teaching Center)
- Jia Luo (Chemistry)
- Jacinta Mutambuki (The Teaching Center)
- Santhi Pondugula (Medicine)