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References

Implementation

Purpose of the COPUS

To allow observers with little observation protocol training and experience to reliably characterize what both faculty and students are doing in a classroom.

Course Level: What kinds of courses is it appropriate for?

Upper-level, Intermediate, and Intro college

Content: What does it assess?

Teaching (What are the students doing?, What is the instructor doing?)

Timing: How long should I give students to take it?

N/A minutes

Example Questions

Descriptions of the COPUS student and instructor codes:

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

Access: Where do I get the assessment?

Download the assessment from physport at www.physport.org/assessments/COPUS.

Versions and Variations: Which version of the assessment should I use?

The latest version of the COPUS, v1, was released in 2013.

Administering: How do I give the assessment?

- Complete the COPUS training according to the COPUS Training Guide (http://www.cwsei.ubc.ca/resources/files/COPUS_Training_Protocol.pdf)
- Print out the COPUS codes and observation matrix.

- Put a check under all codes that happen anytime in each 2 minute time period (check multiple codes where appropriate). If no codes fit, choose "O" (other) and explain in comments. Put in comments when you feel something extra should be noted or explained.
- If you have two observers in a classroom and would like to calculate inter-rater reliability (IRR), for all 25 codes add up all the total number of times: 1) both observers put a check in the same box, 2) neither observer put a check in the same box, 3) observer 1 put a check in a box when observer 2 did not, and 4) observer 2 put a check in a box when observer 1 did not. With this information, you can use a statistical package such as SPSS (IBM Inc.) to calculate the Kappa values.

Scoring: How do I calculate my students' scores?

- Create a pie chart of the code frequency for "Students are doing" and a separate pie chart with the code frequency for "Instructor is doing" for the whole class period. These pie charts give faculty a good sense of how much time they spent on different activities during class.

Clusters: Does this assessment include clusters of questions by topic?

Codes are divided into two sections:

- What are the students doing?
- What is the instructor doing?

It is optional to code the level of student engagement.

Typical Results: What scores are usually achieved?

Results from the COPUS are only a measure of what is happening in the classroom and not a rating of it. Many of the items on the COPUS are representative of practices that are known to generally be "better" or "worse" methods so the time spent on these items as shown in the COPUS results could show room for improvement. From [Smith et al. 2013](#).

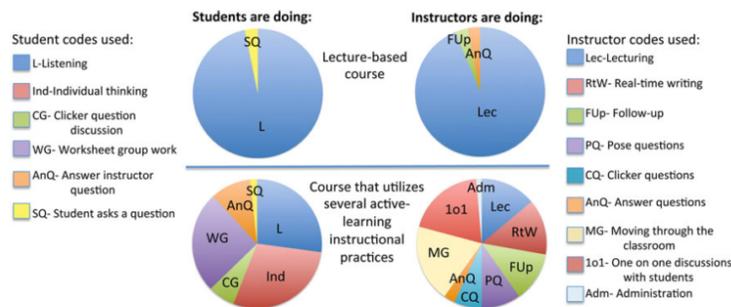


Figure 4. A comparison of COPUS results from two courses that have different instructional approaches.

Interpretation: How do I interpret my students' scores in light of typical results?

COPUS data can be used in several ways.

- It can provide a nonthreatening way to help faculty members evaluate how they are spending their time in class.
- Be used in tenure and promotion documentation to supplement their normal documentation to give substantially more information to report about their use of active-learning strategies than is usually the case.
- Be used to develop targeted professional development.
- Carry out systematic observations of all instructors in a department in order to characterize teaching practices.

Resources

Where can I learn more about this assessment?

M. Smith, F. Jones, S. Gilbert, and C. Wieman, [The Classroom Observation Protocol for Undergraduate STEM \(COPUS\): A New Instrument to Characterize University STEM Classroom Practices](#), CBE Life. Sci. Educ. **12** (4), 618 (2013).

[COPUS Training Guide](#)

Translations: Where can I find translations of this assessment in other languages?

We don't have any translations of this assessment yet.

If you know of a translation that we don't have yet, or if you would like to translate this assessment, please [contact us!](#)

Background

Similar Assessments

[TDOP](#), [RIOT](#), [RTOP](#)

Research: What research has been done to create and validate the assessment?

Research Validation: Gold Star ★

This is the highest level of research validation, corresponding to all seven of the validation categories below.

- ✓ Based on research into **classroom behavior**
- ✓ Studied using **iterative observations**
- ✓ Studied using **inter-rater reliability**
- ✓ Studied using **training materials**
- ✓ Research conducted **at multiple institutions**
- ✓ Research conducted **by multiple research groups**
- ✓ **Peer-reviewed publication**

Research Overview

The codes on the observational protocol were developed based on iterative modifications of the TDOP observation protocol. Sixteen science education specialists used the preliminary protocol in pairs or trios across most departments at one university. The science education specialists met to discuss coding difficulties, and the COPUS was refined through five versions. The COPUS was then tested with 16 K–12 teachers participating in a teacher professional development program, and the COPUS was revised. The final version was tested by having the same 16 K–12 teachers use it to observe 23 STEM classes, and by having seven STEM faculty observers use it to observe eight classrooms at another university in pairs after 1.5 hours of training. The inter-rater reliability of the observations was to be good. COPUS results are published in one peer-reviewed publication.

Developer: Who developed this assessment?

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

References

- K. Commeford, E. Brewe, and A. Traxler, [Characterizing active learning environments in physics using latent profile analysis](#), Phys. Rev. Phys. Educ. Res. **18** (1), 010113 (2022).
- T. Lund, M. Pilarz, J. Velasco, D. Chakraverty, K. Rosploch, M. Undersander, and M. Stains, [The Best of Both Worlds: Building on the COPUS and RTOP Observation Protocols to Easily and Reliably Measure Various Levels of Reformed Instructional Practice](#), CBE Life. Sci. Educ. **14** (2), (2017).
- M. Smith, F. Jones, S. Gilbert, and C. Wieman, [The Classroom Observation Protocol for Undergraduate STEM \(COPUS\): A New Instrument to Characterize University STEM Classroom Practices](#), CBE Life. Sci. Educ. **12** (4), 618 (2013).