OPTIC
POGIL

Observation Protocol for Teaching in Interactive Classrooms

Revised June 2020

Abstract

OPTIC is an observation tool for: 1) the coaching and mentoring of learner-centered practitioners who use collaborative small groups, 2) experienced practitioners to obtain feedback on their facilitating, 3) administrators to aid in the evaluation of faculty who participate in learner-centered collaborative teaching styles, and 4) the documentation of collaborative small-group learning in a learner-centered classroom.

OPTIC Coding Manual

Table of Contents

Overview:

OPTIC is an observation tool for: 1) the coaching and mentoring of learner-centered practitioners who use collaborative small groups, 2) experienced practitioners to obtain feedback on their facilitating, 3) administrators to aid in the evaluation of faculty who participate in learner-centered collaborative teaching styles, and 4) the documentation of collaborative small-group learning in a learner-centered classroom.

NOTE: OPTIC is a whole classroom observation instrument; OPTIC is not an observation tool for individual learning teams. This tool is for observing a single instructor at a time. With regard to Teaching/Learning Assistants, please see Other Parts of the Tool at the end of the manual.

In OPTIC, both the instructor and student behaviors are marked in two-minute intervals. Multiple actions may be coded within the same 2-minute interval. For example, one section of OPTIC focuses on the amount and type of interaction students have with each other and with the instructor; such as "instructor talking to learning team," "students interacting with each other within a learning team," or "learning teams interacting with other learning teams."

An OPTIC app is available for data collection and data visualization. If the OPTIC app is used, a visual in the form of a chronological timeline displaying all the codes marked during the observation in the interval in which they occurred is produced. Alternatively, a visualization can be produced manually. This timeline is a "big-picture" view of the type and position of activities or events that are occurring in the classroom. This visual timeline gives the instructor a snapshot view of the entire class session and is an intuitive way of reflecting on one's teaching.

Please note that the use of any of these codes does not presuppose a "good" or "bad" action by the facilitator or instructor; the instrument is simply recording what is happening in the classroom. The instructor, mentor, or administrator needs to interpret the effectiveness of instruction.

There are three main categories of codes: *Interactions in the Classroom, Facilitator Actions, and Activity Type.* All three categories may be coded simultaneously. Notice that coding of *Interactions in the Classroom* may also result in coding of *Facilitator Actions.* For example, coding the Interaction **I → WC** will lead to coding *Facilitator Actions* such as **LEC, CM, or PLA**. The category *Interactions in the Classroom* is the observed action of the instructor, and the category *Facilitator Actions* is the interpretation of that observed action. The codes in *Interactions in the Classroom* denote the presence of an observed action within a 2-minute interval. However, the code **%xS** in *Interactions in the Classroom* reflects the portion of students not participating or not paying attention in the classroom and is coded at the end of every 2-minute interval.

Interactions in the Classroom:

I→WC (**I**nstructor communicating to **W**hole **C**lass)

 -Instructor verbally communicating to the whole classroom of students. The students are not verbally responding back to the instructor.

Example 1:	Instructor*: Read through the information in the Model silently before discussing with your group. You'll have about ten minutes to get through Key Questions 1-4 before we report out.*
Example 2:	Instructor: *Think about what we've just learned on Lewis structures. We're going to extend this idea to think about the three-dimensional structure of molecules now.*
Example 3:	Instructor: *All right teams, remember that next Monday is your first exam. Be sure to think about study strategies you are going to implement.*
Example 4:	Instructor: *"Please do not use the sinks as garbage cans; please put your waste in the real garbage can in the back of the room."*

I↔WC (**I**nstructor interacting with **W**hole **C**lass)

 -Instructor interacting with the whole classroom of students. The student(s) *are* verbally responding.

Example 1:	Instructor: *Someone, tell me what your team decided for Question 12.* Fernandez: *We said 12 kilograms.* Instructor: *And Allie, I noticed that your team got a different answer. Why is that?* Allie: *Well, we thought we needed to multiply by three since that was the coefficient for sodium, but I guess that was already accounted for by using the stoichiometric ratio earlier in the problem.*

IxWC (**I**nstructor **not** interacting with **W**hole **C**lass)

 -Instructor *is not* observing or not monitoring whole class. This may include interacting with a single student away from their learning team, outside of whole-class discussion.

Example 1:	Instructor is writing instructions on the board that the groups will be using to report out and therefore is not interacting with the classroom.
Example 2:	The instructor is taking attendance.
Example 3:	A student comes up and tells the instructor that they are leaving for their vacation on the same day as the final exam.

I→LT (**I**nstructor communicating to **L**earning **T**eam)

    -Instructor is communicating to learning team, but the learning team *does not* communicate back to the instructor. The instructor interaction could include a non-verbal interaction with the learning team such as the instructor pointing to something on learning team's activity sheet.

Example 1:	Instructor to Learning Team - *Something is wrong with your answer to Exercise A. I'll let you figure it out.*
Example 2:	Instructor *gives an affirmative "thumbs-up" to the Learning Team and then moves on to another Learning Team.*
Example 3:	Instructor to Learning Team - *Great cooperation! I like the way your team is building a consensus before moving to the next model.*

IoLT (**I**nstructor **o**bserving **L**earning **T**eam, no interaction)

    -The instructor is observing/monitoring learning team work without interacting with learning team. The instructor *is not* verbally or non-verbally communicating with a learning team(s).

Example 1:	Instructor sees learning team struggling but chooses not to intervene, instead letting them arrive at their own conclusion.
Example 2:	Xianyu: *I calculated 8.625 mg.* Gail: *That sounds too small…* Peyton: *Oh, look, you should have multiplied instead of dividing by 2!* Instructor watches the Learning Team but does not interact with the Learning Team throughout exchange, and then moves on.
Example 3:	Instructor is moving around the room and glancing at student work but not interacting with teams.

I↔LT (Instructor interacting with Learning Team)
-Instructor is interacting with a learning team, the learning team *does* communicate back to the instructor. The instructor interaction could include a non-verbal interaction with the learning team such as the instructor pointing to something on learning team's activity sheet.

Example 1:	Xianyu: *I calculated 8.625 mg.* Instructor: *That sounds too small compared to your starting mass… Do you see any problems?* Peyton: *Oh, look, you should have multiplied instead of dividing by 2! Is that right, Dr. Radford?* Instructor: *Put the correct units on the value and then you'll be good!*

LT↔LT (Learning Team interacting with Learning Team)
-Learning team or learning team representative interacting with another learning team or learning teams.

Example 1:	Instructor set-up (speaking to only two learning teams): *Since you're done early, I want your two teams to each make up a stoichiometry problem for each other and then trade off.* Rochelle to other team representative: *Here's our problem. Should we compare answers after?*
Example 2:	Instructor set-up (speaking to whole class): *Remember when you get to Q6 that you will need to compare data with another team.* Learning Team 1 Member: *Okay, our data is collected. It looks like Team 4 is done, let's talk with them.* Learning Team 4 Member: *Team 1, our data looks similar to yours except for the 10-gram-mass data point. Should we both retest this one?* Learning Team 1 Member: *Yeah, good idea. Let's each retest and then compare again.*

S↔S (Students interacting with Students within learning team)
-Students interacting with each other within the same learning team during collaborative activity.

Example 1:	Xianyu: *I calculated 8.625 mg.*
	Gail: *That sounds too small…*
	Peyton: *Oh, look, you should have multiplied instead of dividing by 2!*
	(Xianyu, Gail and Peyton are in the same learning team)

%xS (**P**ercent **S**tudents **not** participating)

 -An estimated percent of students *not* participating or *not* paying attention. This should be coded at the end of each 2-minute time interval. The action for this code involves a short scan (no more than 5 seconds) of the classroom to estimate the percentage of students not participating or not paying attention. Do not count individual students. Code with 0,1,2,3.

Code	% of students not participating or not paying attention
0	0
1	Less Than 20
2	Between 20 and 80
3	Greater Than 80

Facilitator Actions:

PLA (**P**reparing for **L**earning **A**ctivity)

 -Preparation for a component of the learning activity immediately prior to that component, including any instructions for learning teams. Pedagogically related to the learning activity

Example 1:	Instructor*: Please read through the information in the Model silently before discussing with your learning team. You'll have about ten minutes to get through Key Questions 1-4 before we report out.*
Example 2:	Instructor*: The manager for today is the person whose birthday is closest to today. The manager will assign the roles of spokesperson, technician and recorder to the rest of the team.*

Example 3:	Instructor: *I want the learning teams to focus on the process skill of teamwork; I will be watching if you are working cohesively and will coach accordingly.*
Example 4:	Instructor: *Model number two starts on page 37; the activity builds on Model one from yesterday's class session. Make sure you reference it.*

MWC (**M**oving through **W**hole **C**lassroom)
    -Instructor moving about the whole classroom observing, monitoring or coaching the learning teams.

Example 1:	As teams work, the instructor moves from learning team to learning team observing the teams, but not conferring with a specific team.
Example 2:	As teams work, the instructor moves from learning team to learning team, asking guiding questions to the teams as needed.

SWC (**S**tatic while observing **W**hole **C**lassroom)
    -Instructor observing or monitoring the whole classroom while remaining in one place. Instructor is static, not moving while observing. This action should be observed for at least 30 seconds.

Example 1:	Instructor is standing at the back of the room but is still observing the classroom from a stationary position.
Counter Example 1:	The instructor is at the front of the room taking attendance or organizing materials. This is an example of classroom management (CM).

INTV (**Int**er**v**ention)
    -Instructor intervenes and addresses the entire class to respond to student needs such as a misconception or confusing concept during an activity. The instructor stops the learning teams and regroups the entire class to respond to student needs such as addressing: a potential misconception or confusing concept, process skills, or a correction to the activity documents.

Example 1:	Instructor: *I've had several questions about Q5. Let's review the Bohr Model before we move on.*
Example 2:	Instructor: *All right everyone, please find Q4. There is a typo in the second sentence. It should say isotope, not isomer.*
Example 3:	Instructor: *I see that several learning teams are not functioning effectively because team members are working individually instead of collaboratively. Managers, please make sure that you are helping your team work more cohesively and focus on today's process skill of teamwork.*

RO (**R**eporting **O**ut)

-Instructor and students using the information for a reporting out strategy from questions within the learning activity. The students might be using white boards, clickers, hand signals, or verbal responses to demonstrate and transmit their learning to the instructor and other learning teams. Reporting out can happen at any point during the activity to assist the instructor in determining whether learning or process objectives are being met.

Example 1:	Instructor: *Spokesperson of Team 1, what did your team get for Question 5B. Can you please justify your answer?*
Example 2:	Instructor: *Fernandez, your team's clicker question answer for Question 12 was different from Allie's team. Can your team offer an explanation?*
Example 3:	Instructor: *Spokesperson, move to the team on your left and share your team's solution to Question 5.*
Example 4:	Instructor: *After your team has put Q5 on a whiteboard, the Reporter should place it up front and be ready to present.*
Example 5:	Instructor: *Here is a clicker question for you to answer individually based on what we just discussed.*

LEC (**Lec**turing)

-The instructor is lecturing to the whole class.

CM (**C**lassroom **M**anagement)

-Instructor is involved in or discussing classroom management / administration tasks. This is not related to the content of the learning activity. The instructor's management of time and pacing cues are considered classroom management. This can also include stationary tasks such as taking attendance or setting up a multimedia device for use during class.

Example 1:	The instructor is at the front of the room taking attendance or organizing materials, prepping clicker questions, writing on the whiteboard, etc.
Example 2:	Instructor: *All right teams, remember that next Monday is your first exam. What study strategies are you implementing?*
Example 3:	Instructor: *Please do not use the sinks as garbage cans. Please put your waste in the real garbage can in the back of the room?*
Example 4:	Instructor: *Managers, by a show of fingers, how many more minutes does your team need?*

Activity Type:

POGIL (**P**rocess **O**riented **G**uided **I**nquiry **L**earning)

-Instructor is using POGIL. For more information, see pogil.org.

CLA (**C**ollaborative **L**earning **A**pproach)

-Instructor is using student-student collaborative learning approach other than POGIL. For example, in-class small group, think-pair-share approach, paired or group problem solving, in-class peer-led instruction, problem/project-based learning, etc. Determine during pre-observation discussion if the instructor would like to have these collaborative learning approaches coded together or separately.

IND (**Ind**ividual)

-Instructor presents a task for students to work on individually. For example, problem solving, reflection, one-minute papers, individual clicker questions, bell ringer/warm up, exit ticket, etc.

Other Parts of the Tool

Are Roles Being Used (Yes or No)
> - The instructor has assigned roles to students in Learning Teams with specific responsibilities for the development of content and process skill objectives.

Number of Students
> - Number of students in the classroom during the observation.

T.A. Actions
> - This tool is designed to observe one instructor interaction throughout a classroom experience. For a class with Teaching/Learning Assistants, consider having a separate observer/coder for each Teaching/Learning Assistant. It may also be possible to consider the whole group of Teaching/Learning Assistants as a single instructional facilitator. General notes about Teaching/Learning Assistant actions should be documented in this section.

Comments
> - Space for additional comments.

Supplemental Documents

OPTIC Code Information Sheet
- A succinct list of codes. This form will be available online using POGIL webpage link on cover page.

OPTIC (Observation Protocol for Teaching in Interactive Classrooms) Codes	
Codes (KEY below)	**Shorthand meaning**
Interactions in the classroom	
I→WC	Instructor verbally communicating to the whole classroom of students. The students are not verbally responding back to the instructor.
I↔WC	Instructor interacting with the whole classroom of students. The student(s) *are* verbally responding.
IxWC	Instructor *is not* observing or not monitoring whole class.
I→LT	Instructor is communicating to learning team, but the learning team *does not* communicate back to the instructor.
IoLT	The instructor is observing/monitoring learning team work without interacting with learning team
I↔LT	Instructor is interacting with a learning team, the learning team *does* communicate back to the instructor.
LT↔LT	Learning team or learning team representative interacting with another learning team or learning teams.
S↔S (within LT)	Students interacting with each other within the same learning team during collaborative activity.
%xS	An estimated percent of students *not* participating or *not* paying attention. Code 0,1, 2, 3
Facilitator Actions	
PLA	Preparation for a component of the learning activity immediately prior to that component, including any instructions for learning teams.
MWC	Instructor moving about the whole classroom observing, monitoring or coaching the learning teams.
SWC	Instructor observing or monitoring the whole classroom while remaining in one place. Instructor is static, not moving while observing. Observe at least 30 s.
INTV	Instructor intervenes and addresses the entire class to respond to student needs such as a misconception or confusing concept during an activity.
RO	Instructor and students using the information for a reporting out strategy from questions within the learning activity.
LEC	The instructor is lecturing to the whole class
CM	Instructor is involved in classroom management/administration tasks. Not related to content. Includes instructor's management of time or pacing.
Activity Type	
POGIL	Instructor using Process Oriented Guided Inquiry Learning
CLA	Instructor is using student-to-student collaborative learning approach other than POGIL.
IND	Instructor presents a task for students to work on individually.

KEY	
Facilitator Actions	**Interactions**
PLA, Preparing for Learning Activities **MWC**, Movement throughout Whole Classroom (WC) **SWC**, Static while observing WC (w/o movement) **RO**, Reporting Out **INTV,** Intervention **LEC**, Lecture **CM**, Classroom Management/Administrative Tasks	→, communicating to ↔, interacting with **I**, Instructor **S**, Student **LT**, Learning Team **WC**, Whole Class **x**, no interaction

OPTIC APP

- This app will be available in typical app stores. Real time data can be collected in the app during an observation. The OPTIC app provides a visual in the form of a chronological timeline displaying all the codes marked during the observation in the interval in which they occurred.

OPTIC Excel Code Sheet

- An excel spreadsheet to record codes during observations. This form will be available online using POGIL webpage link on cover page.

OPTIC: Observation Protocol for Teaching in Interactive Classrooms

Start Time (min):	Interactions in the Classroom									Facilitator Actions							Activity Type		
	I↓WC	I↔WC	I×WC	I↓LT	I↻LT	I↔LT	LT↔LT	S↔S	S×S	PLA	MWC	SWC	INTV	RO	LEC	CM	POGIL	CLA	IND
0-2																			
2-4																			
4-6																			
6-8																			
8-10																			
10-12																			
12-14																			
14-16																			
16-18																			
18-20																			
20-22																			
22-24																			
24-26																			
26-28																			
28-30																			
30-32																			
32-34																			
34-36																			
36-38																			
38-40																			
40-42																			
42-44																			
44-46																			
46-48																			
48-50																			
50-52																			
52-54																			
54-56																			
56-58																			
58-60																			

Instructor: Observer:

Course: Date:

Are Roles being utili   Yes   No   Comments:
Number of Students:____
Number of Teaching Assistants:____

T.A. Actions:

13

Pre-Post Observation Form
- The Pre-Post Observation form is a document that is optional for use by the observer and facilitator to discuss the lesson that will be observed and the debrief that would follow the classroom observation. This form will be available online using POGIL webpage link on cover page.

Pre and Post OPTIC Observation Conversation for the Observer and the Instructor

Name (Instructor):_____

Course:_____ Room:_____ # Students:_____ Date:_____ Duration:_____

Name (Observer):_____

Pre-observation:
- Instructional Objective: (*About what content/topic will the students be constructing knowledge?*)
- Process Skill Objective: (*What Process Skill(s) will the instructor address and how?*)
- Non-Compliance during class: (*What is the instructor's plan when students are being non-compliant?*)
- How will instructor begin the lesson?
- How will instructor close the lesson?
- If the instructor plans to use multiple collaborative learning approaches, what activity types does the instructor want coded separately? (*in-class small group, think-pair-share approach, paired or group problem solving, in-class peer-led instruction, problem/project-based learning, etc.?*)

Post Observation (with Evidence):
- Were the instructional objectives addressed using the activity?
- During the activity, were process skill objectives addressed?
- During the class, was non-compliant behavior identified and addressed?
- How much time are students engaged in active learning; how much time was used for lecture, classroom management, or other passive activities for students?
- What interactions suggest collaborative learning is occurring?

Post Observation reflection for class session:
- Strengths with reasons why it is a strength:
- Improvements with suggestions for improvement:
- Insights into teaching and learning: