

Classroom Discourse Observation Protocol (CDOP) for Undergraduate STEM Classrooms

This protocol allows observers to reliably characterize the specific conversational strategies used by instructors to foster students development of content knowledge.

1. Teacher-centered: Instructor is talking about content.		
Codes	Description	Dialogue
sharing	Instructor shares information, answers student question, or provides instructions for finding the solution	Instructor: Just think of, kind of, chromatid pairs, sister chromatid paired, it's a little easier to think of the numbers.
real-worlding	Instructor relates idea to conventional knowledge, broader perspective, and instructor's or student's personal experiences	Instructor: Successful genotypes-look around the room. Nothing but winner in this room, right? We have all made it to reproductive age.
evaluating	Instructor repeats, accepts and/or rejects student's response, or acknowledges that they don't know the answer to a student's question	Student: And then in the first case, it would be one chance times one chance which is still one sixteenth. Instructor: Right.
linking	Instructor associates past topic to current topic	Student: You don't have a bigger potential as well because there's more connections, there's more access to the axon terminals? Instructor: Well, remember, we had that summation of action potentials. We had an action potential and we had the nodes and it could split off.
forecasting	Instructor associates current topic to future topic	Instructor: You're going to do something in lab actually focused on human population and population growth.

2. Student-centered: Instructor asks student to talk about content.		
Codes	Description	Dialogue
generative	Instructor asks student to recall facts, and basic concepts, or related information	Instructor: Those come together in fertilization to make a zygote, right? Student: Yes.
checking-in	Instructor asks student if they have a question or need clarification	Instructor: Does that make sense?; Do you have any questions?; How's it going?; Are we good?
clarifying	Instructor asks student to elaborate on condensed, cryptic, or inexplicit statement	Instructor: Can you say more about that? What do you mean by that? Can you give an example?
connecting	Instructor asks student to associate past topic to current topic	Instructor: Costs of sex that haven't been mentioned plus what we've been talking about for the last week. Student: Is it overpopulation?
contextualizing	Instructor asks students to relate idea to conventional knowledge, broader perspective, and their personal experiences	Instructor: Anyone have an example that they really want to hear about/talk about (referring to student responses to finding analogies between cell processes and common household items)?
representing	Instructor asks student to create a visual or mathematical representation of content	Instructor: Think about how you could draw that out, too.
constructing	Instructor asks students to build knowledge by interpreting and/or making judgments based on evidence, data, and/or model	Instructor: In your own words, what is your conclusion when you look at those data?
requesting	Instructor asks student to justify or explain their reasoning	Instructor: I'm liking what I see but explain it to me (referring to student whiteboard work calculating the number of fertilization events that produce a specific offspring).
explaining	Instructor asks student to explain reasoning to other students	Instructor: Can you explain your work to everybody else at your table so that they can figure that out?
challenging	Instructor asks student to evaluate another student's idea	Instructor: Cost of sex? Student: Pregnancy. Instructor: I acknowledge that it's a good point, and why is there a problem with calling pregnancy a cost evolutionarily?

3. Other	
Codes	Description
no content discourse	Instructor is not talking or asking students to talk about content
other	TDM not described by these codes