

## Move Instructor's Discourse Moves When Interacting with Students to a Student-Centered Approach to Support Your Active Learning Strategies

The goal of this page is to support instructors to facilitate further interaction and thus move to a student-centered approach during class. Studies indicate that interactive (dialogic and authoritative) discourse moves enhance student engagement, facilitate critical thinking, and share the power dynamic between the instructor and students (Alkhouri et al. 2021).

Figure 1 illustrates the three different discourse moves (authoritative, non-interactive; authoritative, interactive; and dialogic interactive). We emphasized the dialogic, interactive move since it can increase student-instructor and student-student interactions (Smith et al. 2013, Smith et al. 2014, Stains et al. 2018, Warfa et al. 2018). The two examples below and complementary figures exemplify common active learning activities to introduce and encourage interactive discourse into your lecture.

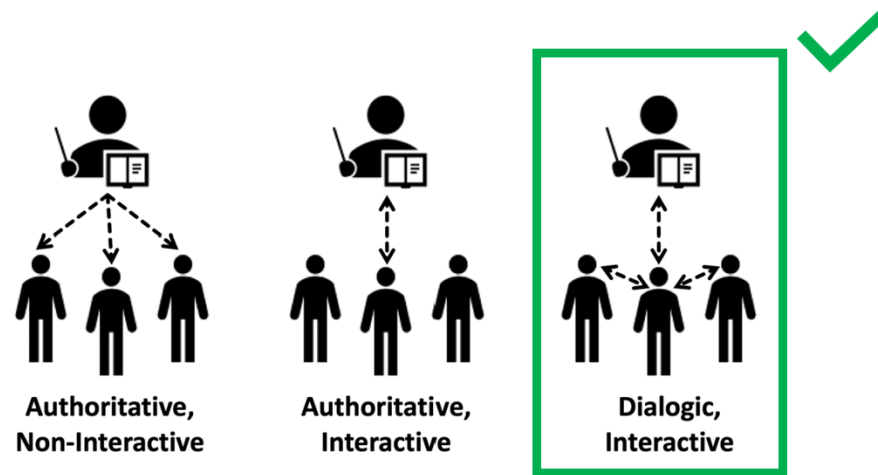


Figure 1. Adapted from Kranzfelder et al. *Al's Undergraduate Biology Instructors Still Use Mostly Teacher-Centered Discourse Even When Teaching with Active Learning Strategies*

### EX 1) How do I, as an instructor, encourage student interaction in my discourse?

Consider the dialogue below between a biology instructor and their student discussing the line graph below (Figure 2).

**Instructor:** "The bacterium *Staphylococcus aureus* causes skin infections commonly called staph infections. One antibiotic that has been used to treat staph infections is methicillin. However, resistance to this antibiotic has become a widespread problem. So, is evolution occurring?"

**Student:** "Yes, evolution is occurring".

The instructor can open the discussion further by implementing interactive statements as illustrated in Figure 3 to provide greater thinking opportunities and enhance student-engagement interactions (Smith et al. 2013, Smith et al. 2014, Stains et al. 2018, Warfa et al. 2018).

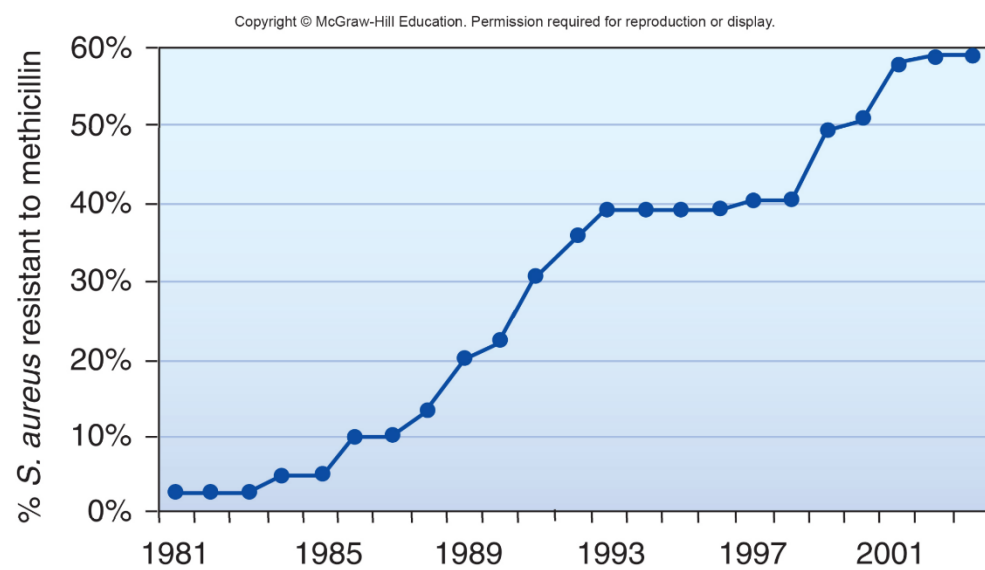


Figure 2. % *S. aureus* resistant to methicillin from McGraw-Hill Education

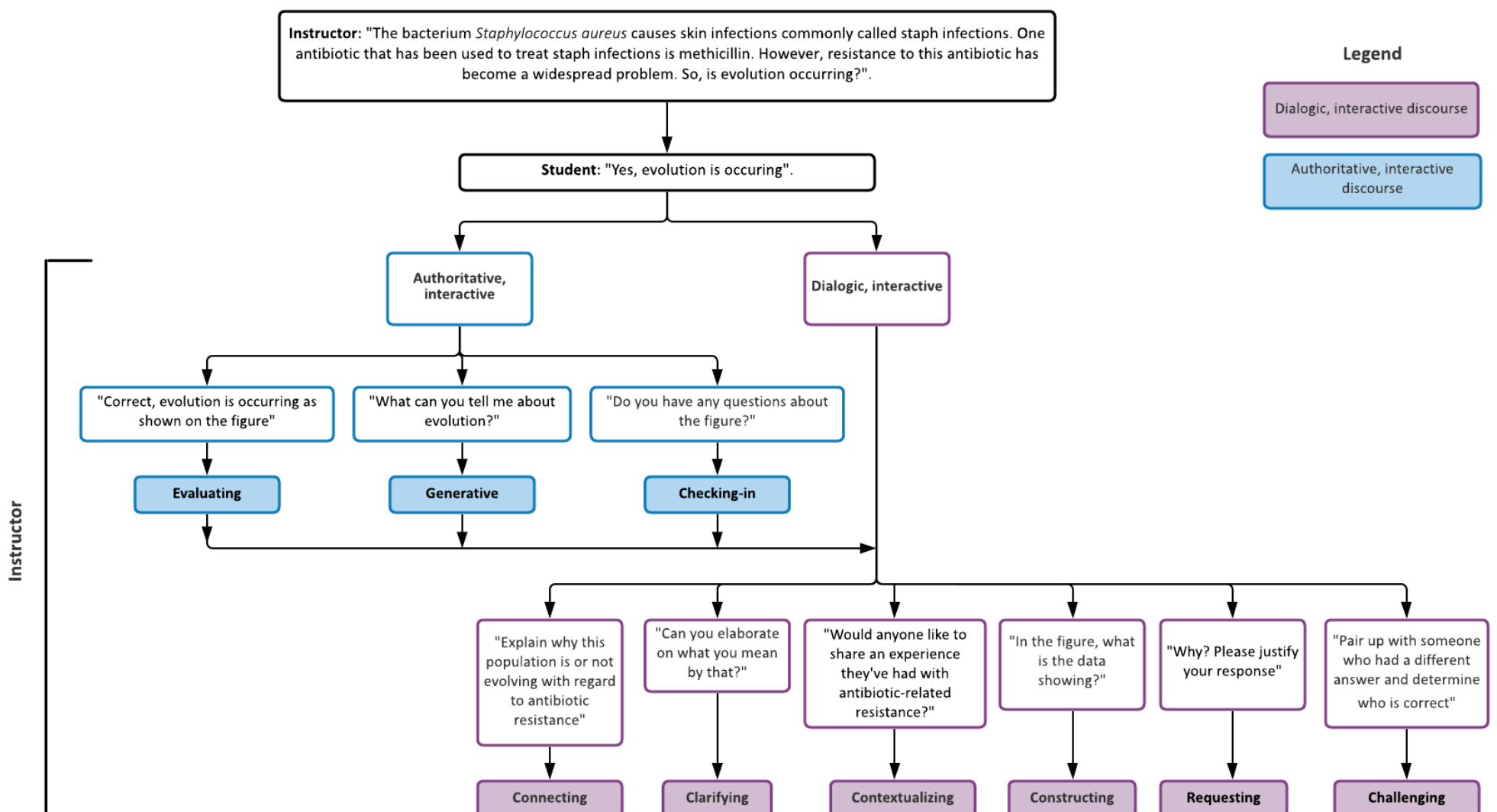


Figure 3

## Move Instructor’s Discourse Moves When Interacting with Students to a Student-Centered Approach to Support Your Active Learning Strategies

The flowchart in Figure 3 provides examples of how the instructor can further develop a student conversation. You can facilitate student-student interactions by having students participate in connecting, contextualizing, constructing, requesting, or challenging, dialogic interactive discourse moves. Student centered approaches encourage engagement and collaboration (Alkhouri et al. 2021).

### EX 2) How do I introduce interactive discourse while lecturing?

The following statements below assess student understanding periodically throughout your class time. Please remember to provide wait time after posing a question. The examples in Table 1 showcase how to disperse interactive discourse, and thus balance lecturing (or sharing) with student interaction throughout a class session. Click [here](#) for more literature regarding the importance of wait time, as described by Patricia E. Blosser.

Statement	Note	CDOP Code Description	CDOP Code	Discourse Approach
"Shall I explain this concept again?"	Allow for a five-second wait time	Teacher asks student if they have a question or need clarification	Checking-In	Authoritative, Interactive
"With a partner, please summarize the slide's information"	Think-pair-share activity	Teacher asks student to recall facts, and basic concepts, or related information	Generative	
"Can someone please explain the diagram to me?"	Use after explaining a graph	Teacher asks student to justify or explain their reasoning	Requesting	Dialogic, interactive
"With a partner, please explain the concept's description"	Think-pair-share activity	Teacher asks student to explain reasoning to other students	Explaining	

Table 1

## References

You can find the papers referenced in the Supplemental Materials page as well as additional papers to help build your knowledge of CDOP (Classroom Discourse Observation Protocol) below.

Blosser, Patricia E.. How to Ask the Right Questions. United States, National Science Teachers Association, 1991.

Jourjina Subih Alkhouri, Cristine Donham, Téa S Pusey, Adriana Signorini, Alexander H Stivers, Petra Kranzfelder, Look Who's Talking: Teaching and Discourse Practices across Discipline, Position, Experience, and Class Size in STEM College Classrooms, *BioScience*, Volume 71, Issue 10, October 2021, Pages 1063–1078, <https://doi.org/10.1093/biosci/biab077>

Kranzfelder P, Bankers-Fulbright JL, García-Ojeda ME, Melloy M, Mohammed S, Warfa A-RM (2019) The Classroom Discourse Observation Protocol (CDOP): A quantitative method for characterizing teacher discourse moves in undergraduate STEM learning environments. *PLoS ONE* 14(7): e0219019. <https://doi.org/10.1371/journal.pone.0219019>

Petra Kranzfelder, Jennifer L Bankers-Fulbright, Marcos E García-Ojeda, Marin Melloy, Sagal Mohammed, Abdi-Rizak M Warfa, Undergraduate Biology Instructors Still Use Mostly Teacher-Centered Discourse Even When Teaching with Active Learning Strategies, *BioScience*, Volume 70, Issue 10, October 2020, Pages 901–913, <https://doi.org/10.1093/biosci/biaa077>

Scott P., Mortimer E. (2005) Meaning Making in High School Science Classrooms: A Framework for Analysing Meaning Making Interactions. In: Boersma K., Goedhart M., de Jong O., Eijkelhof H. (eds) *Research and the Quality of Science Education*. Springer, Dordrecht. [https://doi.org/10.1007/1-4020-3673-6\\_31](https://doi.org/10.1007/1-4020-3673-6_31)

Smith MK, Jones FHM, Gilbert SL, Wieman CE. 2013. The classroom observation protocol for undergraduate stem (COPUS): A new instrument to characterize university STEM classroom practices. *CBE: Life Sciences Education* 12: 618–627.

Smith MK, Vinson EL, Smith JA, Lewin JD, Stetzer MR. 2014. A campus wide study of stem courses: New perspectives on teaching practices and perceptions. *CBE: Life Sciences Education* 13: 624–635.

Stains M, et al. 2018. Anatomy of STEM teaching in North American universities. *Science* 359: 1468–1470. doi: 10.1126/science.aap8892.

Warfa A-RM, Nyachwaya J, Roehrig G. 2018. The influences of group dialog on individual student understanding of science concepts. *International journal of STEM education* 5: 46

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