



Learning **WITH** Others

Cooperative Learning

What is it?

Cooperative learning refers to a group of instructional practices that emphasize interaction between students as they work together toward shared learning goals. Cooperative learning is contrasted with an individualistic approach, wherein students' attainment of learning goals is independent of their classmates, and a competitive approach to learning, wherein students' attainment of learning goals is in direct conflict of their classmates, as is the case with assessment practices that rank students or limit the number of students who can earn a certain grade (e.g., only the top 10% earn an "A"). Cooperative learning can range from small, short-term activities (e.g., groups of 2-4 students completing an activity in a single class) or a large, longer-term projects (e.g., an entire class working throughout the semester on a large service-learning project). Cooperative learning methods can take the form of highly structured activities, or a set of norms and expectations for interactions within a class, as well as many practices in between.

Why should I use it?

Numerous specific applications of cooperative learning have been found to improve learning, especially when the learning tasks require cooperative interaction between students and there are both individual and group incentives (e.g., grades) connected to the learning goals. Cooperative learning can also improve motivation. Peer accountability can give students additional reasons to keep up with their work, and increased interaction between students supports feelings of connection and belonging to the group. Furthermore, many of the types of jobs our students will take after finishing their education will require them to work collaboratively with colleagues, and cooperative learning can help them develop the teamwork, communication, and collaboration skills they will need in the future.

How do I implement it in my engineering course?

- Give students guidelines for *how* to work together, including expectations for how students will interact and how work ought to be distributed. Collaboration and academic teamwork are not innate skills, and students who haven't been taught how to work cooperatively with classmates might not know how to do it effectively.
- Cooperative learning tasks should be clearly defined (e.g., "complete the practice problems on p. 42" rather than "review the chapter")

- Students should have opportunities to give and receive feedback on the correctness of their understanding and the quality of their work.
- Incentives (e.g., grades) should be structured so that everyone has to work toward the goal and no student can “get by” without learning or contributing to the group’s output.

Additional readings

- Smith, K. A. (1995, November). Cooperative learning: Effective teamwork for engineering classrooms. In *Proceedings Frontiers in Education 1995 25th Annual Conference: Engineering Education for the 21st Century* (Vol. 1, pp. 2b5-13). IEEE.
- Hsiung, C. M. (2012). The effectiveness of cooperative learning. *Journal of Engineering Education*, 101(1), 119-137.