

## **Good practices for forming teams** (supported by research where noted) by M. W. Ohland

**Generally, avoid allowing students to self-select their teams.** If students don't know each other, they tend to pick teams of people who "look like they would be good to work with," which results in teams that lack diversity.<sup>1</sup> If some members of the team have a special relationship (such as they are already friends), the team is more likely to form cliques. Instructors who want students to have some input sometimes let students request 1-2 students who they would like to have on their team or who they would rather not have on their team. It has also been suggested that the incidence of cheating is higher in student-selected teams.<sup>2</sup> If the instructor assigns teams, it also avoids marginalizing students who don't get picked for a team. If you form new teams later, it can also help to separate students who have worked together on a team previously to prevent clique formation.

**Consider ability in forming teams.** There is a large body of research, mostly in pre-college settings, addressing the learning benefits of forming groups of heterogeneous ability levels using various measures. Ability might be measured with any relevant and available information such as GPA in high school or college, the grade in a prior course, the score on a diagnostic test, or experience using Excel or in computer programming. Weaker students gain from seeing how better students study and approach problems, which is rooted in Vygotsky's research on the Zone of Proximal Development.<sup>3</sup> It is generally the academically stronger students who will object most strongly to being put in teams of heterogeneous ability. There is research indicating that the highest-performing students have the greatest normalized gain in interactive settings.<sup>4</sup> Furthermore, high-performing students should also take the opportunity to develop mentoring and leadership skills. If high-performing students are unconvinced by either of those benefits, they should recognize that if they expect to remain high-performers, they are getting practice in college for having that same role in teams during their career. Nevertheless, if teams are competing with other teams for a grade, it's unfair to put high-performing students with weaker students who could cause them to receive a lower grade. This supports grading against a standard rather than on a curve.

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<sup>1</sup> Bacon, D. R., Stewart, K. A., & Silver, W. S. (1999). Lessons from the best and worst student team experiences: How a teacher can make the difference. *Journal of Management Education*, 23(5), 467-488.

<sup>2</sup> Oakley, B., Felder, R. M., Brent, R., & Elhajj, I. (2004). Turning student groups into effective teams. *Journal of student centered learning*, 2(1), 9-34.

<sup>3</sup> Vygotsky, L. (1987). Zone of proximal development. *Mind in society: The development of higher psychological processes*, 5291, 157.

<sup>4</sup> Hake, R. R. (1998). Interactive-engagement versus traditional methods: A six-thousand-student survey of mechanics test data for introductory physics courses. *American journal of Physics*, 66(1), 64-74.

**Avoid isolating women and underrepresented minorities.** When women and minorities are isolated, the dominant group (men and majority students) is more likely to ignore their input, interrupt them, and take credit for their ideas.<sup>5</sup> By putting women and minorities in teams in pairs or more, the dominant group is more likely to learn how to work in a diverse team. Make it clear that you aren't doing this because women and minorities are weak and need help.

**Consider the experience of international students.** Whereas international students may experience similar challenges to women and minorities,<sup>6,7</sup> it's not necessarily appropriate to put more than one on a team. Putting two students on the same team who have a language barrier in addition to the cultural barrier could notably disadvantage that team and create a lot of resentment from their teammates.

**Separate students with similar first or last names.** To help students focus on the unique contributions of each team member, make it as easy as possible for team members to tell their teammates apart even when they aren't meeting face-to-face. A team made up of students named Alex, Aleksandr, Alexis, and Lexie may have a difficult time remember who is who.

**What's the best team size?** It depends – mostly on the amount and type of work you will ask teams to do. Each team needs enough person-power to get the job done as well as the appropriate set of skills (or the ability to develop them during the scope of the project). There are other issues that affect smaller and larger teams. Teams of two cannot provide feedback to each other in a confidential form. Teams larger than five are more likely to fragment and develop cliques.

**Do not re-form groups too often.** Teams need time to learn to work together and work through issues with team dynamics. Help dysfunctional teams learn to work together rather than give up and wait for a new team.

**Form teams with compatible schedules.** If you're not using a computer tool such as CATME, this can be difficult to implement, but teams will struggle if they can't meet to work together to the extent that your assigned work requires. In addition to the importance of face-to-face interaction in cooperative learning environments,<sup>8</sup> if teams cannot meet synchronously, they don't have any way to resolve issues with team dynamics. Have teams identify regular meeting times as soon as possible after team formation.

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<sup>5</sup> Rosser, S. V. (1998). Group work in science, engineering, and mathematics: Consequences of ignoring gender and race. *College Teaching*, 46(3), 82-88.

<sup>6</sup> Jimenez-Useche, I.C., Hoffmann, S.R., Ohland, M.W. (2015, June). Multicultural team dynamics in a First-Year Engineering class in the U.S. *Proc. Amer. Soc. Eng. Ed.*, Seattle, WA.

<sup>7</sup> Jimenez-Useche, I., Hoffmann, S.R., & Ohland, M.W. (2015, August). The role of culture in the performance of students in a first-year engineering class. *First-Year Engineering Education Conference*, Roanoke, VA.

<sup>8</sup> Millis, B. J., & Cottell Jr, P. G. (1997). *Cooperative Learning for Higher Education Faculty. Series on Higher Education*. Oryx Press, PO Box 33889, Phoenix, AZ 85067-3889.