

### **FAQs. III. GROUPWORK IN DISTANCE LEARNING\***

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Of all the instructional methods we advocate in our teaching workshops, the ones we emphasize most involve students working together in small groups. Workshop participants invariably ask whether such collaboration is possible in distance learning. The answer is that it may take some additional effort by the instructor, but it can be done and done effectively.

In this column we offer ideas for getting students at remote sites to collaborate when attending lectures in a synchronous course, working through lessons in an asynchronous course, and doing homework in either distance mode. Other references outline the hows and whys of using groupwork in traditional class settings<sup>1,2</sup> and discuss the educational value of distance learning compared to traditional classroom instruction.<sup>3</sup>

In synchronous lectures, brief group exercises can be assigned just as they are in traditional classrooms. (Ask a question or assign a short problem to pairs or small groups of students, stop them after 30 seconds–3 minutes, collect answers, provide the correct answer if necessary, and move on.) The instructor may announce in the first class that such exercises will be interspersed throughout the lectures to provide practice for the homework and tests, adding that the students at the remote sites can either do the exercises as instructed, in which case they will learn how to do them, or just sit there and watch, in which case they'll quickly get bored and learn little or nothing. If some students choose not to participate, the loss is theirs.

A similar procedure may be followed for asynchronous course offerings that go out on videotape or web-based media. When the students come to an exercise in a taped or streamed presentation they can either (a) pause the presentation, try the exercise (ideally with others who

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\* *Chemical Engineering Education*, 35(2), 102–103 (2001).

may be physically or virtually present with them), and then fast-forward to the point in the presentation where the answer is presented, or (b) just do the fast-forwarding. The instructor should present both options in the first class and strongly suggest that if the students really want to learn the material they will choose the first one. Students may be helped to connect with one another in small groups to view the classes and work through the exercises via instant messaging, e-mail, threaded discussion, and ftp transfers. In addition, growing numbers of on-line students—especially those in industry—have access to videoconferencing facilities with electronic whiteboards. With those tools, virtual teams can almost (but not quite) duplicate the in-person team experience.

The first step in getting students at remote sites to collaborate on problem sets or projects is to organize virtual teams and set them up to interact electronically using any of the tools mentioned above. Simply asking students to do something in groups is not enough to guarantee effective learning, however, as anyone who has ever tried it knows. Even in traditional classes students may do little or no work but get the same grade as their more industrious colleagues, and serious conflicts may arise between teammates with varying levels of ability and senses of responsibility. The problems may be even worse when groups are virtual and don't have the self-regulating capability provided by face-to-face meetings. It is therefore particularly important in distance classes to adhere to the defining principles of cooperative learning, especially positive interdependence (if anyone fails to do his or her part everyone loses in some way), individual accountability (all team members are held accountable for all the material in the assignment), and regular self-assessment of team functioning.

Standard references offer guidance on how to meet the criteria for cooperative learning in traditional classes,<sup>2</sup> and tips for making groupwork effective in a distance setting are given by Millis<sup>4</sup> and Bailey and Luetkehans.<sup>5</sup> The following suggestions are drawn from these sources.

1. *Make it clear to the students why groupwork is being required.*<sup>5</sup> This admonition is particularly important for students in distance courses, whose learning preferences tend to favor working independently.
2. *Form small teams that are balanced in knowledge and skills.*<sup>4,5</sup> Teams of three or four are large enough to provide adequate diversity of opinions, experiences, and learning styles, but not so large that individual members can successfully hide. Groups of all strong students or all weak students should be avoided. If possible, at least one member of each team should have experience with the computer tools to be used to complete the assignments.
3. *Give clear directions regarding both the assignments and the communication tools.*<sup>4</sup> Virtual groups may find it particularly frustrating to have to decipher muddy directions about what to do and how to do it, and their frustration could hurt both their motivation and their performance. Give short preliminary assignments that require the team members to demonstrate their mastery of the communication software.
4. *Monitor team progress and be available to consult when teams are having problems.*<sup>4,5</sup> The tendency of some students in traditional classes to let groupwork slide in the face of other time demands is likely to be worse when the team members never see each other face-to-face. Appoint team coordinators whose responsibilities are to keep their teams on task and to report on progress and problems at regular intervals. Periodically rotate this role among team members. Prompt groups that are not meeting frequently enough and offer guidance if they appear to be stuck.
5. *Intervene when necessary to help teams overcome interpersonal problems.*<sup>5</sup> Suggest strategies like active listening to resolve conflicts. (Each side makes its case, and the other side has to repeat that case to the first side's satisfaction without attempting to counter it.

When both sides have had their say, a resolution is sought.) Consider conducting such sessions by videoconference or telephone rather than asynchronously.

6. *Collect peer ratings of individual citizenship and use the ratings to adjust the team assignment grades.*<sup>4</sup> Rewarding exceptional team members and penalizing non-contributors helps avoid many of the conflicts and resentments that often occur when students work on group projects. A procedure for collecting ratings and using them to adjust team grades is described in the literature.<sup>6</sup>
7. *Anticipate problems and get help when necessary.*<sup>4</sup> You can be reasonably certain that any problem you encounter in groupwork has already been encountered by others and is addressed somewhere in the literature. When a problem arises, check the references<sup>1,2</sup> to make sure you have not forgotten any of the elements of good practice in cooperative learning and ask knowledgeable colleagues or faculty development center personnel to help you strategize remedies.

## References

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3. R.M. Felder and R. Brent, "Is Technology a Friend or Foe of Learning," *Chem. Engr. Education*, 34(4), 326–327 (2000).
4. B.J. Millis, "Managing—and Motivating!—Distance Learning Group Activities." <[www.tltgroup.org/gilbert/millis.htm](http://www.tltgroup.org/gilbert/millis.htm)>.
5. M.L. Bailey and L. Luetkehans, "Ten Great Tips for Facilitating Virtual Learning Teams," *Distance Learning '98: Proceedings of the Annual Conference on Distance Teaching and Learning*, Madison, WI, August 5–7, 1998. ERIC Document ED-422838.
6. D.B. Kaufman, R.M. Felder, and H. Fuller, "Accounting for Individual Effort in Cooperative Learning Teams," *J. Engr. Education*, 89(2), 133–140 (2000).