# Part IV
# Supporting Peer Interaction with Small Group Activities: Chaps. 13, 14, 15, 16 and 17

Vygotsky and other social constructivists remind us that meaningful learning depends in part on "more knowledgeable others" who help us by scaffolding our thinking as we construct new knowledge. This section describes several small group practices that have been successfully deployed in college and university science classes.

*A learning theory that supports the inclusion of peer interaction into our design of active learning is Social Development Theory (Vygotsky, 1978). The major theme of this framework is that in order for learners to internalize their understanding of concepts, they must first construct a common understanding of the concept with others in a social interaction. This theory also suggests that the skills and knowledge that can be developed with peer collaboration (or guidance of a more knowledgeable other) exceed what learners could attain on their own. **Debra Linton (13)***

*Peer-Led Team Learning introduces a rich, complex network of features that is otherwise missing in a traditional lecture-only course. For example, PLTL courses are not dominated by an authoritative expert in the classroom, the team learning environment encourages collaboration, students engage in constructive argumentation and work toward the solution of more-challenging problems, and peer leadership offers mentoring and emotional support. **Pratibha Varma-Nelson and Mark S. Cracolice (14)***

*Team Based Learning (TBL) is a very well-defined pedagogical approach that neatly brings together many empirically-supported best practices of student-centered active learning into a single strategy. This is very convenient for TBL adopters, who have often tried "bits and pieces" of active-learning and/or cooperative-learning strategies over several semesters or years, and are ready for something more comprehensive. **Sarah Leupen (15)***

*…..factors evoking effective collaboration were student autonomy and self-regulatory behavior, combined with a challenging, open, and complex group task that required students to create something new and original. The design factors of these courses fostered a sense of responsibility and shared owner-ship of both the collaborative process and the end product of the group assign-ment. The attitude of the teacher is also of importance, especially expressing trust in the students' abilities. We conclude that those who design collabora-tive learning environments should use challenging and relevant tasks that build shared ownership with students.* **Karin Scager, Johannes Boonstra,Ton Peeters, Jonne Vulperhorst, and Fred Wiegant (16)**

*Our previous research leads us to a model in which the vocal students experi-ence a virtuous cycle. Students who do vocally participate are rewarded with feedback and extra credit, and this participation encourages them to engage in the class discussion. In turn, this motivates the students to prepare for class so that they can participate vocally in the next class. Importantly, based on our research, the entry to this virtuous cycle appears to be the extra credit for vocal participation. However, once students do volunteer to participate, their learning gains encourage further participation.* **Carrie A. Obenland, Ashlyn H. Munson and John S. Hutchinson (17)**