

**Annotated Bibliography on Teaching Alternatives to Lecture
Three Alternatives Explored: Discussion, Problem-Based/Case-Based Learning,
Cooperative/Team-Based Learning**

Discussion

Classroom Discussion

Brookfield, Stephen D., & Preskill, Stephen. (2005). *Discussion as a way of teaching: tools and techniques for democratic classrooms*. San Francisco, CA: Jossey-Bass.

If you are newly considering the introduction of discussion activities into your classroom, or if you have been using discussion in your classroom, this can be a very practical and helpful book to you. Because it is full of classroom examples drawn from different disciplines, from the sharing of dialogue to personal experiences, the different tools and techniques explored can be imagined as you might actually use them in your own course. Of course this book claims that the use of discussion will help learning and enliven the classroom, but it is not without warning about the dangers lurking around some classroom corners. There are practical chapters on ensuring that students come to class prepared to talk about a discussion topic, exercises to help prompt students to talk, and how to evaluate discussion. There are also more conceptual chapters on speech patterns, the balance of voice, and determining how democratic our discussions really are or can be. There are also two chapters covering online discussions. This book can be used as a guide to begin, or continue, your use of discussion in the classroom by exploring its many configurations and suggested problem resolutions.

Cashin, William E., & McKnight, Philip C. (January 1986). *Improving Discussions. Idea Paper No. 15*. Retrieved November 19, 2006 from Kansas State University, Center for Faculty Evaluation and Development Web site:
http://www.idea.ksu.edu/papers/Idea_Paper_15.pdf.

This teaching newsletter first reviews the strengths and weaknesses of discussion approaches to teaching. Then recommendations are summarized regarding three aspects of discussion: improving cognitive or intellectual learning, improving the affective or interest/value aspects of learning, and increasing participation. Practical suggestions are given for taking a facilitative role, using questioning techniques that encourage student interaction, and achieving a balance of challenging students without making it counterproductive. Additional suggestions are given for dealing with conflict and controlling excessive talkers.

Finkel, Donald L. (2000). *Teaching with your mouth shut*. Portsmouth, NH: Boynton/Cook Publishers, Inc.

This book begins by explaining the title's meaning, which is the opposite of "teaching through telling." Each subsequent chapter presents a set of circumstances to produce significant learning outcomes. Chapter 2, "Let the Books Do the Talking," explains the

use of parables, puzzles, and great books in learning. In chapter 3, "Let the Students Do the Talking," the open-ended seminar is examined as one way of engaging students in conversation. Other kinds of talking included are formal class presentations, out-of-class and in-class study groups. The next chapter focuses on inquiry-centered teaching and, in fact, in organizing an entire course as inquiry-centered, based on linking students' present interests to needs. Chapter 5 is broken into two parts to first explore how a teacher's writing can become a powerful teaching tool, and then how to organize a course to put students' writing at the center as a writing community. Conceptual workshops as a class design are described in chapter 6 with two sample worksheets shared. Making classrooms more democratic by separating power and authority is discussed in chapter 7. Co-teaching is explored in chapter 8. He summarizes and concludes with chapter 9, reminding us of Dewey's quote "no idea can possibly be conveyed as an idea from one person to another" meaning that reflecting can only be done for yourself; no one else can do it for you. A conceptual workshop is included as an appendix for a small group discussion of this book.

Kremer, J., & McGuinness, C. (1998). Cutting the cord: Student-led discussion groups in higher education. *Education & Training*, 40(2), 44-49.

This article outlines the experience of using leaderless group discussions and associated peer assessment as an integral part of an undergraduate degree program. Student-led or leaderless groups are learning groups where a power structure or hierarchy is deliberately suppressed, and where all participants are encouraged to play an active part in the life of the group. Peer or self-assessment is required in this type of group. Each week, a new topic is covered in a 90-minute lecture, offered as a general overview covering major theories and contemporary research but deliberately leaving a few loose ends to be pursued during the subsequent discussion group time. At the end of the lecture, a list of five selected readings is handed out to all group members and each person is responsible for at least one of the readings. Discussion groups are held six days after the lecture. The organization, structure, and evaluation of these discussion groups are shared. The practicalities of running the group, the lessons which have been learned over time, and the benefits for student learning are also discussed.

McGonigal, K. (Fall 2005). Using class discussion to meet your teaching goals. *Speaking of Teaching*, 15(1). Retrieved November 19, 2006 from Stanford University, Center for Teaching and Learning Web site:
http://ctl.stanford.edu/Newsletter/discussion_leading.pdf.

This teaching newsletter reviews several teaching goals served by classroom discussion: 1) increase students' comfort with the specialized language and methods of a field, 2) develop critical thinking, and 3) develop problem-solving skills. Prompts and exercises are given for each teaching goal. Suggestions for assessing students' learning through discussion are also given.

McKeachie, Wilbert J., & Svincki, Marilla. (2006). Facilitating discussion: posing problems,

listening, questioning. In *McKeachie's teaching tips: Strategies, research, and theory for college and university teachers* (pp. 35-55). Boston, MA: Houghton Mifflin Company.

This book chapter shares how discussion techniques can help students learn in all class sizes. Methods to start and lead discussions are shared, as well as overcoming barriers to discussion, and handling arguments and emotional reactions. Since classes do not automatically carry on effective discussions, skills for teaching students how to learn through discussion are given. This, the book's newest edition, also has a short section on online discussions.

Nunn, Claudia E. (1996). Discussion in the college classroom: Triangulating Observational and Survey Results. *Journal of Higher Education*, 67 (3), Ohio State University Press.

This study, which provides information regarding interaction in the college classroom, was conducted in a large public university and triangulated data from observations of actual classroom behavior with self-report surveys of faculty and students. The research questions addressed were: How much student verbal participation occurs? Which techniques do teachers use in eliciting student participation or in responding to it? Is there a relationship between these teaching techniques and the amount of participation that occurs? Do students and teachers hold similar views about classroom interaction, and how do their views compare with observational findings? The researcher created, refined, and validated the observational coding system, teacher survey, and student survey used in the study. The 16 discussion-related teaching techniques listed on the observational coding instrument were interesting. The faculty and student surveys focused on the extent to which they perceived certain teaching techniques as encouragers of student participation in classroom discussion. The results showed that typically only 2.28% of class time was spent in student participation with typically only 25.46% of the students participating. However, individual classes showed great variability. Significant differences were found between teaching techniques and the amount of time spent in student participation: praises student, teacher questions, teacher asks for elaboration of student question/answer, accepts student answer, repeats student answer, uses student name, and corrects wrong answer, were the techniques that increased the time spent in student participation. Both students and teachers agreed that humor, use of student ideas, praise, a supportive atmosphere, and use of student names as strong encouragers of student participation. Additional discussion of findings and suggested avenues for future research are given.

On-line Discussion

Biesenbach-Lucas, Sigrun. (2004). Asynchronous web discussions in teacher training courses: Promoting collaborative learning—or not? *AACE Journal*, 12(2), 155-170.

This article discusses course adaptations made in the use of a discussion board assignment in graduate level teacher training courses over a five-semester period. It examines how assignment preparation, student groupings, number, topic, type of posting, prompt, instructor's role, evaluation, and carry-over into class meetings were modified in

each semester, based in response to student end-of-semester surveys, and discusses which parameters contributed to collaborative learning identified through positive interdependence, promotive interaction, individual accountability, social skills, and self-evaluation. Based on the findings, conclusions about a recommended discussion board assignment are presented. Students will not necessarily use web discussions in a collaborative manner, but collaboration can be promoted through the provision of some structure suggested by the author. The technology needs to be carefully integrated into the curriculum and carry-over into class meetings so it is not viewed simply as a supplement to the course.

Brown, David G. (12/1/2002). The role you play in online discussions. *Syllabus Magazine*. Retrieved November 17, 2006 from <http://www.syllabus.com/article.asp?id=6988>

Briefly discusses five different possible instructor roles in online discussions: community leader, discussion leader, manager, technical consultant, or information provider. Provides a few tips for improving the impact of discussions.

Chism, Nancy. (n.d.). *Handbook for instructors on the use of electronic class discussion*. Retrieved November 17, 2006, from Ohio State University, Office of Faculty and TA Development Web site: <http://ftad.osu.edu/Publications/elecdisc/pages/home.htm>

A comprehensive handbook on online discussion, this web site is organized into several sections: why discussion is important in learning, advantages of electronic class discussion, basing use on course goals and logistics, goals for the electronic discussion (building group among the students, information sharing, processing ideas, tutorials, further communication skills, provide feedback), the role of the instructor along a continuum from absent to moderator/facilitator to expert, structuring the interchange (regarding issues such as links between the online discussion and the rest of the course, discussion format, participation expectations, and grading plan), tips from instructors at Ohio State, and a netiquette appendix appropriate for inclusion in student guidelines for online discussion.

Duke University, Center for Instructional Technology. (n.d.). *Sample assessment strategy for an instructional technology project: gauging the impact of online discussion boards*. Retrieved November 17, 2006 from http://cit.duke.edu/ideas/assessment/impact_online.do

An interesting matrix to organize your evaluation of online discussion's impact on student outcomes. Links to sample rubrics also provided.

Jeong, Allan C. (2003). The sequential analysis of group interaction and critical thinking in online threaded discussions. *The American Journal of Distance Education*, 17(1), 25-43.

This study examined group interaction and critical thinking in online threaded discussions. The Discussion Analysis Tool (DAT) was used to identify patterns in interactions and determine which interactions promoted critical thinking. The findings show that interactions involving conflicting viewpoints promoted more discussion and

critical thinking, and that evaluation of arguments was more likely to occur as conclusions were being drawn – not as arguments were being presented. Note that with the theoretical framework of this particular study, interaction patterns of most interest were those associated with conflict and argumentation. In addition, the emphasis is on the software tool DAT and the methods developed in this study.

Kent State University, College of Education, Health & Human Services. (2005). *The ABCs of CMC: using online discussion in education*. Retrieved November 17, 2006 from <http://fpdc.kent.edu/online/>

An Introduction & Rationale plus eight *planned* web-based modules on online discussions. The only two modules currently available include Accessing Online Discussion, and Cultural Issues in Online Discussions. Each module begins with an introduction to the topic and a rationale, an explanation of the technique, a bibliography of relevant research, resources for further exploration, realistic scenarios, FAQs, and a Focus Glossary.

Palloff, Rena M. & Pratt, Keith. (2005). *Collaborating online: learning together in community*. San Francisco, CA: Jossey-Bass.

This book is intended for faculty who are teaching online or preparing to teach online, and for those who are designing and developing collaborative activities for online courses. The first part of the book, Collaboration Online, presents the theory behind collaboration and collaborative activity in an online course, information on virtual team, creating the environment, challenges, and assessment and evaluation. The second part of the book, Collaborative Activities, offers a wide selection of collaborative activities with suggestions for use in an online course, including role playing, simulations, case studies, questioning techniques for discussions, dyads, small-group projects, jigsaw activities, blogs, debates, fish bowls, and webquests. Sample directions and assessment tips are given for each activity. This is a quick-read and easy-to-understand book.

The Pennsylvania State University, Teaching and Learning with Technology. (10/31/2005). *Crafting questions for online discussions*. Retrieved November 17, 2006, from http://tlt.its.psu.edu/suggestions/online_questions/

A comprehensive faculty resource for online discussion organized into several sections: benefits of online questioning strategies, types of questions for discussion (including factual, comprehension, application, analysis, synthesis, and evaluation), responding to and facilitating the query process, discussion and questioning tools in ANGEL and additional documentation within ANGEL Help, considerations when using online questioning and discussion, and strategies for engaging students in discussion.

Zhang, Ke, and Peck, Kyle. (2003). The effects of peer-controlled or moderated online collaboration on group problem solving and related attitudes. *Canadian Journal of Learning and Technology*, 29(3). Retrieved November 17, 2006 from http://www.cjlt.ca/content/vol29.3/cjlt29-3_art6.html

This study investigated the relative effectiveness of peer-controlled and moderated online collaboration to the management and execution of online forums during group problem solving. Four research questions were asked: 1) Are two types of collaboration, peer-controlled and externally structured and moderated, equally effective in terms of determining correct answers and developing reasoning to support the chosen solution? 2) Do the two types of collaboration lead to different amounts of time spent in collaboration or the use of different media for collaboration (e.g. email, telephone, face-to-face, etc.)? 3) Does the type of moderation influence students' perceptions of the difficulty or value of online collaboration during group problem solving? 4) Do student perceptions of the difficulty or the value of online collaboration influence the probability that they would use an optional online collaboration tool in the future? Three conclusions were reached: 1) Groups assigned to moderated forums displayed significantly higher reasoning scores than those in the peer-controlled condition, but the moderation did not affect correctness of solutions, 2) Students in the moderated forums reported being more likely to choose to use an optional online forum for future collaborations, 3) Students who reported having no difficulty during collaboration reported being more likely to choose to use an optional online forum in the future. This study provides evidence that structured and moderated online peer collaboration during group problem solving may result in superior reasoning and better attitudes toward collaboration, without significantly increasing the time students must invest in the learning activity. The moderator's role, as defined in this study, can enhance the value of the online collaborative learning experience.

Classroom and On-line Discussions

Heckman, Robert, and Annabi, Hala. (2005). A content analytic comparison of learning processes in online and face-to-face case study discussions. *Journal of Computer-Mediated Communication*, 10(2), article 7. Retrieved November 17, 2006 from <http://jcmc.indiana.edu/vol10/issue2/heckman.html>

This study used a content analytic framework to analyze transcripts from eight case study discussions, four FTF and four ALN. The two objectives were to provide a rich, detailed, descriptive comparison of actual case study discussions in both FTF and ALN modes, and to expand our understanding of several content analysis approaches for analyzing ALN discussions. The findings provide useful empirical data for those attempting to maximize the learning potential of case study discussions in both FTF and ALN modes. A summary of major findings follows:

- Teacher presence was much greater in FTF discussions.
- Virtually all student utterances in FTF were responses to the teacher. In ALN discussions nearly two-thirds of student utterances were responses to other students.
- FTF discussions used more informal language and active voice.
- Student utterances were longer in ALN, while teacher utterances were shorter.
- The major interactive operation in ALN was continuing a thread, while in FTF it was asking a question (usually by the teacher).

- There was a greater incidence of direct instruction in the FTF discussion. This was true of confirming understanding (a feedback function), presenting content, and focusing the discussion.
- There was a greater incidence of drawing in participants, especially through cold calling on students in the FTF discussions.
- More than half of the instances of Teaching Process in the ALN discussion were performed by students rather than the teacher.
- In the average FTF discussion there were nearly twice as many instances of Cognitive Process as in the average ALN discussion.
- In FTF discussions, the instances of Cognitive Process were predominantly in the lower order exploration category.
- In contrast, the ALN discussions contained more high-level Cognitive Process instances, both in absolute and relative terms.
- Student-to-student interactions contain a greater proportion of high-level cognitive indicators.

Simmons College, Pottruck Technology Resource Center. (n.d.). *Facilitating great discussions: online and face-to-face*. Retrieved November 17, 2006, from http://my.simmons.edu/services/technology/ptrc/pdf/discussion_jobaid.pdf

This is a nice job aid to use in planning discussions. The four stages of online group development are described. It also gives an explanation of the differences between online and face-to-face discussions. A list of suggested resources to learn more is provided.

Problem-Based/Case-Based Learning

Gerdes, D. (2004). *Introduction to PBL*. Retrieved November 20, 2006 from Illinois Mathematics and Science Academy, Department of Problem-Based Network @ IMSA Web Site: <http://www2.imsa.edu/programs/pbln/tutorials/intro>

This tutorial defines problem-based learning, describes and gives examples of ill-structured problems in PBL, discusses teachers' and students' roles, delineates the benefits, clarifies the parameters, and presents a sample organizational structure for PBL in three courses: Science, Society, and the Future; Biochemistry; and, American Studies. A nice introduction to PBL.

Good Practice Case-Based Learning. Retrieved November 20, 2006 from Queen's University, Centre for Teaching and Learning Web Site: <http://www.queensu.ca/ctl/goodpractice/case/index.html>

Case-based learning is described and its rationale for use is explained. The section on case-based teaching strategies is especially helpful with descriptions of case formats, managing a case, designing case questions, and effectively managing case discussion and debate.

Houghton Mifflin, Online Study Center, Business Resources for Students (n.d.). *Case studies*.

Retrieved November 20, 2006 from

<http://college.hmco.com/business/resources/casestudies/students/index.html>

This is a great resource for business students to accompany a case study assignment. The site includes tools to learn how to effectively analyze and write a case study. It provides a checklist and explanation of areas to consider, suggested research tools, and tips on financial analysis.

Kilbane, C., Theroux, J., Sulej, J., Bisson, B., Hay, D., and Boyer, D. (Winter 2004). The real-time case method: description and analysis of the first implementation. *Innovative Higher Education*, 29(2), 121-135.

This article describes the first implementation of the “Real-time Case Method” (RTCM) – a new instructional model for business education that makes use of various technologies to create a new type of case study. Two important characteristics distinguish real-time cases: 1) real-time interactivity with the case company and 2) the extensive quantity and depth of case content that describe real-time events occurring in the case company over the duration of the semester. Analysis suggests RTCM was successfully implemented at both the graduate and undergraduate levels, in traditional face-to-face as well as online learning environments, with students of varying levels of experience and backgrounds, and by instructors with differing professional backgrounds and teaching styles. The instructors were highly satisfied with the method. They observed that students were engaged by RTCM, that it motivated them to work harder and longer on assignments, and that it allowed them to have experiences that were qualitatively different from those available from textbooks and traditional cases.

Kunselman, Julie C., and Johnson, Kathrine A. (2004). Using the case study method to facilitate learning. *College Teaching*, 52(3), 87-92.

The primary purpose of this research study was to determine the effectiveness of the case study method in facilitating learning, critical thinking, and understanding among students in social science courses, and specifically criminal justice courses. The use of the case study method facilitated the accumulation of knowledge that allowed students to progress from conceptualization to application, and created an active learning atmosphere. Instructors also benefited from rethinking their approach to teaching. The students written comments and scaled responses suggested that learning was enhanced using the case study method.

Maricopa Community Colleges, Maricopa Center for Learning and Instruction. (5/16/01). *Problem based learning*. Retrieved November 17, 2006 from

<http://hakatai.mcli.dist.maricopa.edu/pbl/index.html>

This website provides an overview on problem-based learning, and a example of how faculty got involved in incorporating PBL into their math classes with “UBUYACAR”. Their student manual is included, along with other materials developed for PBL at the

Maricopa Community Colleges. They have a searchable archive with 43 web and 16 print resources. However, they are no longer adding to this resource.

McKeachie, Wilbert J. & Svincki, Marilla. (2006). Problem-based learning: teaching with cases, simulations, and games. In *McKeachie's teaching tips: Strategies, research, and theory for college and university teachers* (pp. 221-228). Boston, MA: Houghton Mifflin Company.

Three variants of problem-based learning (PBL) are described in this chapter – guided design, the case method, and simulations. It is based upon the assumption that if a realistic, relevant problem is presented before study, students will identify needed information and be motivated to learn it. The authors feel that while PBL may sometimes result in less acquisition of knowledge, it is superior in retention, application, and motivational outcomes. If problem-based learning is a new teaching strategy for you, then this chapter is a nice introduction with an annotated supplementary reading list to learn more. If you are looking for actual strategies to incorporate problem-based learning into your course, then this is not the resource you need.

Montgomery, D., Bull, K., and Kimball, S. (1/09/05). *Case and problem-based learning processes*. Retrieved October 9, 2006 from Oklahoma State University Web site: <http://home.okstate.edu/homepages.nsf/toc/EDUC5910iep19>

This online instructional module is the equivalent of 32 printed pages of text. Its objectives are to: define problem based learning; provide rationales for the use of problem based learning; describe processes for developing and using problem based learning; explain problem based learning as a problem solving process; describe communities in relation to problem solving processes; describe models of problem solving; describe basic mechanisms for problem solving; differentiate between experts and novices in problem solving; identify issues in problem solving related to context, strategies, and questions; explain how to deal with naïve problem solving; explain general problem based learning; and to describe the use of cases in problem based learning. I found the list of questions for use in problem based and case learning to be helpful. Links to case building software and site with cases and/or lists of cases are shared.

The Pennsylvania State University, Schreyer Institute for Teaching Excellence. (2004). *Case Evaluation Rubrics*. Retrieved November 20, 2006 from <http://www.schreyerinstitute.psu.edu/pdf/CaseEvalRubric.pdf>

This website provides a useful form for evaluating the quality and applicability of teaching cases. Included are sections to assess Effectiveness of the Case, Appropriateness of the Content, Attentive Focus of the Content, Authenticity of the Problem Scenario, Unity of Organization, Coherence of Organization, and Clarity of Presentation.

The Pennsylvania State University, Schreyer Institute for Teaching Excellence. (2004).

Guidelines for Case Writing. Retrieved November 20, 2006 from <http://www.schreyerinstitute.psu.edu/pdf/CaseWritingGuidelines.pdf>

This website takes a user on the writing process of writing a case study, asking questions that help to direct you through the process.

The Pennsylvania State University, Teaching and Learning with Technology. (3/11/2006). *Using cases in teaching*. Retrieved November 17, 2006, from <http://tlt.its.psu.edu/suggestions/cases/index.html>

This comprehensive website was designed specifically for instructors interested in incorporating case assignments into their courses. Site contents include definitions, examples by disciplines, case types, tips for structuring and writing out a case assignment, teaching tips, ANGEL tips, links to related resources on problem-based and inquiry-based learning and teams, links to case repositories, and tips for students including problem-solving steps.

Rhem, J. (December 1998). Problem-based learning: an introduction. *The National Teaching & Learning Forum*, 8(1). Retrieved November 20, 2006 from http://www.ntlf.com/html/pi/9812/pbl_1.htm

This article explains how PBL orients students towards meaning-making over fact-collecting. The historical origins of PBL are shared, as well as the roles and procedures for implementation. A nicely annotated resource list is provided. This quote was meaningful, “What students learn about collaboration, different approaches to a problem, cooperation and responsibility, makes their learning in PBL courses multisided, richer, and, in that way, deeper.”

University of Buffalo. (11/10/05). National Center for Case Study Teaching in Science, Retrieved November 20, 2006 from <http://ublib.buffalo.edu/libraries/projects/cases/case.html>

The purpose of this web site is to promote the development and dissemination of “innovative materials and sound educational practices for case teaching in the sciences.” Here you will find a case collection for teaching anatomy and physiology, anthropology, astronomy, atmospheric science/meteorology, chemistry/biochemistry, computer science, ecology/environment, food science, geography, geology, mathematics, medicine, microbiology, nutrition, physics, plant biology, psychology, and more. Any reproductions require permission. Guidelines are provided for submitting cases to this collection. This site also offers something unique – a collection of possible sources of case ideas.

University of Delaware. (2/16/06). *Problem-based learning*. Retrieved November 20, 2006 from <http://www.udel.edu/pbl/>

From this web site, you can link to University of Delaware articles and books on PBL, and link to sample PBL problems from biology, chemistry/biochemistry, criminal justice,

and physics. There are also examples of sample syllabi and problems from various disciplines utilizing PBL. An interesting part to this website is the provision of video vignettes of “Groups in Action” that can be used to trigger discussions on bringing out the best in the PBL groups.

University of Medicine & Dentistry of New Jersey, Center for Teaching Excellence. (2006). *Case-based learning*. Retrieved November 20, 2006 from http://cte.umdnj.edu/active_learning/active_case.cfm

This is a nice resource web site with links to introductions to case-based learning, methods and tools for teaching with cases, and case repositories and examples (most are discipline-specific).

Cooperative/Team-Based Learning

Clinebell, Sharon & Stecher, Mary. (June 2003). Teaching teams to be teams: An exercise using the Myers-Briggs Type Indicator and the Five-Factor Personality Traits. *Journal of Management Education*, 27(3), 362-383.

This article addresses team development issues by reporting on the results of a student-team intervention that used team members’ personality assessments on the Myers-Briggs Type Indicator and the Five-Factor Model to enhance the team development process and engender an appreciation of the effect of different personalities on team functioning and performance. Its purpose was to educate the students about the effects of individual differences among team members on team effectiveness, and to help teach teams to be teams. The class exercise is described in which team member personality assessment is used to facilitate interaction, role development, and conflict resolution in student teams. The majority of participants reported that knowledge of team member’s personality types was helpful in understanding team member behavior and was used in managing team dynamics. Those teams that used extreme division of labor were more likely to respond that the personality-based intervention was not helpful in managing team dynamics.

Fortuin, Joanne, and H. Wendy. (n.d.). Team Work, *On Course Newsletter*. Retrieved November 21, 2006 from <http://www.oncourseworkshop.com/Interdependence001.htm>

This newsletter article presents a team case study with an activity to evaluate the team members’ performance. The value is the “Elements of Team Work Checklist” that could be incorporated into team evaluation form.

The Foundation Coalition. (2001). *Student teams in engineering*. Retrieved November 19, 2006 from http://www.foundationcoalition.org/home/keycomponents/student_teams.html

Resources are provided, in a series of 4-10 page length mini-documents, to help faculty increase the effectiveness of student teams in their engineering courses. Sample issues include forming student teams, effective decision making in teams, peer assessment, constructing and administering team tests, developing learning activities for teams, and

team process check. The Foundation Coalition is one of eight engineering coalitions funded by the National Science Foundation.

Gross, Barbara Taylor. (1993), *Collaborative Learning: Group Work and Study Teams. Tools for Teaching*. San Francisco, CA: Jossey-Bass. Retrieved November 19, 2006 from <http://teaching.berkeley.edu/bgd/collaborative.html>

From the hard copy book *Tools for Teaching*, this site begins by distinguishing between informal learning groups, formal learning groups, and study teams. The strategies shared on this site are geared for formal learning groups and study teams. Sections include general strategies, designing group work, organizing learning groups, evaluating group work, dealing with faculty and student concerns about group work, and setting up study teams. The pre-planning suggestions on this site are its strength.

Harvard University, Derek Bok Center. (2002-2006). *Working in Groups*. Retrieved November 20, 2006 from <http://www.bokcenter.harvard.edu/docs/wigstudents1.html>

This site provides a one-page sheet for faculty on assigning group projects, ways to organize groups, and what to do when the process goes awry. However, the site's gem is a student guide consisting of six separate one-page handouts. "Getting Started" includes information on organizing the work and understanding the group process. "Include Everyone and Their Ideas" offers suggestions for encouraging ideas and gives examples of what to say. "Group Leadership" discusses the leader's responsibilities, group members' concerns about participation, and characteristics of effective teams. "Focusing on a Direction" offers alternatives for a process for selecting ideas with examples of what to say given. "How People Function in Groups" shares roles that contribute to the work and the atmosphere. Finally, "Some Common Problems (And Some Solutions)" work through floundering, domination, digressions, getting stuck, rush to work, feuds, and ignoring or ridiculing with examples of what to say for each.

Johnson, D.W., Johnson, R. T., and Smith, K. A. (1991). *Active learning: cooperation in the college classroom*. Edina, MN: Interactive Book Co.

This book is one of the "go-to" books in cooperative learning. I love the quote that says, "Becoming a good teacher requires at least one life time of continuous effort to improve." This book is to be used by faculty to incorporate cooperative learning to increase student achievement, to create positive relationships among students, and to promote healthy student psychological adjustment to college. Cooperative learning is about structuring learning situations so students can work together to achieve shared goals. The book is full of lesson plans, worksheets, examples, how-to's, and useful templates. Chapter 1 sets the background by introducing the old and new paradigms of college teaching, and then introducing cooperative learning – its history, basic elements, types of cooperative learning groups, and using cooperative learning groups in the classroom. Chapter 2 explains the research on cooperative learning through social interdependence, interaction patterns, interpersonal relationships, the importance of peer relationships, and the learning outcomes promoted by cooperative learning. Chapter 3 covers the basic elements

of cooperative learning: positive interdependence, face to face promotive interactive, individual accountability/personal responsibility, interpersonal and small group skills, and group processing. Chapter 4 is on formal cooperative group learning and describes the instructor's role, instructional objectives, preinstructional decisions, structuring the group task, monitoring and intervening, and evaluating. Some formal cooperative group learning structures are described including the jigsaw procedure, peer editing, drill-review pairs, checking homework, class presentations, and lab groups. Remaining chapter topics include informal cooperative learning, cooperative base groups, teaching with academic controversy, and faculty working cooperatively with colleagues.

McKeachie, Wilbert J. & Svincki, Marilla. (2006). Active learning: Cooperative, collaborative, and peer learning. In *McKeachie's teaching tips: Strategies, research, and theory for college and university teachers* (pp. 213-219). Boston, MA: Houghton Mifflin Company.

This chapter is about students teaching other students – learning together. Included is research-based information on the effectiveness of peer learning and tips to initiate cooperative learning methods into your course. The learning cell or student dyad, syndicate, and jigsaw methods of peer learning are described.

Meeuwsen, Harry J., and Pederson, Rockie. (2006). Group Cohesion in Team-Based Learning. *MountainRise*, 3(1). Retrieved November 21, 2006 from <http://facctr.wcu.edu/mountainrise/archive/vol3no1/html/meeuwsen.htm>

This study, based on situated learning theory, examined group cohesion within permanent student teams. The purpose was to examine the source of individual attraction of learning and working within these permanent teams. The research questions were: 1) Was the attraction of belonging to a group related to completing class-related tasks and assignments or to the social bonds and friendships that developed during the semester? 2) Was group cohesion stable or did it change as students worked together over the course of a semester? A modified Group Environment Questionnaire was administered to determine the locus of group cohesion which indicated that the locus of group cohesion was largely based on the benefits of working together to complete assigned tasks and much less on the social bonds that develop. The data also indicated that future research is needed to examine how social interactions change over a semester and their impact on student performance.

Michaelsen, Larry K., Fink, L. Dee, and Knight, Arletta. (1997). Designing effective group activities: lessons for classroom teaching and faculty development [Electronic version]. *To Improve the Academy*, 16, pp. 373-398, Stillwater, OK: New Forums Press and the Professional and Organizational Development (POD) Network in Higher Education. Retrieved November 19, 2006 from <http://www.ou.edu/idp/tips/ideas/groupact.html>

This article provides guidance for designing effective group assignments and activities for classes and workshops. The forces that foster social loafing are examined and four key variables are identified. The impact of various types of activities and assignments on learning and group cohesiveness are discussed. A checklist is provided to evaluate the

effectiveness of group assignments. The authors convey four strong messages: 1) group activities and assignments can be a highly effective tool for developing students' mastery of basic conceptual material and their higher-level thinking and problem solving skills; 2) the vast majority of students' dysfunctional behaviors and complaints are the result of bad assignments not bad learners; 3) the key to designing effective group assignments is to maximize the extent to which the learning tasks promote the development of cohesive learning groups; 4) the single best way to gauge the effectiveness of group assignments is to observe the level of energy that is present when the results of the small group discussions are reported to the class as a whole. If you only read on article, read this one!

The Pennsylvania State University, Information Technology Services. *Developing and implementing effective team projects*. Retrieved November 20, 2006 from <https://cms.psu.edu/AngelUploads/Content/HELP/assoc/052D211C04IW026/Documentation/EffectiveTeamProjects.html>

This handbook identifies the common problems encountered by instructors and students when using team projects in the classroom. It helps faculty prepare for course team projects by explaining the instructor's role and working through several preinstructional decisions: specify project objectives, determine team size and diversity, assignment or self-selection of students to teams, classroom arrangement, planning the instructional materials, student role assignments, and structuring the team project. Information is also given on monitoring and intervening during the team project. Team tools for students are shared, as well as sample team evaluation tools. The integration of the team project with Penn State's course management system, ANGEL, is explained. A resource list is also provided.

The Pennsylvania State University, Teaching and Learning with Technology. (6/29/06). *Building blocks for teams*. Retrieved November 20, 2006 from <http://tlt.its.psu.edu/suggestions/teams/index.html>

This website provides a lot of information about team management for both students and faculty. It is organized into these sections: "About Teams" explains the properties of team dynamics and how they can enhance learning; "Managing Teams" contains suggestions for helping student work through team issues and tips for grouping students into teams and grading team work; "For Students" is a stand-alone guide written specifically for students and explains how teams can function.

Stein, Ruth Federman & Hurd, Sandra. (2000). *Using student teams in the classroom: a faculty guide*. Bolton, Massachusetts: Anker Publishing Company.

This book supplies useful background information on the theories behind group learning and a variety of assignment templates for implementing teamwork. It is broken down into three parts. Part I provides a review of the theoretical research underlying teamwork and how teamwork contributes to student retention. Part II gets into the process of student teams with chapters including "Guidelines for Student Teams," "Group Exercises" for

team-building and "Team Evaluation." Part III provides discipline-specific templates of teamwork activities.

University of Oklahoma, Instructional Development Program. (8/16/06). *Team-Based Learning: The Power of Teams for Powerful Learning*. Retrieved November 19, 2006 from <http://www.ou.edu/idp/teamlearning/index.htm>

This website has a collection of materials to help one get started using Team-Based Learning including an essay that takes you through the entire teaching strategy process, an essay that describes the creation of effective team assignments, a document describing to methods for calculating peer evaluation scores, and a collection of helpful forms for attendance, peer evaluation, and assessment. A unique feature of this website is the library of video segments, each approximately 4-6 minutes in length, of Team-Based Learning in the classroom of Larry Michaelsen that illustrate various aspects of the process including introducing students to Team-Based Learning, forming groups, giving a practice readiness assessment test (R.A.T.), running application exercises, and assessing the course and team effectiveness at mid-term. Another nice feature of this website is the provision of course descriptions that have successfully used Team-Based Learning.