

Faculty Learning Communities as Catalysts for Implementing Successful Small-group Learning

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Last year, as I attended a national conference of predominantly faculty developers, I was reminded how it feels to be in a poorly run small-group-learning activity. Ours was a group of five all seated in one row along one side of a table. The task was to categorize 30 items listed on one sheet of paper. The paper was given to the person farthest from me at the opposite end of our group. Initially, I attempted to bend forward in order to participate, but I still couldn't read the paper; in addition, one individual quickly dominated our group by barking out her category selections in a competitive manner to beat the rest of us. After a few minutes, I sat back in my chair—smoldering just a bit—until the group task was completed. I thought it puzzling that the session *facilitator* (and likely my group mates) was the director of a university center for teaching and learning, yet she gave no guidelines for accomplishing the small-group task, such as encouraging all groups to sit in a circle and placing the paper in the center, including everyone in the discussion, and equalizing talking and listening.

How could this scenario occur? Myself a founding director of a teaching and learning center, I've come to realize that one-shot workshops on topics as complex as teaching and learning rarely produce faculty change; the workshop continues to be the standard program offering of many teaching and learning centers; and, as a result, even some center directors remain novices when it comes to using small-group learning. This is even more surprising when one considers that almost 30 years ago Joyce and Showers alerted the K-12 community to this problem. In their study of the transfer of training from staff development sessions, they found that only a small percentage of an innovation was transferred from a workshop setting to classroom practice without the presence of these components: (a) study of the theoretical basis of a teaching method. (b) demonstrations by persons who are relatively expert in the teaching method. (c) practice and feedback in protected conditions. and (d) coaching one another as individuals work the new teaching method into their repertoire. providing companionship. helping one another to learn appropriate responses, and figuring out optimal uses of the teaching method (Joyce & Showers, 1983).

Over the past four years, many of our 23 teaching and learning centers in the California State University (CSU) system have created faculty learning communities (FLCs) to promote changes

in faculty teaching practices that are not typically attainable from even the best one-shot workshop. I posit here that the components called for by Joyce and Showers occur within a well-run FLC.

In status reports on the use of small-group learning, experts in the field continue to raise concerns that although this powerful intervention is generally well accepted, there are still obstacles to its wider use among faculty (Cooper, Ball, & Robinson, 2008, p. 7). And although both Karl Smith and Barbara Millis (p. 4) call for faculty to engage in conversations and collaborations with like-minded colleagues about their use of group work, they fall short of recommending FLCs. I submit that small-group learning for college students parallels small-group FLC learning for faculty and is perhaps the missing faculty development link for overcoming obstacles to faculty change.

Moreover, based on our CSU experiences with FLCs, this chapter encourages college leaders who are interested in developing small-group-learning expertise among faculty to use FLCs as the vehicle to develop and internalize the requisite skills to accomplish this. This chapter further presents a concise *Faculty Developers' Guide* for FLC implementation in order to provide initial direction for establishing small-group learning FLCs, addressing the following key issues: the research base for using small-group learning with college students and for using small-group FLC learning with college faculty; suggestions for FLC structure, incentives, curriculum, activities, assessments, deliverables, and facilitation; small-group learning structures and teaching tips; and resources on both FLCs and small-group learning.

FLCs and the Miami University Projects

The concept FLCs as an approach to faculty development was developed by Milt Cox at Miami University in 1979. Initially created to develop the teaching abilities of junior faculty through a Lilly Endowment grant, national interest in FLCs was generated in 2001-2004 through the support from the Fund for the Improvement of Postsecondary Education (FIPSE). In the 2003-2004 academic year, Richlin & Essington identified 132 institutions hosting 308 FLCs across the United States and Canada (Beach & Cox, 2009, p. 7).

Typically, FLCs consist of a cross-disciplinary faculty group of 8-14 members, engaged in a yearlong curriculum focused on exploring a specific issue. There are two types of FLCs, cohort-based and topic-based. Cohort-based groups share the same cohort attributes, such as all being junior faculty, senior faculty, or department chairs. These FLCs collaboratively study the unique developmental needs of their cohort (Cox, 2001, p. 71-72). However, for the purpose of

this chapter, our focus is the topic-based FLCs, and the topic theme is *implementing successful small-group learning in our college classrooms*.

A recent review of the impact of FLCs, published in the first volume and issue of the *Learning Communities Journal*, reported the outcomes of a large-scale survey of FLC participants, including facilities' perceived changes in their teaching and their students' learning as a result of their FLC participation. In summary, with responses from 395 faculty at six universities, 79% reported that student learning was improved, and 73% reported changes in their beliefs and attitudes about teaching (Beach & Cox, 2009).

What might account for the success of FLCs over traditional workshops includes the components of theory, modeling, practice and feedback stressed by Joyce and Showers, as well the community/social structure of FLCs. Beach and Cox (2009) describe the benefits of FLCs when compared with other forms for faculty development (e.g., workshops, brown bags, and teaching circles) as FLCs being more (a) structured, (b) intensive, (c) focused on completing the deliverables, (d) focused on the social aspects of building community, (e) focused on the scholarship of teaching and learning, and (f) focused on the team aspect while developing individual projects. In addition, the process of working on individual projects deeply engages each community member in efforts that may include (a) trying out a new pedagogy and assessing the student learning that results from its use; (b) revising a course and assessing the results; (c) creating a new course, teaching it, and assessing the results; or (d) action research in a course, followed by presentations of results at conferences. It should come as no surprise to the reader that, much as small-group learning with students builds community and positive social learning gains, so do FLCs with faculty.

To further support FLCs as an effective faculty-development practice for implementing small-group learning, the spring 2005 FLC FIPSE grant follow-up survey conducted by the external evaluator found that the FLC themes that faculty perceived as resulting in the greatest changes in student learning involved active, student-centered, and group learning (Beach and Cox, 2009, p. 22). Where 4.0 indicated *substantial amount* and 3.0 indicated *moderate amount* in changed student learning, the data revealed the following:

<i>Teaching and Learning Approach</i>	<i>Mean</i>	<i>SD</i>	<i>Total</i>
Active learning	4.07	1.06	244
Student-centered learning	3.99	1.05	236
Cooperative or collaborative learning	3.84	1.13	236

The California State University Projects

In fall 2006, Sonoma State, one of 23 CSU campuses, was working on a U. S. Department of Education grant to implement Universal Design for Learning at Sonoma and six other CSU campuses, in order to increase access for college students with disabilities. At approximately the same time, the CSU was also awarded a FIPSE grant to develop digital-case stories on various pedagogical themes to be used in faculty development. An unexpected nexus occurred between the two grants when faculty involved in the FIPSE grant decided to use Universal Design for Learning as their digital-case pedagogical theme. Moreover, after a two-day FIPSE-group meeting regarding the creation of Universal Design for Learning digital cases, participants recognized that this theme was so complex that its implementation would require in-depth engagement over time; hence, the CSU Institute for Teaching and Learning suggested that each campus form FLCs and offered to fund stipends of \$500 per person, January to June, 2007.

Because I was personally involved in the early stages of the FIPSE digital-case project as the faculty development lead, I previewed the project at the Southern California Faculty Developers' June 2007 meeting at CSU Long Beach, asking the eight faculty developers present what information they would deem essential for a *Faculty Developers' Guide*. The following four components were unanimously suggested by these center directors, representing two University of California campuses, three CSUs, and three private colleges:

1. The literature base for the pedagogical theme, emphasizing its impact on student learning.
2. A condensed summary of the basic vocabulary, concepts, and information associated with the pedagogical theme.
3. Suggested learning outcomes, learning activities, and assessments.
4. An online commons for faculty to discuss their use of the pedagogical theme.

The first three components were subsequently incorporated into the *Faculty Developers' Workshop Guide* for the digital case in production, and the fourth item, an online commons, was developed for the entire FIPSE project. Because of the positive feedback from the FIPSE grant's *Workshop Guide*, the first three components are either directly included in the following *Faculty Developers' FLC Guide* or are listed in the *References and Resources* end-section for further study. However, because the digital cases were conceived as a faculty development *workshop* tool, as opposed to an *FLC* tool, where bi-weekly face-to-face gatherings are a key component, it is less essential to develop an online commons during the period of time in which an FLC is actively meeting.

Faculty Developers' FLC Guide on Using Small-group Learning

Pedagogical Theme

Successful Use of Small-group Learning in College Classrooms

Literature Base

The use of *small-group learning*, a term synonymous with *cooperative learning* for the purposes of this *FLC Guide*, has a strong research base associating its use with student achievement and success. Among the numerous studies, three offer significant insights.

- Walberg (1984) studied the effect of selected alterable variables on student achievement. The effect size for cooperative learning was .80 with a percentile equivalent of 79. This indicates that under cooperative learning instruction, the average student is above 79% of the students under the control teaching conditions.
- Many of the *Seven Principles for Good Practice in Undergraduate Education* (Chickering & Gamson, 1987) are fulfilled when using small-group learning, specifically: student-faculty contact, cooperation among students, active learning, prompt feedback, and respect for diverse talents and ways of learning.
- Astin (1993) conducted a comprehensive longitudinal study of the impact of attending college on undergraduate students, looking at factors that determine influences on students' academic achievement, personal development, and satisfaction with the college. He found that student-to-faculty and student-to-student interaction had the greatest impact on general education outcomes. For the commuter students on our urban campuses, it is likely that for many the only student-to-student interactions they experience are in small-group learning classroom settings, as they hurriedly race from work, to school, to class, to home.

Vocabulary, Concepts, and Information¹

- *Small-group learning*, also called *cooperative learning*, is a form of *inter-active learning* among two or more students to complete a common task. Many teachers prefer to

¹ This summary of small-group learning represents my interpretation of the dozens of articles and books I have read over the last 25 years, as well as my participation in dozens of workshops, on occasion as a participant, but more frequently as the workshop leader. However, if I were to cite one person whose resources most shaped my understanding, it would be Spencer Kagan's workshops and books, especially the book *Cooperative Learning*.

design four-person groups, seated in a circle facing one another, where all group members can focus on both the task and each another. Odd-numbered groups should be monitored for inclusion, as they increase the likelihood of producing “odd man out” when individuals lean towards forming pairs. For teachers who are more comfortable with limited student interaction, pair-work is suggested, and it can be extended by having pairs share their results with another pair seated in close proximity.

- There are many *small-group structures*, each defined by a set of student actions and interactions that are designed to promote small-group learning. These structures fall on a continuum from *simple structures* (e.g., *Think-Pair-Share*) to *complex structures* (e.g., *Jigsaw*) in their degree of complexity of steps, social interaction, classroom organization, student responsibility, and time to complete.
- The *formation of student groups* also falls on a continuum from student selected, to random, to teacher-designed. Teacher-designed groups are typically formed with the intent of establishing within-group heterogeneity and between-groups talent-balance; however, with cause, homogeneous grouping by any desired attribute may be prescribed (e.g., grouping less-chatty students together so they have greater opportunity to be heard). Random groups can be accomplished by having students count off. To do this easily, divide the *size of class* by the *size of the group* desired, and ask students to count off by the quotient (e.g., in a class of 40, where groups of 4 are desired, divide 40 by 4, to yield 10, and then ask students to count off by 10, forming 10 groups of 4), or distribute playing cards and ask students to find their *like number* (e.g., the 4 suits for each number equal a group of 4), or use another creative grouping method drawn from course content (e.g., excerpts from Shakespearian plays, where students locate group mates who have excerpts from the same play).
- Key elements of successful small-group learning include *positive interdependence*, *individual accountability*, and attention to *social skills*.
- *Positive interdependence* is essential because small-group learning stresses cooperation among group mates as compared with other situations that are designed to foster student competition with one another (e.g., running a 5K race to beat the other runners) or with oneself (e.g., running a 5K race to beat your personal best time). Positive interdependence can be established by designing a task so that each group member’s success enhances the success of the entire group—captured in the image of “We all swim, or sink, together.” Positive interdependence is often built into a *small-group structure*. For example, in the *Numbered-Heads Together* structure, small groups are

typically asked a higher-order-thought question that has a convergent answer and given sufficient time to discuss it. This is followed by one person from the group being randomly called upon to provide the group's answer. This practice encourages students both *to share* information they possess and *to listen* to the information provided by others, given the 25% chance that they will be randomly selected to report for their group. This motivation to share and listen for the good of the group is called positive interdependence.

- *Individual accountability* refers to *each* learner attaining the course learning outcomes. The opposite of individual accountability occurs when one student does the majority of the work, while the others *hitch-hike*, contributing little and showing no evidence of learning, but *all* receive the same group grade. This scenario likely explains why some students wince when a small-group project is announced; however, unfair group-grading practices can easily be prevented through projects designed with individual accountability. It may be useful to think of the wording: *small-group* learning and *cooperative* learning are both modifiers for how students are *learning*. But when the time comes for final *testing*, each individual student must demonstrate his or her learning. This can be accomplished in a variety of ways in classrooms where small-group learning occurs. Three examples include:
 1. Limit small-group learning to the use of simple structures that are not graded.
 2. Use complex small-group structures, followed by an individual assessment activity where each student is asked to integrate the contributions of all group members into an essay, outline, graphic, or on an exam.
 3. Assign group projects that require a substantial amount of research, integration, planning, and a culminating class presentation. Consider implementing some of the following tactics: help orchestrate virtual meetings for working-commuter students to connect outside of class (e.g., wiki, blog, Google.docs, and teleconference); ask students to keep track of the group roles each fulfills and a time-spent-on-project record; periodically during class, ask groups to give each other feedback on individual contributions to both the task and social well-being of the group (this can be done anonymously); use low-stakes grading on the project (pass/fail), but give letter grades for individual reports submitted by each group member on his or her individual sub-topics for the project.
- Small group *social skills* encompass the myriad human behaviors that can make or break a group's effort to work together in order to solve a learning problem. Social skills

include talking, listening, asking and giving help, encouraging others, gently querying reticent group mates, holding one's tongue on occasion, acknowledging the good ideas of others, recapping messages in order to affirm clarity, staying on task, summarizing where the group has been and where it still needs to go, and so on. It may be assumed that most college-aged students should already know how to do all these skills, but experience shows otherwise. Three methods of addressing social skills include:

1. **Embed social-skill suggestions in each structure as you teach it.**

When explaining the steps for a small-group structure, embed some social steps as well. These may include asking each group of four to form a square (either by moving their chairs, or by two students moving to the other side of a table, or by two students turning around in their theatre-style seats), equalize talking and other forms of participation, include everyone's ideas, and ask for and give help as needed. And then it is wise for the teacher to circulate among the students in order to capture a few good examples of groups behaving nicely in order to report back to the total class without attribution to any one group; this way, many groups will surmise that you caught *them* in these good social acts and appreciate your nod.

2. **Role-play appropriate and inappropriate social skills.**

Briefly role-play examples of good listening behavior and perhaps a humorous inappropriate example, asking a willing student to tell you the plot of the last movie he saw while you playfully yawn and look inattentively at your watch.

3. **Debrief social dynamics at the middle or end of group-project sessions (or both), in small-groups or with the whole class (or both), and publicly or anonymously (or both).**

Briefly check the functioning of groups in order to air valid grievances and provide suggestions before problems fester. A few simple questions often suffice: What are we doing well as a group? What are we doing as a group that may be hindering our progress on the tasks at hand? What *group rules* should we implement in order to improve our group's functioning?

Now, to offer a word of comfort to the teacher who laments those small-group discussions that are too social and roam off-topic: students who are *not* working in small groups, but appear to be quietly *listening* to your lecture, may in fact be off-topic as they *think* about the latest pop-culture topic and daydream right through your eloquent

prose. The difference in a lecture situation is that you have scant *physical* evidence of students' lack of engagement until the exam. Bottom line: humans go off-topic when interesting thoughts enter their brain or too much time is devoted to a task, causing attention to wane. Hence, it is probably wise to hit the *repeat* and *recap* buttons periodically when using any pedagogy.

And lastly, social skills are a topic of concern to many, at work, at play, and on the highway. If you have ever muttered under your breath that *so-and-so clearly has never learned how to act civilly*, acknowledge that this same so-and-so may be in your college classroom, and your efforts to promote student civility will allow other students to learn in a prosocial environment.

FLC Organization and the Call for Faculty Participation

Although FLCs typically last a year, a small-group learning FLC can produce results in six months because this theme involves modifications of instructional delivery, learning activities, and formative assessments (i.e., processes), and many faculty, when they begin using small-group learning, do so without altering their curriculum, final student products, or syllabus.

The *Call for Participation* inviting faculty to join an FLC on small-group learning should be specific in terms of meeting dates and times, responsibilities, and deliverables in order to avoid scheduling conflicts and misunderstandings later, but loose enough to allow for members' input and subsequent buy-in to this community process. The *Call* might include the following:

1. Timeline

This should include the exact dates and times of all FLC gatherings so faculty can determine if their schedule fits with the FLC's and mark on their calendars the FLC gatherings far in advance.

2. Skeletal FLC Agenda Sample

Up to eight faculty will meet face-to-face with the FLC facilitator for two hours on six separate occasions from January to June, culminating in a four-hour session where each FLC member will share his/her results with the community in a 30-minute presentation, followed by a provost-hosted luncheon at the Faculty Development Center.

#1: Introductions and sharing of small-group learning resources for at-home study.

#2: Guest speaker(s); discuss resources

#3: Plan for projects; classroom implementation

#4: Share/discuss individual progress

- #5: Share/discuss individual progress
- #6: Share/discuss individual progress
- #7: Project presentations (30-minute final reports by all 8 community members)

3. Application and Selection Suggestions

Faculty might be asked to write a one-page essay describing their instructional methods, problems or concerns they have about student learning, and why they would like to join this FLC. A simple check-off and sign sheet on the *Application to Participate* should determine that participants are teaching during the January to June timeframe of the FLC, plan to contribute to the community, are open to new ideas, can participate during the dates of the project, and have discussed with their department chair the FLC deliverable of sharing results with their academic department.

4. Small-group Learning Project—Sample Deliverables

In addition to the learning assignments/activities and classroom practice agreed upon by the FLC members, each FLC member:

- a. Gives a 30-minute final presentation to the FLC, sharing classroom findings.
- b. Shares findings at a departmental meeting.
- c. Submits a 500 to 750-word article summarizing findings to the FLC facilitator, where select articles will appear in the *Teaching and Learning* newsletter to be distributed campus-wide.

5. Incentives

Although many faculty would likely join an FLC for the intrinsic rewards, and others would join only if they were given 3-units released time, we have taken the middle road and offered a \$500 professional development stipend to each faculty member upon his or her completion of the deliverables and a final project.

FLC Faculty Learning Outcomes

Throughout the duration of this FLC (6 months suggested), faculty will be supported as they:

1. Design small-groups (2-4 students) to complete classroom learning tasks together using simple and complex structures.
2. Incorporate key elements of successful small-group work, including
 - a. Positive interdependence
 - b. Individual accountability
 - c. Social skills (e.g., inclusion, equal participation, and mutual support).

3. Assess the efficacy of small-group learning in one's classroom, using simple classroom assessment techniques, such as *Minute Papers*, to determine how students are learning in small group (Angelo & Cross, 1993, pp. 148-153).
4. Revise to improve the use of small-group learning in one's classroom.
5. Share interim results with the FLC at bi-weekly gatherings.
6. Deliver individual project final results in a 30-minute presentation to the FLC.
7. Prepare a final written report (500-750 words) to submit to the FLC facilitator.
8. Make presentations to local, regional, and national audiences.

FLC Curriculum, Learning Activities, and Assessments

In addition to the *Vocabulary, Concepts, and Information* that appear in this *Guide*, the small-group learning FLC curriculum includes a variety of small-group learning structures. Below is a starter toolbox of eight structures. The first seven are considered to be *simple* structures, with the last structure, *Jigsaw*, classified as *complex*. [For additional structures, see *References and Resources* at the end of this chapter.] Note that because structures are content-free, faculty are challenged to find authentic disciplinary issues/problems and format the structures to them in purposeful ways that will illustrate to students that two or more heads are better than one.

1. Think-Pair-Share

This simple structure is likely the most familiar and a starting point for teachers who have never used small-group learning. It can be used to solve problems in mathematics, economics, or chemistry, as well as to generate possible solutions for political, environmental, or educational issues. For a thorough analysis of this structure, see Millis & Cottell, 1998, pp.72-78.

1. Problem posed by teacher.
2. *Think* time occurs.
3. *Pairs* work together to solve the problem.
4. *Share* a few pair solutions with total class.

2. Think-Ink-Pair-Square

This is a variation on Think-Pair-Share. Teachers are encouraged to see how structures are built from a set of *student actions* and *interactions*, and they should feel free to modify structures to fit their students' learning needs.

1. Problem posed by teacher.
2. Individuals write a response.
3. Pairs share and discuss responses.

4. Pairs meet with another pair (a *square*) and share and discuss responses.

3. Roundrobin

This structure involves students by having them orally share information to solve a learning task. For example, students might each be asked to give a separate incident from the class novel that demonstrates the main character's unwarranted distrust of others.

1. Students grouped in 3s or 4s, count off.
2. Teacher gives the learning task.
3. Students take turns orally contributing in order.

4. Three-step Interview

This structure is a useful get-acquainted activity, but truly outstanding method for having students share (and learn from) completed individual assignments prior to submitting them (e.g., original narratives and reports, research article or current event summaries, service-learning experiences, and artistic products).

Although labeled as three steps, it is beneficial to insert two additional steps at the beginning: (1) Discuss how a good interview is conducted, encouraging the interviewer to pose a question and then *listen* to the interviewee. Role-play an inappropriate interview where a TV personality keeps interrupting the guest. (2) Allow time for students to draft 3-5 appropriate-to-topic interview questions.

1. Students pair up and one in each pair interviews the other.
2. At the teacher's signal, students reverse roles, and the other person interviews.
3. At the teacher's signal, the pairs *square* with another pair, making a foursome, and *roundrobin* share what they learned in their interview of the *other* person. This promotes listening and learning from others.

5. Numbered-heads Together

This structure works well when (a) it is used to check understanding of higher-order thinking, (b) the answer has multiple parts, and (c) answers are convergent.

1. Students seated in groups of four, numbered off *1, 2, 3, and 4*.
2. Teacher presents a problem and asks students to *put their heads together* to solve it.
3. Group-discussion time occurs.
4. One number (e.g., *number 4*) is randomly called, and that person answers for

his or her group. For problems with multiple parts, different groups can give one part. If there is only one answer, one *number 4* responds and then the other number 4s may be asked to agree/disagree or to add to the response.

6. Send-a-Problem

This structure gives each small group the opportunity to write review questions to trade and solve with another group, perhaps in preparation for an exam. To increase the complexity of this structure, see Millis, 2008, pp. 159-161. [This Millis article is an excellent FLC group-reading selection, particularly for teachers with prior experience using small-group learning.]

1. Students grouped in 3s or 4s, each is asked to write a high-consensus verifiable course-review question on a separate 3 x 5 card.
2. Group members test the clarity of their questions with group mates, revise as needed, and write a final draft on one labeled side of the card and the answer on the other.
3. Group questions are stacked and clipped together and *sent* to another group to solve *as a group* by reading each question aloud, solving together, and checking the answer when all agree to do so.
4. If needed, groups can send a *diplomat* to the question's author in order to check intentions.
5. After answers are checked, the receiving group writes a comment on the answer side of each card, indicating if they agree or disagree with the author's answer, and then returns the cards to their group of origin or to another group to solve.

7. Categorizing with Post-Its

This structure promotes a visual group analysis of a course issue, and requires small Post-It pads, large sheets of chart paper, masking tape, and markers.

1. Students, grouped in 4s, brainstorm ideas on the announced topic, writing one idea Per Post-It. [Example topic: lists ways to improve the K-12 public schools.]
2. Striving for a dozen or more ideas on Post-Its, students then categorize their ideas in groupings they can justify on a large piece of chart paper, labeling each category.
3. Completed charts are posted around the room and one group member from each group is identified to remain with their chart as the *chart explainer* while the rest of the group *gallery walks* around the entire room to study the other charts. Make charts accessible during break for the *chart explainers* to view other charts.

8. Jigsaw

Designed by Elliot Aronson, *Jigsaw* is a division of labor strategy that is particularly useful in getting students to read the assigned chapters of a text. In this scenario, each student in the foursome specialized in one of four chapters and studies it in order to teach its contents to his or her group mates, after which all group members are responsible for understanding all four chapters. To assess individual accountability, each student completes an integration-of-chapters assignment alone. This may sound a lot like the age-old graduate school study group—or a pot-luck dinner—where you are responsible for only a piece of the puzzle, but ultimately view the entire picture!

1. If using small groups of four, the teacher divides the material to be *jigsawed* into four equal parts in terms of length and complexity, assuring that each part is independently comprehensible to the reader.
2. Each student in a *heterogeneous home* group is assigned a *different* part to independently study in order to master key concepts and then teach them to group mates. At the initial introduction of *jigsaw* to a class, consider teaching the *jigsaw* process by using four one-page information sheets and guiding students through all the *Jigsaw* steps during a class session. Allow sufficient time for students to master their sheets, design a teaching strategy, and then teach the concepts from all four sheets to group mates.
3. Each student independently completes an instructor-designed integration assignment that requires using the concepts from all four sheets.

An alternate form, *Expert-group Jigsaw*, increases student interaction and complexity. In this version students with the *same* parts are asked to meet as *experts* (*homogeneous* groups) to discuss their mastery of key concepts and teaching strategies *before* they meet with their original group (*heterogeneous home* group) to teach their parts. Students learn to appreciate the insights of others in *expert groups* and are often reluctant to select the first version of *Jigsaw* over this modification in the future.

Two teaching tips: (1) When teaching either form of *Jigsaw* with large classes, reproduce the four sheets on four different colors of paper and ask students to form *rainbow* or *like-color* groups when meeting as *home* or *expert* groups. (2) Always give students access to all of the material, not just his or her part, so that each can check the accuracy of what's being learning from group mates.

Additional Learning Activities

In addition to the activities that are offered as *FLC Faculty Learning Outcomes*, additional learning activities include guest speakers, both local and national, who are experts on using small-group learning; conference attendance; reciprocal classroom visitations and coaching among FLC members; lesson videotaping and review; and student-panel discussions. Moreover, all these activities can be used as assessments in order to determine the effectiveness of the FLC in promoting small-group learning.

Two Concluding Caveats

- Not all students think and learn well in small groups; some need solitude to study and master concepts. Only at that point do they work effectively in groups by sharing what they have discovered by themselves. Teachers might allow the more *reflective learner* to be successful by announcing at-home readings that can be done *prior* to class small-group work in order to prepare for it.
- Not all faculty learn well in groups either; hence, some may shy away from using small-groups in their teaching as a result of their experiences. These faculty will likely need to take smaller steps to be convinced of the worth of small-group learning.

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