

The Case and Context for Learner-Centered Pedagogy

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Introduction

In the mid-1990s, clarion calls were sounded for improving the quality of undergraduate education that solicited a paradigm shift—away from the traditional focus on the teacher and the teaching process—to a “new learning paradigm” that focuses on the *learner* and the *learning* process (American College Personnel Association, 1994; Angelo, 1997; Barr & Tagg, 1995). The shift suggests a new starting point for improving the teaching-learning process—one that centers on what the learner is doing, rather than what the teacher is doing (and covering) in class. In the new learner-centered paradigm, the defining features and goals of effective college teaching are facilitating the learning *process* and assessing learning *outcomes*.

Implications of the new learning paradigm for college professors include the following shifts in educational philosophy and instructional practice.

1. Instruction shifts from teacher-centered and content-driven to *learner-centered* and *learning process-driven*.

Instructional methods may be conceptualized as ranging along a continuum from *teacher-centered* to *learner-centered*. Extreme, teacher-centered teaching is best illustrated by the straight (uninterrupted) lecture, in which the professor does all the talking and is the center of attention and control of the learning process. In contrast, learner-centered instruction involves less didactic discourse or “talk time” on the part of the instructor, and shifts more class time, control, and responsibility for learning to the students.

2. The student’s role changes from being a passive receptacle and recipient of teacher-delivered information to being an *engaged learner* and *active agent* in the learning process.

Instead of instructors delivering information-loaded lectures for the sole purpose of transmitting knowledge, learner-centered instruction goes beyond the learning of content to include the learning of *process*—i.e., educating students in the process of *learning how to learn* and developing *lifelong learning* skills (e.g., critical thinking, problem solving, and communication skills).

3. The instructor’s role expands from being a professor who professes and disseminates truths to being a *facilitator* or *mediator* of the learning process.

In this expanded role, the instructor engages in three key educational tasks:

- (a) educational *design*—creating *learning* tasks and classroom conditions that are conducive to active student involvement;
- (b) educational *coach*—facilitating, coordinating, and orchestrating learning “from the sidelines,” while students assume the role of active players (participants) in the learning process;
- (c) educational *assessor*—evaluating the effectiveness of learning by collecting data on learning outcomes and using this data as feedback to improve the learning process.

Thus, in the learner-centered paradigm, students spend less time being “instructed” (lectured to or talked at) and more time engaging in learning activities that ask them to actually *do* something—other than rote recording of lecture notes (O’Neill & McMahon, 2005).

The Case for Learner-Centered Alternatives to the Lecture Method

Among the primary forces propelling the paradigm shift toward learner-centered pedagogy are the limitations of the lecture method. Lest we forget, the dominant pedagogical strategy used by college professors is lecturing (Pascarella & Terenzini, 2005) and the frequency of its use has been remarkably consistent over several decades (Bligh, 2000; Nance & Nance, 1990). While professors may think that students are cognitively engaged when they are taking lecture notes in class, research suggests otherwise. For example, Fassinger (1996) surveyed over 1,000 students in more than 50 classes in a wide variety of academic disciplines that met during the same time period. She found that students reported being less actively involved in class than their instructors perceived them to be. Furthermore, the quality of student note-taking during lectures leaves much to be desired. For example, one study revealed that most students take notes that are written on the board (or projected on a slide); however, they record less than half of the important ideas that professors state verbally, but do not put in print (Johnstone & Su, 1994). Other research indicates that approximately one-half of students' time during lectures is spent on thinking about things unrelated to the lecture content, and up to 15% of their class time is spent "fantasizing" (Milton, Polio, & Eison, 1986). (Mercifully, the investigators neither examined the specific nature of, nor offered hypotheses about, the content of student fantasies during lectures.)

In particular, student attention and concentration tend to drop precipitously after the first 10-15 minutes of a continuous lecture (Penner, 1984; Verner and Dickinson, 1967). This drift and drop in attention occurs among all types of students, including intrinsically motivated, learning-oriented (vs. grade-oriented) undergraduates (Milton, Polio, & Eison, 1986) and advanced students taking courses in graduate and professional school (Stuart and Rutheford, 1978). Thus, attention loss during lectures cannot be simply dismissed as a "student problem" attributable to lack of student motivation, a breakdown in self-discipline, or an outbreak of attention deficit disorder among contemporary youth. Instead, the problem lies with the lecture method itself—or, more precisely, continuous use of the lecture method for an extended amount of time. This research suggests that the ability to sustain attention to aurally-received information for a prolonged period of time is a task that the human brain is not naturally inclined or equipped to perform. Evolutionary psychologists and neurobiologists theorize that the brain is not wired to process information emanating from a single source for an extended period of time because it would not have contributed to the survival of the human species. Our early ancestors needed to process information in short segments so they could swiftly shift their attention from the task at hand to respond immediately to a potential threat (predator) or opportunity (prey) (LaBerge, 1995; Sylwester, 1996). The human brain is better equipped to perceive and process information in short, focused timeframes (lasting no longer than 10-15 minutes) followed by opportunities to "act" on the information it has processed (Jensen, 1998).

Even if students were able to sustain maximum attention throughout a typical 50-minute lecture, important educational outcomes, such as higher-level thinking and attitude change, would not likely be realized. Studies show that when humans engage in prolonged performance on a repetitive mental task (such as continuous note-taking), lower centers of the brain that control automatic (mindless) behavior become involved in performing the repetitive task, with limited involvement of higher (cortical) areas of the brain normally responsible for higher-level thinking (Bligh, 2000; Mackworth, 1970). This finding reinforces the old aphorism: "During lectures, information passes from the lecturer's notes to the students' notes, but through the minds of neither."

To achieve educational outcomes beyond information acquisition, students need to be more actively engaged in the learning process (Pascarella & Terenzini, 1991; 2005). As McKeachie et al. (1986) conclude from their review of the research literature on college teaching methods, "If we want students to become more effective in meaningful learning and thinking, they need to spend more time in active, meaningful learning and thinking—not just sitting and passively receiving information" (p. 77). This is consistent with the results of an extensive literature review conducted by Donald Bligh (2000), whose conclusion provides a fitting summary statement for research on student learning outcomes associated with the lecture method: "The balance of evidence favors this conclusion: *Use lectures to teach information. Do not rely on them to promote thought, change attitudes, or behavioral skills if you can help it*" (p. 20).

This is not to imply that lecturing should be totally eliminated or eradicated at the postsecondary level. Certainly, higher education is a place where knowledgeable professors

share their knowledge with undergraduates and model thinking processes for students to emulate. However, to do so for an extended period of time in one sitting is not an effective, brain compatible form of learning. For student to be cognitively engaged in the college classroom, teacher-centered pedagogy needs to be alternated or punctuated with learner-centered experiences that empower students to take a more active and responsible role in the learning process.

Learner-Centered Instructional Alternatives to the Lecture Method

There are four major types of instructional strategies that have been used to promote greater student engagement in the college classroom: (a) whole-class discussions, (b) small-group discussions, (c) collaborative learning groups, and (d) cooperative learning groups. What follows is a discussion of why and how each of these learner-centered teaching strategies can effectively complement and augment the lecture method.

Whole-Class Discussions

Strategic insertion of instructor-posed questions during lecture can stimulate higher levels of student involvement with course content and the course instructor. Infusing thought-provoking questions into instructional presentations creates a climate of intellectual inquiry that serves to model and encourage students to ask their own questions in class. However, not all instructor-posed questions are equally effective in eliciting student involvement. The types of questions that are most likely to involve students are open-ended questions, which call for more than one correct or acceptable answer (e.g., "What may be possible interpretations of explanations for ____?"). Such questions invite multiple responses, welcome a diversity of perspectives, and promote divergent thinking—i.e., expansive thinking that does not "converge" on one (and only one) correct response (Cuseo, 2005).

Small-Group Discussions

The major limitation of whole-class discussion is that it involves students on an individual and sequential basis, i.e., one student raises a hand and makes a contribution, followed by the instructor calling on a second student who makes a contribution, etc. In contrast to this sequential involvement of individual students, when discussion takes place in small groups (2-4 students), multiple students become involved simultaneously.

The need to augment whole-class discussion with small-group work is supported by research, which indicates that typically less than 10% of students in class account for more than 75% of all contributions made during class discussions. Students themselves are acutely aware of this phenomenon; when surveyed, almost 95% of them students agreed with the statement: "In most of my classes, there are a small number of students who do most of the talking" (Karp and Yoels (1976). Small-group discussions can provide an antidote to these disturbing findings by creating a better opportunity for all students—not just the most assertive or most verbal—to become involved with the course material and with each other in the college classroom.

Collaborative Learning Groups

Collaborative learning may be defined as a small-group learning experience in which group members reach *consensus* with respect to some decision or action. Scholars in the fields of English and Literature have argued that in order to ensure that group work moves beyond interaction to collaboration, consensus must be reached by group members, (e.g., Bruffee, 1993; Wiener, 1986). The argument that consensus as the sine qua non for collaboration has its roots in the professional education of medical students who were asked to work in small groups to reach unified diagnostic decisions—which often proved superior to decisions reached individually (Abercrombie, 1960). (Fittingly, the etymological root of the word *discussion* means to "divide" or "break up"—as in the words, differentiate and disintegrate; in contrast, the etymological root of *collaboration* denotes integration or convergence—i.e., to "co-labor" or work together.) Thus, the key feature differentiating a discussion group from a collaborative learning group is that the latter does not simply generate or aggregate individual ideas; instead, its members attempt to reach a unified group decision with respect to the ideas they generate. For instance, rather than simply

aggregating their ideas, a collaborative group will take it further by attempting to reach agreement on how best to categorize or prioritize their ideas.

Collaborative group work qualifies as a form of “brain compatible” learning. The human brain is likely to be wired for collaboration because working harmoniously in groups has been critical to the survival and evolution of the human species (Jensen, 1998). In fact, brain-imaging studies reveal that more activity occurs in thinking parts of the brain when people learn through social interaction than when they learn alone (Carter, 1998).

Cooperative Learning Groups

Cooperative learning (CL) may be defined as a specific form of collaborative learning, which employs structured procedures that are deliberately designed to convert group work into teamwork. Succinctly described, CL involves the use of small, *intentionally selected* groups of students who work *interdependently* on a well-defined learning task, have equal opportunity to contribute to the completion of task, and are held *individually accountable* for their contributions; the role of the instructor during CL is to serve as an unobtrusive *facilitator, coach, or consultant* to the learning groups (Cooper, 1993).

More specifically, CL attempts to strengthen the effectiveness of small-group work by attention to the following seven procedural features

1. Positive Interdependence among Group Members (Collective Responsibility)
2. Individual Accountability (Personal Responsibility)
3. Intentional Group Formation
4. Intentional Team Building
5. Explicit Attention Paid to the Development of Students' Social Intelligence
6. Instructor Assumes the Role as Facilitator during the Group Learning Process
7. Attention to Inter-Group Interaction and Integration of Work Generated by Separate Learning Groups

What follows is a description of these key features accompanied by strategies for implementing each of them.

1. Interdependence among Group Members (Collective Responsibility)

When humans interact in an interdependent fashion, they share common goals, engage in collective effort and, as a result of their collective effort, experience mutual benefits. Arguably, positive interdependence is the quintessential feature of cooperative learning; it is the feature that effectively transforms group work (“talking heads”) into bona fide *teamwork*. The following instructional strategies may be used to promote positive interdependence among students working in groups.

* The group creates a common, jointly-constructed work product.

In contrast to small-group discussions, in which students engage in informal discussion of a course-related issue, CL groups are expected to generate a *formal work product* that represents a concrete manifestation of the group's *collective effort*. For example, the CL group may complete a common, final product that takes the form of a worksheet, a list or chart of specific ideas, or an overhead transparency, which can be presented to the instructor or other groups. The objective of working toward a common, tangible outcome keeps team members “on task” and focused on the group's ultimate goal—the creation of a unified product that captures and reflects the team's concerted effort.

* Each group member assumes a *complementary, interdependent role* with respect to the group's final product.

A sense of personal responsibility and commitment to the team is increases when each member has a *specific and indispensable role* to play in achieving the group's final goal. For instance, different group members may be assigned the following interdependent roles:

- 1) *Functional* roles—whereby each member is responsible to perform a particular functional duty

for the group, such as:

- (a) group *manager*—keeps the group on task and ensures that all its members make contributions;
 - (b) group *recorder*—keeps a written record of the group's ideas;
 - (c) group *spokesperson*—orally reports the group's ideas to the instructor or other groups;
 - (d) group *processor*—monitors the social interaction or interpersonal dynamics of the group process (e.g., whether individuals listen actively and disagree constructively);
 - (e) group *research runner*—accesses and retrieves information for the learning group, and (f) accuracy coach—attends to procedural details and troubleshoots errors.
- 2) *Resource* roles—each member is responsible for providing one key piece of information to be incorporated into the group's final product (e.g., information from one chapter of the text or one unit of classroom instruction).
- 3) *Cognitive* roles—each member contributes one component or dimension of *higher-level thinking* to the group's final product (e.g., application, analysis, synthesis, or evaluation).
- 4) *Perspective* roles—each member contributes an important perspective or viewpoint (e.g., ethical, historical, economic, or global).

Specialized roles such as these serve to ensure that each group member has a well-defined and well-differentiated responsibility to fulfill throughout the learning process. A further advantage of such role specialization is that the quality of each member's contribution to the final product can be readily identified and assessed by the instructor, thus ensuring individual accountability in the grading process.

* Teammates rely on each other *before* seeking help from the instructor. This feature may be implemented by using the following strategies:

- Redirecting student questions directed to back to the students' team so that teammates get in the habit of relying on each other, rather than their instructor.
- Having teams seek help from other teams before seeking help from the instructor.
- Having the last team who received help, provide help to the next team who seeks help.
- Having group members consistently use team responses. For example, all teammates raise their hands if they need assistance from the instructor; teammates provide a choral response to instructor-posed questions; and all teammates sign their names on the completed work product).

* Provision of individual *rewards or incentives* for engaging in positive interdependence. Positive interdependence and mutual support may be encouraged among group members by

- (a) awarding extra (bonus) points that count toward individual students' course grade if each teammate's performance exceeds a certain criterion (e.g., each member achieves a score of at least 90%), or
- (b) having students' total grade for group work equal the sum of their individual score plus their team score (Slavin, 1990).

2. Ensuring *Individual Accountability* (Personal Responsibility)

Experimental research in social psychology has documented the phenomenon of "social loafing," i.e., if the effort or output of individuals working within a group is anonymous or not clearly identifiable, it will be less than if the individuals were working alone (Williams, Harkins, & Latane, 1981). Listed below are procedures that may be used to combat social loafing and promote individual accountability in learning groups.

- * Assign students' individual grades, *not* the same group grade.

High-achieving students often report that they dislike group projects in which all group members receive the same grade because their individual effort and contribution to the group's final product often exceeds the efforts and contributions of their less motivated teammates—who receive exactly the same grade, despite the fact they exerted appreciably less effort (Fiechtner & Davis, 1991). Thus, individual accountability is enhanced when students not receive the same, undifferentiated, group grade.

- * Prior to discussing their ideas in small groups, give students some *private reflection time* to gather their thoughts individually and to record their individual ideas in writing.

These written products can serve as evidence that each student has given thought to the group task, and they may be collected by the instructor and counted toward the student's individual grade (e.g., as points for attendance and participation).

- * Have individual members keep an *ongoing record of the specific contributions* they make to their team (e.g., by recording them in a journal or learning log), and inform students that you will check this record and count it as part of their course grade.

- * Use *random response sampling*, whereby any one person in the group is randomly selected to report the team's response, or provide a summary of their group's ideas.

- * Have teams turn in their work product with the initials of individuals affixed to their particular contribution(s) to the final product.

- * Have students engage in:

- (a) *self-evaluation*—each member assesses the quality of his individual effort or contribution to the group, and
- (b) *peer evaluation*—each member assesses the effort or contribution of her teammates (peer evaluation).

3. **Intentional Group Formation**

Learning teams may be formed on a *random* basis (e.g., students count off numbers consecutively from 1 to 4 and form groups with other students who have the same number), or they be formed on an *intentional* basis, i.e., teammates are selected according to some predetermined criteria that are likely to maximize or magnify the educational impact of small-group learning. In contrast to traditional approaches to small-group formation, in which students typically select their own group members or groups are randomly formed by the instructor, CL begins with the intentional selection of group members on the basis of certain criteria that are expected to magnify the positive effects of small-group learning. For instance, teams may be deliberately formed to maximize diversity of perspectives by grouping students of different: (a) gender, (b) racial, ethnic, or cultural background, (c) chronological age (e.g., traditional age and re-entry students), (d) level of prior academic achievement (e.g., based on performance in high school or on early course exams), (e) learning style (e.g., based on learning-style inventories completed in class), or (f) personality profile (e.g., based on the Myers-Briggs Type Indicator).

The particular criterion used to form groups, and the decision about whether to place students in heterogeneous or homogeneous groups with respect to this criterion, will vary depending on the instructor's educational objective. However, a thematic procedural principle of CL is that group formation should not be left to chance; instead, careful forethought is given to the decision about the learning group's composition in order to create an optimal social-learning environment.

4. **Intentional Team Building**

The following practices may be used to build solidarity and sense of team *identity* among CL groups.

- * Before launching into the task, group members are given informal interaction time to develop social cohesiveness. For example, (a) students participate in icebreaker (warm-up) activities when they first form their group (e.g., learning each other's names and sharing information about

themselves), or (b) group members engage in practices that promote team identity (e.g., a distinctive team name, symbol, photo mascot, cheer or handshake).

The objective of these team-building activities is to create a social-emotional climate conducive to creating an esprit de corps among group members, enabling them to feel comfortable in future group activities that may require them to express their personal viewpoints, disagree with each other, and reach consensus in an open (non-defensive) fashion. Small-group learning often involves both cognitive and social risk-taking; students are more likely to take these risks in an interpersonal climate characterized by group cohesiveness, mutual trust, and emotional security. Listed below are strategies for creating such a climate.

* Have students consistently use *team language* in the classroom (“We” and “our” vs. “I” “me” or “mine”).

* *Allow for continuity* of group interaction among teammates across successive class periods.

In contrast to traditional small-group discussions or “buzz groups,” which usually bring students together sporadically for a relatively short period of time (e.g., a single class period or portion thereof), CL groups may be asked to meet regularly over an extended period of time (e.g., every class period for five weeks or more). This continuity of contact among group members provides opportunity for interpersonal bonding to develop among group members, and supplies CL groups the time needed to congeal into a tightly knit social network or social-support group.

5. Explicit Attention Paid to the Development of Students’ Social Intelligence

In contrast to the strictly cognitive objectives of most small-group work in higher education, a major objective of CL is the intentional development of students’ interpersonal communication and human relations skills. Rather than simply placing students in small groups and hoping they will act like a team, CL involves intentional preparation of students for teamwork. To achieve this objective, the following procedures may be implemented.

* Provide students with explicit instruction on effective skills for communicating and relating to others prior to, and in preparation for participation in small-group work. Instruction may include explicit strategies for:

- (a) encouraging and supporting other group members,
- (b) listening actively,
- (c) learning to disagree constructively,
- (d) resolving conflict, and
- (e) building consensus.

Thus, rather than being left entirely to their own devices, students receive at least some orientation and preparation for handling the social and emotional demands of small-group work.

* Intentionally recognize and publicly reinforce effective interpersonal behavior displayed by students within groups.

During CL, the instructor should be ready to identify and praise specific instances of effective interpersonal communication and collaboration exhibited by students in their learning groups. In addition to reinforcing the exemplary behavior, it also showcases it as a behavioral model for other students to emulate.

* Encourage students to reflect on and evaluate the group’s social dynamics.

Students’ social intelligence is further developed by having them assess their group interaction with respect to principles of effective interpersonal communication and human relations. Students may also be asked to reflect on how their social dynamics of their group interaction affected their individual learning. For example, students may be asked how effectively they were able to: (a) verbalize their thoughts to other group members, (b) question the reasoning of other group members, and (c) express personal disagreement with their teammates.

6. Instructor Assumes the Role of Facilitator during the Group Learning Process

In CL, the instructor takes on the role of a learned peer or collegial coach while student work in groups, interacting with them in a much more personal, informal, and dialogic fashion than would

be possible in the traditional lecture or whole-class discussion format. The instructor becomes a group-learning facilitator and consultant, circulating actively among the learning groups, performing such duties as:

- (a) offering encouragement
- (b) reinforcing positive instances of cooperative behavior
- (c) clarifying task expectations
- (d) catalyzing dialogue, and
- (e) issuing timely questions designed to promote reflection, elaboration, and higher-level thinking.

Interacting with students while they work in small groups not only facilitates the learning process, it also enables instructors to learn about their students (e.g., learn their names, ways of thinking, and styles of learning and communicating).

7. Attention to *Inter-Group* Interaction and Integration of Work Generated by Separate Learning Groups

Promoting communication among different learning groups and synthesizing their separate work products has three key benefits:

- (a) It brings a sense of *closure* to the group-learning experience (Millis & Cottell, 1998).
- (b) It stimulates *synergy* across the work generated by separate learning teams.
- (c) It creates a stronger sense of class *community*, in which students perceive their class as a unified “group of groups.”

Although there may be many occasions where small-group work is an end in itself and cross-group interaction is unnecessary, periodic attempts should be made to transform the separate experience of small, isolated subgroups into a larger, unified class community. The following practices are offered as strategies for making this transformation.

* After completing small-group work, one student from each learning group plays the role of “plenary reporter” whose job is to share the group’s main ideas with the entire class. The instructor can use the blackboard to record the main ideas reported from each group, validating their contributions, and identifying important themes or variations that emerge across groups.

* Following completion of the small-group task, one “roving reporter” from each team visits other groups to share her team’s ideas. Remaining members of her team stay together and play the role of “listener-synthesizer”—actively listening to the ideas presented by successive roving reporters from other groups and integrating these ideas with those generated by their own group (Kagan, 1992).

* Following completion of the small-group task, each learning team rotates clockwise and merges with another small group to share and synthesize their separate work. This share-and-synthesize process continues until each group has paired interaction with all other learning groups in class. The last step in the process is for each team to generate a final product, which reflects an integration of their own work with the best ideas gleaned from their successive interactions with other groups.

These different procedures for promoting inter-group interaction have the following benefits: (a) they provide meaningful synthesis and closure to the group-learning experience; (b) they promote class synergy by harnessing and pooling the ideas generated by separate learning groups; and (c) they enable students to meet and collaborate with a variety of classmates beyond their small group. In so doing, the team building that takes place within individual learning groups is augmented by *class* building across all groups, and a class that was initially deconstructed into multiple, isolated subgroups is reconstructed into a single, unified community.

Conclusion

The foregoing features of CL differentiate it from other varieties of group work and all other forms of learner-centered pedagogy. When small-group work is intentionally implemented with the majority of these seven procedural elements in place, there is substantial empirical evidence

that CL can have significant impact on both cognitive and affective learning outcomes (Slavin, 1990). In one meta-analysis of the effects of CL on college students' academic performance in science, math, engineering and technology—conducted by the National Institute for Science Education—it was found that CL had a “robust” positive effect on multiple educational outcomes, including: (a) academic achievement, (b) student retention, and (c) attitude (liking) of the subject matter (Cooper, 1997).

One particular outcome that CL has great potential to realize is appreciation of diversity. Research strongly suggests that increasing exposure or contact of majority students to students from minority racial and ethnic groups is not a sufficient condition for promoting interracial interaction and intercultural education because these still self-segregate (Burgess & Sales, 1977; Stephan, 1978). Something more than mere exposure to minority-group members must occur in order to stimulate intercultural contact and multicultural appreciation. As Hill (1991) puts it, “Real educational progress will be made when multi-culturalism becomes *interculturalism*” (p. 41) (*italics added*). The capacity of CL to provide such a context for “*inter-culturalism*” is supported by research indicating that inter-group contact under CL conditions reduces racial prejudice and promotes formation of interracial friendships (Aronson, 1978; Blake & Mouton, 1979; McConahay, 1981; Worchel, 1979). CL has the potential to capitalize on the rising demographic wave of student diversity, empowering instructors to access and harness its educational power by intentionally forming learning teams with diverse membership, creating equal opportunity for all members to participate via well-defined roles, and promoting positive interdependence among teammates through their pursuit of a clear and common goal.

References

- Abercrombie, M. L. J. (1960). *The anatomy of judgment*. New York: Hutchinson.
- American College Personnel Association (1994). *The student learning imperative: Implications for student affairs*. Washington, D.C.: Author.
- Angelo, T. A. (1997). The campus as learning community: Seven promising shifts and seven powerful levers. *AAHE Bulletin*, 4(9), pp. 3-6.
- Aronson, E. (1978). *The jigsaw classroom*. Beverly Hills, CA: Sage.
- Barr, R. B., & Tagg, J. (1995). From teaching to learning: A new paradigm for undergraduate education. *Change*, 27(6), pp. 12-25.
- Blake, R., & Mouton, J. (1979). Intergroup problem solving in organizations: From theory to practice. In W. Austin & S. Worchel (Eds.), *The social psychology of intergroup relations*. Monterey, CA: Brooks/Cole.
- Bligh, D. A. (2000). *What's the use of lectures*. San Francisco: Jossey-Bass.
- Bruffee, K. A. (1993). *Collaborative learning: Higher education, interdependence, and the authority of knowledge*. Baltimore, Johns Hopkins Press.
- Burgess, J. M. & Sales, S. (1977). Attitudinal effects of "mere exposure": A reevaluation. *Journal of Experimental Social Psychology*, 7, 461-472.
- Carter, R. (1998). *Mapping the mind*. Berkeley and Los Angeles: University of California Press.
- Cooper, J. L. (1997). New evidence of the power of cooperative learning. *Cooperative Learning and College Teaching*, 7(3), pp. 1-2.
- Cooper, J. (2003). What is cooperative learning? In J. L. Cooper, P. Robinson, & D. Ball (Eds.), *Small group instruction in higher education: Lessons from the past, visions of the future*. Stillwater, OK: New Forums Press. (Originally published in the *Cooperative Learning and College Teaching Newsletter*, Fall, 1990).
- Cuseo, J. (2005). "Questions that Promote Deeper Thinking Skills." *On Course Newsletter* (July), Monkton, MD.
- Fassinger, P. A. (1996). Professors' and students' perception of why students participate in class. *Teaching Sociology*, 24(1), 25-33
- Fiechtner, S. B., & Davis, E. A. (1992). Why some groups fail: A survey of students' experiences with learning groups. In A. S. Goodsell, M. Maher, & V. Tinto (Eds.), *Collaborative learning: A sourcebook for higher education* (pp. 59-67). The National Center on Postsecondary Teaching, Learning, and Assessment, The Pennsylvania State University.
- Hill, P. J. (1991). Multiculturalism: The crucial philosophical and organizational issues. *Change*, 23(4), 38-47.
- Jensen, E. (1998). *Teaching with the brain in mind*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Johnstone, A. H., & Su, W. Y. (1994). Lectures--a learning experience? *Education in Chemistry*, 31(1), 65-76, 79.
- Kagan, S. (1992). *Cooperative learning*. San Juan Capistrano, CA: Resources for Teachers, Inc.
- Karp, D. A., & Yoels, W. C. (1976). The college classroom: Some observations on the meanings of student participation. *Sociology and Social Research*, 60, 421-439.
- LaBerge, D. (1995). *Attentional processing*. Cambridge, MA: Harvard University Press.

- Mackworth, J. (1970). *Vigilance and habituation*. New York: Penguin.
- McConahay, J. B. (1981). Reducing racial prejudice in desegregated schools. In W. D. Hawley (Ed.), *Effective school desegregation: Equity, quality, and feasibility* (pp. 35-53). Beverly Hills, CA : Sage.
- McKeachie, W. J., Pintrich, P., Lin, Y., & Smith, D. (1986). *Teaching and learning in the college classroom: A review of the research literature*. Ann Arbor: University of Michigan, NCRIPTAL.
- Millis, B. J., & Cottell, P. G., Jr. (1998). *Cooperative learning for higher education faculty*. Phoenix, AZ: American Council on Education and The Oryx Press.
- Milton, O., Pollio, H. R., & Eison, J. A. (1986). *Making sense of college grades*. San Francisco: Jossey-Bass.
- Nance, J. L., & Nance, C. E. (1990). Does learning occur in the classroom? *College Student Journal*, 24(4), 338-340.
- O'Neill, G. & McMahon, T. (2005). Student centered learning: What does it mean for students and lecturers? In G. O'Neill, S. Moore, & B. McMullin (Eds.), *Emerging issues in the practice of university learning and teaching*. Dublin: AISHE.
- Pascarella, E. T., & Terenzini, P. T. (1991). *How college affects students: Findings and insights from twenty years of research*. San Francisco: Jossey-Bass.
- Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students, Volume 2: A third decade of research*. San Francisco: Jossey-Bass.
- Penner, J. (1984). *Why many college teachers cannot lecture*. Springfield, IL: Charles C. Thomas.
- Slavin, R. E. (1990). *Cooperative learning: Theory, research, and practice*. Englewood Cliffs, NJ: Prentice-Hall.
- Stephan, W. G. (1978). School desegregation: An evaluation of predictions made in "Brown vs. Board of Education." *Psychological Bulletin*, 85, 217-238.
- Stuart, J. & Rutheford, R. (1978, September). Medical student concentration during lectures. *Lancet*, 23, 514-516.
- Sylwester, R. (1996). *Recent cognitive science developments pose major educational challenges* (Unpublished paper). Eugene, OR: School of Education, University of Oregon.
- Verner, C., & Dickinson, G. (1967). The lecture: Analysis and review of research. *Adult Education*, 17, 85-100.
- Wiener, H. S. (1986). Collaborative learning in the classroom: A guide to evaluation. *College English*, 48, 52-61.
- Williams, K., Harkins, S. & Latane, B. (1981). Identifiability as a deterrent to social loafing: Two cheering experiments. *Journal of Personality and Social Psychology*, 40, 303-311.
- Worchel, S. (1979). Cooperation and the reduction of intergroup conflict: Some determining factors. In W. Austin & S. Worchel (Eds.), *The social psychology of intergroup relations*. Monterey, California: Brooks/Cole.