

# How Cooperative Learning Can Enhance Mastery Teaching

When you add the harmony of cooperative learning to the melody of mastery teaching, you produce a richer sound in the classroom.

Recent controversies in *Educational Leadership* have highlighted the relative merits of cooperative learning and of Hunter's mastery teaching model. Here we attempt to transform the debate into a dialogue by illustrating how the versatility, flexibility, and powerful social motivation of cooperative learning add to direct instruction à la Hunter. After all, the two models address different aspects of the teaching-learning process, and each model makes its own distinct contributions. But, first, let's review each model and its merits separately.

## The Basics of Mastery Teaching

The premise of Hunter's model—sometimes called the UCLA model or ITIP (Instructional Theory into Practice)—is that effective teaching is a constant chain of deliberate professional decisions in the following categories:

1. *Content*: what to teach (including objectives, task analysis, and diagnosis).
2. *Learner behavior*: what the student will do or say to learn and to demonstrate his or her learning (input-output modalities).
3. *Teacher behavior*: what the teacher can do to increase learning based upon principles of motivation, retention, trans-

fer, rate and degree of learning, practice, reinforcement, and modeling.

Hunter's design provides teachers a comprehensive framework of decisions to consider in lesson planning. Nevertheless, many implementors have missed the flexibility Hunter intended in her "recipe for a basic white sauce" (Hunter 1984) by "Hunterizing" (Slavin 1987, Hunter 1987) their staff members, rather than allowing them the freedom to decide for themselves which elements to include, repeat, or delete.

**Hunter's design provides teachers a comprehensive framework of decisions to consider in lesson planning.**

When implemented properly, however, the model has many merits. For example, mastery teaching:

- emphasizes planning by objectives (the teacher's objectives are to be very clear, whether or not they are stated for the students);
- improves teachers' presentation skills;
- is based on psychological principles that have achieved widespread, if not universal, acceptance;
- emphasizes checking for understanding, which is crucial for learning.

Further, the step-by-step task analysis and careful giving of directions in mastery teaching are crucial to the success of many experiential learning activities (except for open-ended explorations and possibly group investigations with goals and procedures chosen by students). In addition, teacher exposition related to experiential learning activities helps students see the big picture. Finally, Hunter's language (or labeling) system is useful for analyzing and developing a common vocabulary for talking about the act of teaching.

## Principles of Cooperative Learning

There is a large repertoire of cooperative learning strategies (Kagan 1989),

also called methods, models, structures, or procedures, based on several common ideas. For example:

- The class is divided into small groups (typically with two to five members each), who work together cooperatively to discuss and complete an academic task.

- Tasks can be given at various levels of intellectual complexity: facts, skills, concepts, principles, problem solving, and creative thinking. A teacher presentation may or may not precede the group activities.

- The teacher states guidelines to foster cooperation and mutual interdependence within each group, circulating from group to group and noting progress and problems for later processing.

In working together, students use a variety of social skills; these are explicitly taught in some cooperative models but not in others. To illustrate how cooperative groups operate, we will briefly describe three well-known structures: Think-Pair-Share, Co-op Co-op, and Jigsaw.

1. In *Think-Pair-Share*, the teacher poses a question to the students in the class, who are sitting in pairs. Students *think* of a response individually for a given period of time, then *pair* with their partners to discuss the question and reach consensus. The teacher next asks students to *share* their agreed-upon answers with the rest of the class.

2. *Co-op Co-op* is a highly structured version of Sharan and Sharan's (1989) group investigation model. Elements of Co-op Co-op include: (a) student-centered class discussion; (b) selection of student learning teams; (c) teambuilding; (d) team topic selection; (e) mini-topic selection, preparation, and presentation; (f) preparation of team presentations; (g) team presentations; and (h) evaluation.

3. The elements of *Jigsaw* include:
  - a. Task division: A task or passage of text material is divided into several component parts (or topics).

- b. Home groups: Each group member is given a topic on which to become an expert.

## Proponents of combining the two models sometimes promote group work as guided practice, but we suggest there are many other opportunities for combination.

- c. Expert groups: Students who have the same topics meet in expert groups to discuss the topics, master them, and plan how to teach them.

- d. Home groups: Students return to their original groups and teach what they have learned to their group members.

*Note: If steps e and f are used, the method is called Jigsaw II.*

- e. Quiz: The quiz is taken individually.

- f. Team recognition.

### Enhancing Lesson Design

Now let's look at some ways that cooperative learning can add to mastery teaching. Proponents of combining these models sometimes promote group work as guided practice, but we suggest there are many other opportunities for combination. Here we will expand each category of lesson design

by adding contributions from cooperative learning.

- *Anticipatory set* may occur in cooperative brainstorming or in group discussions. Students can learn to pose key questions such as: What is this topic all about? Why would I wish to learn it? How would it be interesting or useful for me? What do I know about this already?

- Students in groups can talk about the lesson's *objective and purpose* to clarify the task, remind each other of why it's worth doing, and identify specific uses of the skill or learning outcomes.

- In addition to the teacher, text, or instructional media, the students become sources of *input* when they contribute ideas to the discussion in language familiar to their peers.

- After the teacher demonstrates his or her best modeling, the students themselves can also serve as *models*. Research in social learning (Johnson and Johnson 1989) shows the effectiveness of peer models (if properly validated). For example, the expert groups in Jigsaw help students learn effective modeling behaviors to use in their home groups.

- The teacher can *check for understanding* within each group and can also show students how to do so within their own groups, for example, by using the think-pair-share process. Peers often offer immediate feedback not readily available from the teacher.

- *Guided practice* is highly effective in small groups, as demonstrated by research on STAD, TGT, and TAI (Slavin 1983, Slavin et al. 1985). Additional cooperative strategies that can stimulate practice include color-coded co-op cards, pairs check, roundtable, and numbered heads together (Kagan 1989).

- *Independent practice* takes place in the context of the group, for example, as students practice individually in their groups and periodically check each other's responses for accuracy.

- *Closure* occurs in a group sum-

**Mastery teaching synthesizes the most rewarding aspects of expository instruction and clarifies what the best traditional teachers do so well, and cooperative learning breathes creative life into that teaching by inviting students to become coproducers of ideas with their teachers.**

mary or synthesis, addressing questions such as, "What are the key ideas we learned today?" "What social skills did we do well on today?" "Which skills do we need to improve?" Responses can be shared within groups, between groups, or with the whole class.

**Strengthening the Learning Principles**

In addition to enhancing lesson design, cooperative learning can contribute to a teacher's use of Hunter's categories of learning principles. We will examine each category.

1. *Motivation.* As Glasser (1986) and others have shown, students have strong needs to affiliate; they often come to school primarily to be with their friends. In a cooperative group, they may develop higher levels of trust: feel less vulnerable to taking risks, and feel more comfortable than in the class as a whole. Group work may even reassure the overly anxious student and energize the unconcerned one.

Cooperative groups provide a variety of sources of motivation. Intrinsic motives such as interest, curiosity, and desire for understanding often arise in group explorations. Social motives are shown by statements such as: "We're all in this together" and "I want to do my part well and not let the group down." When group members acknowledge, recognize, or praise each other's contributions, ego-integrative motives come into play. Students in groups often develop a sense of competence in their own abilities to reason and to solve problems. As group members learn to nurture and support one another, they also begin to develop mutual respect across the boundaries of race, ethnicity, and social class. Further, cooperative groups foster active participation, which in itself is motivating for many students.

2. *Practice.* Research on cooperative learning shows strong effects of peer practice models, and a variety of structures is available for practice, including color-coded co-op cards, pairs check, roundtable, and numbered heads together (Kagan 1989).

3. *Retention.* The retention of information is closely linked with formation of concepts and schemata. Concepts and schemata can be formed and modified via communication with others in a group discussion. Vygotsky (1962) asserts that cognitive functions appear first on the social level, then on the individual level. Further, cognitive rehearsal strategies can increase retention, and these readily take place in small groups. In fact, students frequently attest to the benefits; for example, one student remarked, "I remember the story much better when I talk it over with my group than if I just read it by myself."

4. *Transfer.* Small-group tasks are often designed explicitly to require and facilitate transfer of ideas from one setting to another. The processing of social skills provides transfer to other school and nonschool settings.

5. *Learning styles.* Cooperative groups accommodate a wide variety of learning styles and modalities. For example, small groups can benefit introverted as well as extraverted learners (Emlay and Davidson, in press). Methods such

as think-pair-share, which involve wait-time for silent thinking, benefit all students, especially reflective ones. In addition, through concrete manipulative materials and structured movement activities, small groups employ auditory and verbally expressive modalities, visual modalities (graphs, diagrams, nonverbal cues), and tactile/kinesthetic modalities.

6. *Extending students' thinking.* Small group tasks can be designed at all levels of Bloom's taxonomy: knowledge, comprehension, application, analysis, synthesis, and evaluation. Group investigation (Sharan and Sharan 1989) and its variation, Co-op Co-op (Kagan 1989), involve extended group study requiring higher cognitive levels. Research on small-group inquiry/discovery and problem solving in mathematics (Davidson 1990) and science (Lazarowitz 1985) is aimed at higher-order outcomes. In addition, the processing of social skills in some models of cooperative learning elicits higher-order thinking (Johnson and Johnson 1987, Dishon and Wilson O'Leary 1984, Solomon and Solomon 1987). Further, the exposure to multiple perspectives inherent in group work fosters analysis, synthesis, and evaluation.

Research on cooperative learning (Slavin 1983, Johnson and Johnson 1989,

**In addition to enhancing lesson design, cooperative learning can contribute to a teacher's use of Hunter's categories of learning principles.**

Sharan 1980) shows positive effects in the areas of academic achievement, self-esteem as a learner, cross-race friendships, social acceptance of mainstreamed children, and social skill development (if social skills are taught and practiced). In addition, the fact that the research base for both academic and social outcomes is stronger for cooperative learning than for mastery teaching (Slavin 1987) may prompt mastery teaching practitioners to add cooperative learning to their repertoire.

Cooperative learning shows the power of divergent thinking and learning. When teachers release some of their control over learning situations and share the responsibility with students, a dramatic release of creative potential can occur for both.

#### **Combining Melody and Harmony**

To use a musical analogy, mastery teaching provides the basic scales and

## **Cooperative learning shows the power of divergent thinking and learning.**

traditional melodies in the repertoire of teaching strategies, while cooperative learning brings in the harmonies, tonal colors, rhythms, variations, and point/counterpoint. That is, mastery teaching synthesizes the most rewarding aspects of expository instruction and clarifies what the best traditional teachers do so well, and cooperative

learning breathes creative life into that teaching by inviting students to become coproducers of ideas with their teachers. The result? The teacher's role changes from solo performer and practice master in the Hunter model to conductor of a choir or an orchestra of cooperative learning groups. □

#### *References*

- Davidson, N. (1990). *Cooperative Learning in Mathematics: A Handbook for Teachers*. Menlo Park, Calif.: Addison-Wesley Innovative Division.
- Dishon, D., and P.W. O'Leary. (1984). *A Guidebook for Cooperative Learning: A Technique for Creating More Effective Schools*. Holmes Beach, Fla.: Learning Publications, Inc.
- Emley, W., and N. Davidson. (In press). *Collegians Cooperate Too: TAI in Remedial Mathematics*.
- Glasser, W. (1986). *Control Theory in the Classroom*. New York: Harper and Row.
- Hunter, M. (April 1987). "The Hunterization

## **Models Of Teaching & Peer Coaching**

### **Summer Institute For Trainers**

August 6th to 24th, 1990

Staff:

**Bruce Joyce & Beverly Showers**

*Call or Write:*

**Dave Shore**

*Richmond Schools*

*7811 Granville Ave.*

*Richmond, B.C. V6Y 3E3*

*Canada*

*(604) 668-6000*



*Booksend  
Laboratories*

### **Videotapes**

*Call or Write:*

**Bruce Joyce & Beverly Showers**

*652 St. Andrews Drive*

*Rio Del Mar*

*Aptos, California 95003*

*(408) 685-3719*

*Synecotics ~ Concept-Attainment ~ Mnemonics ~ Cooperative Study  
Inductive Thinking ~ Jurisprudential Inquiry ~ Group Investigation*



**Now Available  
from the  
National Council  
for  
Geographic  
Education**

**Teaching Map Skills: An Inductive Approach**  
by *Jeremy Anderson*. \$5

**Map and Globe Skills: K-8 Teaching Guide**  
by *Barbara J. Winston*. \$5

**Intermediate Level and Secondary Level Geography Tests**  
\$15 per bundle of 30, plus \$2 postage  
\$2 invoice fee if not prepaid  
\$2 examination copy

**Journal of Geography**  
Special Teacher Issue, Vol. 88, No. 4  
\$5 each; bulk prices available

**Guidelines for Geographic Education;  
Elementary and Secondary Schools**  
\$3 each; bulk prices available

**GENIP PUBLICATIONS**

**K-6 Geography:**  
**Themes, Key Ideas and Learning Opportunities**  
and

**Geography, Grades 7-12:**  
**Themes, Key Ideas and Learning Opportunities**  
\$6 each; bulk prices available

**Text Assessments in Geography:**  
**Interpretive Analyses of the 20 Most Commonly Used  
Geography Textbooks, 7-12**  
by *Patrice St. Peter*.  
\$6 each, \$4 each for 10 or more

For more information or to order, contact:  
**National Council for Geographic Education**  
Leonard 16A  
Indiana University of Pennsylvania  
Indiana, PA 15705  
(412) 357-6290

- of America's Schools." *Instructor*: 60.
- Hunter, M. (1984 Yearbook). "Knowing, Teaching, and Supervising." *Using What We Know About Teaching*. Alexandria, Va.: Association for Supervision and Curriculum Development. p. 175.
- Johnson, D.W., and R.T. Johnson. (1987). *Learning Together and Alone: Cooperation, Competition, and Individualization*. Englewood Cliffs, N.J.: Prentice-Hall.
- Johnson, D.W., and R.T. Johnson. (1989). *Cooperation and Competition: Theory and Research*. Edina, Minn.: Interaction Book Company.
- Kagan, S. (1989). *Cooperative Learning Resources for Teachers*. San Juan Capistrano, Calif.: Resources for Teachers.
- Lazarowitz, R., et al. (1985). "The Effects of Modified Jigsaw on Achievement, Classroom Social Climate, and Self-Esteem in High School Science Classes." In *Learning to Cooperate, Cooperating to Learn*, edited by R.E. Slavin et al. New York: Plenum Press.
- Sharan, S. (1980). "Cooperative Learning in Small Groups: Recent Methods and Effects on Achievement, Attitudes, and Ethnic Relations." *Review of Educational Research* 50: 241-271.
- Sharan, S., and Y. Sharan. (December 1989/January 1990). "Group Investigation Expands Cooperative Learning." *Educational Leadership* 47:17-21.
- Slavin, R.E. (1983). *Cooperative Learning*. New York: Longman.
- Slavin, R.E. (April 1987). "The Hunterization of America's Schools." *Instructor*: 56-58.
- Slavin, R.E., et al., eds. (1985). *Learning to Cooperate, Cooperating To Learn*. New York: Plenum Press.
- Solomon, R., and E. Solomon. (1987). *The Handbook for the Fourth R: Relationship Skills*. Columbia, Md.: National Institute for Relationship Training.
- Vygotsky, L.S. (1962). *Thought and Language*. Cambridge, Mass.: MIT Press.

**Neil Davidson** is Associate Professor of Curriculum and Instruction, University of Maryland, Benjamin Bldg., College Park, MD 20742. He serves as President of the Mid-Atlantic Association for Cooperation in Education and is President-Elect of the International Association for the Study of Cooperation in Education. **Pat Wilson O'Leary** is a staff development speaker, consultant, and university lecturer. She may be contacted at Cooperation Unlimited, P.O. Box 68, Portage, MI 49081.

Copyright © 1990 by the Association for Supervision and Curriculum Development. All rights reserved.