

Ercanbrack, J. (2004). Keys to cooperative learning: An interview with Dr. George Jacobs. *Ehime University Journal of English Education Research*, 3, 51-71.

## **Keys to Cooperative Learning: An Interview with George Jacobs**

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George Jacobs holds a doctorate in Educational Psychology from the University of Hawai'i at Manoa. He has taught courses on English, cooperative learning, curriculum design, environmental education, and multiple intelligences in the U.S., Thailand, Singapore, Nicaragua, and China. Dr. Jacobs has published more than 100 articles, book chapters, and books on Cooperative Learning (CL) and other areas of education. His CL books are *The Teacher's Sourcebook for Cooperative Learning*, and *Learning Cooperative Learning Via Cooperative Learning: A Sourcebook of Lesson Plans for Teacher Education on Cooperative Learning*. Dr. Jacobs also serves on the executive board of the International Association for the Study of Cooperation in Education and edits that organization's newsletter. Additionally, he is the moderator of an internet listserv on CL, edits the newsletter of TESOLers (Teachers of English to Speakers of Other Languages) for Social, and acts as co-convener of the Language and Ecology Scientific Commission of the International Association for Applied Linguistics. In June 2004 he helped to organize an international CL conference in Singapore, where he lives and works. The following interview was conducted in January 2004.

J.E.: Dr. Jacobs, to begin our discussion, could you explain how you first became interested in cooperative learning?

G.J.: In the mid-1980s, I was teaching at Chiang Mai University in northern Thailand. I had always been interested in using groups in my teaching and was using them in all the various English courses I was working with. Not surprisingly, I faced the usual problems with group activities such as students not getting along with groupmates, or wanting to receive help from groupmates but not being willing to give help, or focusing all their help on what was wrong in their partners' work, not what was right.

J.E.: You said you had always been interested in using groups. What sparked that interest?

G.J.: Lots of things. To begin with, I'm more of an introvert than an extrovert. I don't really enjoy standing up all day performing for an audience of students. When I was studying to be a teacher, I observed a teacher who basically talked the whole time. He was a great talker. I enjoyed listening to him, and the students seemed to as well, but that's not me. I prefer a more student-centered teaching style.

Also, like anyone else, I don't like watching people yawn, rub their eyes, look out the window, and show other signs of boredom during class. Students are much less likely to be bored when they actively participate, particularly when they are involved in group interactions.

Furthermore, although I had studied Spanish for about five years in junior high school and high school in the U.S., at the end of that period I could barely speak the language, partly because I had done so little speaking in the mostly teacher-fronted Spanish classes I had taken. Based to some extent on that experience, I'm a big believer in Communicative Language Teaching. I want to give my students lots of chances to practice English, and group activities do that.

Considering groups from another angle, if you ask people what teaching resources are available in classrooms, some would mention the teachers, the books and other materials that come with the books, any charts or pictures on the walls, and any computers or other communications equipment. That misses one of the most powerful teaching resources, one that is found in every classroom, one that schools don't need to buy: the students. Students can help each other learn and, as the saying goes, "Those who teach learn twice." This also involves students in taking more responsibility for what happens in the classroom.

A final reason I prefer groups is not related specifically to English teaching. It comes from the concept of ‘hidden curriculum;’ in other words, the idea that the way we teach – not just what we teach - affects the values students develop. I believe in participatory democracy and in people working together to make the world a better place. But if in the classes I teach, I’m the one who decides everything for students, if I tell students “Eyes on your own papers, no talking to your neighbors,” I’m not creating an environment in which students develop either the skills or the inclination to control their own lives and to cooperate with others to improve things for themselves and others.

J.E.: For those who are not familiar with cooperative learning, could you define the concept and summarize its basic principles?

G.J.: I define CL as “principles and techniques for helping students work together with others.” The basic goal of cooperative learning lies in one of its core principles: positive interdependence. This is the feeling people have that we all sink or swim together. If something helps you, it helps me. If something hurts you, it hurts me, too. In the classroom, this principle typically comes to life as students work in small groups, but the principle extends to all types of relationships between people, and even between people and other organisms. Too often, in classrooms and elsewhere, the feeling is that what helps you hurts me, and what hurts you helps me (such as when tests are graded on a curve). This is called negative interdependence. There is also the situation of no interdependence in which people feel unconnected to what happens to others.

Many other cooperative learning principles exist, according to who is listing the principles. I try to borrow from different approaches to CL. Here are some other principles:

1. Individual accountability: We don’t just sit there letting others do the work; we do our share and help others. The success of the group is measured not by the quality of the group product (although that too is important), but by the individual learning of each member.

2. Equal participation: All group members have the opportunity to contribute to the group effort.
3. Collaborative skills: Students think about the skills and attitudes needed to work with others and monitor their own progress toward achieving and utilizing them.
4. Group autonomy: Students take on more responsibility for what their group does and how they do it.
5. Cooperation as a value: Cooperation isn't only a means of learning, but it also becomes a concept that is learned about.

J.E.: What are some common practical techniques that teachers might employ if they wish to introduce cooperative learning to their classrooms?

G.J.: Maybe the simplest technique is Circle of Speakers (it also goes by other names). Students are in groups of 2, 3 or 4. The easiest is with a pair. The teacher asks a question or the students begin some task. The two students take turns speaking, and then the teacher calls on a few students to share what their partner told them.

J.E.: That is very simple. What makes it CL?

- a. G.J.: Let's look at some of the CL principles in relation to Circle of Speakers. We are encouraging individual accountability, because each person has a designated turn at which time they are supposed to speak, rather than let others do all the talking.

J.E.: That's important because sometimes, for whatever reason, students try to avoid participating.

G.J.: Right, and the opposite problem is when one or two group members dominate the group, and others don't have a chance to participate. That's the reason for the CL principle of equal participation, and we encourage that by the turn-taking aspect of the technique, whereas in typical group work, nothing is structured to encourage good dynamics.

J.E.: So, cooperative learning and group work aren't synonymous terms.

G.J.: That's right. Cooperative learning can be seen in some ways as a subset of group work. It's group work in which some planning and preparation has been done to increase the chances that students will work together well.

J.E.: Why do you say "in some ways"?

G.J.: Because CL principles, particularly positive interdependence, have implications beyond what takes place among small groups of students learning together.

J.E.: That's something that I hope we can discuss further later in the interview.

G.J.: Getting back to the CL techniques, the close cousin of Circle of Speakers is Circle of Writers. In this case, instead of taking turns to speak, students take turns to write.

J.E.: That would, of course, be useful for students who are not fond of talking.

G.J.: Yes. Also, these CL techniques can be combined and modified. For instance, students can do Circle of Writers first with one partner, and then Circle of Speakers with a different partner.

J.E.: What happens, though, in Circle of Speakers if, when it's your turn, you speak for five seconds, but when it's my turn I speak for 65 seconds? We're still taking turns, as the technique tells us, but it's not really equal participation according to the CL principle.

G.J.: That's right. One way around that is by using another CL technique called Ask Your Neighbor. In this CL technique, each person has a set amount of time to speak/write, such as one minute. In that way, participation is even more likely to be equal.

J.E.: I see what you mean, but I have students who, even if they are given one minute to speak, will still only use five seconds of that minute. What happens then?

G.J.: This is one place where collaborative skills can come into play. Instead of the other partner beginning their turn, that partner should encourage their quiet groupmate to expand on what they said.

J.E.: That's not easy.

G.J.: Yes, I know. All of us, myself most definitely included, need to work on our collaborative skills, and it's even tougher when we have to use these skills in a second language. However, collaborative skills are very important not just in the classroom but also in many aspects of life.

J.E.: Good point. How about telling us about one more CL technique?

G.J.: Sure. Write-Pair-Switch is done in a foursome. First, each student works alone to write their answer to a prompt supplied by the teacher or the course materials, or the prompt could be generated by students. In the Pair step, students share what they wrote with a partner and give each other feedback. Finally, in the Switch step, students change partners and tell their new partner about their original partner's ideas.

J.E.: The Switch step is good for maximizing student talk.

G.J.: Yes, because if, as in Circle of Speakers/Writers, the teacher calls a few students to share with the class what their partner said or wrote, there is only one person at a time

speaking in the entire class. But when we use Switch, half the class is speaking. Spencer Kagan calls this simultaneous interaction and contrasts this with sequential interaction: one person at a time--the teacher or a student--speaking to the class.

J.E.: All right, you've shared a few basic techniques of cooperative learning with us. Could you also explain some of the more advanced techniques, particularly those that might be utilized with university students or adult learners?

G.J.: I think there's a misconception that simple cooperative learning techniques are for lower level, younger students, and more advanced, older students need more complicated CL techniques for them to be interested.

J.E.: Could you elaborate on that?

G.J.: Let me give some examples. I just finished reading a book by David and Roger Johnson of the Cooperative Learning Center at the University of Minnesota. The book is titled *Assessing Students in Groups*. The authors begin some of the chapters with anecdotes about famous collaborations, such as between Watson and Crick, the discoverers of DNA, or between Picasso and his fellow Cubist, Georges Braque. Crick is quoted as saying, "If either of us suggested a new idea, the other, while taking it seriously, would attempt to demolish it in a candid but non-hostile manner." Group discussions among the path-breaking sociologist Kurt Lewin and his students and colleagues are described in a similar way: "The interaction ... was so free, and the disagreement so intense, that I remember them as the most stimulating experiences I have ever had." Thus, we don't need complex techniques or interaction to facilitate complex thinking and language.

J.E.: So, what you're saying is that the spirit among the group members is more important than the way that a particular activity is set up.

G.J.: Exactly. The key lies in the dynamic that exists among the group members, in their involvement with the topic and each other. All that CL principles and techniques do is to attempt to facilitate a positive dynamic.

J.E.: I take your point, but I'm still curious about other CL techniques.

G.J.: Actually, there are well over 100 techniques, with more being created all the time. Probably the best source if you want to know 100-plus CL techniques are the books put out by Kagan Publishing. In addition, each technique can be varied in endless ways.

J.E.: With Circle of Speakers and Circle of Writers, one variation I tried was to combine them. Students take turns writing, but they think aloud as they write so that their partners understand the thinking behind what they are writing.

G.J.: Good one. Another example of modifying and combining CL techniques is Write-Pair-Switch, which we discussed earlier, and which was invented by a Singapore secondary school teacher. Most CL techniques are just common sense. When I do workshops on CL, almost without fail someone will come up to me after the workshop and tell me, "I was already using CL technique 'X,' I just didn't know the fancy name for it."

J.E.: So, we should feel free to make up our own CL techniques?

G.J.: Yes, please do. Also, we should be sure to notice the variations that our students develop. These may be better than what we've thought of. However, be sure to bear in mind the CL principles.

J.E.: Could you tell us more about complex CL techniques?



G.J.: Okay, probably the best-known complex CL technique is Jigsaw. The person credited (along with some colleagues) with developing Jigsaw, Elliot Aronson, has a nice website describing the technique.

J.E.: Please refresh my memory about how Jigsaw works.

G.J.: Well, there are many variations, but the basic procedure has four steps, as follows:

Step 1: Students are in home teams of approximately four members. Each member receives a different piece of information about the same topic. For instance, if the topic is literacy, one person might have something to read about the definition of literacy and how that definition has evolved, a second member might have material on literacy levels around the world, another might have something on the causes of illiteracy, and the fourth member could have something to read about programs that promote literacy.

Step 2: Students leave their home teams and form expert teams of approximately four members with students from other groups who have the same piece of information. This is why it's called Jigsaw, because a jigsaw puzzle has pieces, and in the Jigsaw technique, there are pieces of a different sort, pieces of information. What students then do in their expert teams is to become experts on their piece and prepare to teach it to their home team members.

J.E.: There may be a problem there. Students aren't always good teachers.

G.J.: You're right. This is where Jigsaw most often falls on its face.

J.E.: What can we do about that?

G.J.: A few ideas are:

- a. make sure the materials that students read are not too difficult
- b. provide study guides to help students learn the materials, and
- c. ask students in their expert teams to rehearse what and how they will teach when they return to their home teams.

J.E.: Another idea would be to have the experts use graphic organizers, such as mind maps, to explain their points.

G.J.: Yes, I often do that. We don't want students to go back to their home teams and just read aloud what we've given them. That's not teaching. So, in Step 3, students return to their home teams and take turns teaching their pieces to their home team members.

J.E.: And how about Step 4?

G.J.: Step 4 involves students in using the information that their fellow home team members taught. This can be done via a quiz or some kind of task that requires all four pieces of information.

J.E.: You mentioned variations on Jigsaw. What are a couple of those?

G.J.: One is called BYOP (Bring Your Own Piece) Jigsaw. Instead of the teacher giving all the pieces, students find their own. Another variation is Jigsaw II. Each student receives all the pieces, but they become experts on only one of the pieces.

J.E.: What's the advantage of Jigsaw II?

G.J.: There are two main advantages. First, in some cases, students can't understand their piece without having first read the other pieces. For instance, if they are reading a short story, how can the person with the last part of the story understand that part if they haven't read the first three parts of the story? Second, if someone doesn't do a very good job of teaching their piece, groupmates still have that piece to read on their own.

J.E.: All right, let's talk specifically now about cooperative learning in English language education, as opposed to other disciplines. Does cooperative learning mesh especially well with English language teaching, or does its use in English language classrooms present some special considerations or problems?

G.J.: Cooperative learning is a generic approach to teaching, useful with any subject and any type of student. That said, there's no doubt that CL in the ESL classroom is a special case.

J.E.: One thing that comes to mind immediately is the issue of whether students use English or the L1 in their groups.

G.J.: Yes, that's probably the number one issue that comes up when ESL teachers talk about using CL.

J.E.: I suppose the first thing teachers need to think about is whether they want to try for 100% English with their students or whether a lower percentage might actually be more appropriate.

G.J.: Yes. Once we've made that decision for our particular context, we have to see what the students think. Maybe they won't agree. I've had situations in which students wanted a 100% English rule. Of course, what they actually did in class was significantly less than 100% English.

J.E.: What can we do to encourage an optimal amount of English?

G.J.: One key is to pay careful attention to the difficulty level of the tasks that students do. Yes, with groups, 1 + 1 can equal 3, but it won't equal 300, so we need to make sure that tasks are doable in English given students' current level of English proficiency.

J.E.: That would entail providing lots of support, wouldn't it?

G.J.: Yes. Remember that just because our class is using CL, it doesn't mean we aren't still doing some teacher talk. For instance, we can demonstrate how a task should be done in English. We can even give students a kind of script which they modify slightly as they do the task.

J.E.: To use a term popular in education these days, we need to do some scaffolding.

G.J.: And another way we can do scaffolding is to form heterogeneous groups, so that there is one relatively more proficient student in each group.

J.E.: Dr. Jacobs, our readers are particularly keen to understand CL as it applies to the Japanese context. What is your view on using CL with Japanese students, generally, and with English language students at Japanese universities, specifically?

G.J.: I've never taught in Japan, but I have taught Japanese university students in other countries, and I've talked with many people, Japanese and non-Japanese, who teach at Japanese universities and at other levels of education in Japan.

J.E.: Are these people optimistic about the use of CL by Japanese university students?

G.J.: In general, yes, they are optimistic. Every context has its pros and cons regarding the facilitation of CL, but some of the pros vis-à-vis CL in Japan are:

- a. students enjoy working together in groups
- b. students have previous experience working together at school
- c. students may be more willing to speak in a small group than in front of the entire class
- d. peers can help to motivate one another when positive interdependence exists within a group

- e. peers can provide support for risk taking
- f. peer power can help students become less dependent on teachers
- g. peers can study together outside of class

J.E.: I especially agree with your fourth point about motivation. Many teachers bemoan the low level of motivation of Japanese university students. Students may be motivated to try harder if they feel they are working not just for themselves but also for their team.

G.J.: Let's hope so.

J.E.: Turning to a context that you are more familiar with, could you describe for us how cooperative learning is currently being utilized in classrooms in Singapore, your home base?

G.J.: I've been teaching cooperative learning to teachers in Singapore (mostly in elementary and secondary schools) for about 10 years, and CL is supported by the Ministry of Education. Many other teacher educators support CL as well.

J.E.: If I walked into a classroom in Singapore, then, would I be likely to see CL in action?

G.J.: I wouldn't advise betting your lunch money on it. Yes, some teachers do use CL, but it's more likely the case that a teacher you visit will have heard of CL, will have attended some kind of staff development sessions about it, and will occasionally use group activities and possibly CL. Let me add, though, neither would you be likely to find lots of CL if you visited classes in the U.S. where it has been talked about since the 1980s.

J.E.: Why aren't more teachers in Singapore and the U.S. using CL?

G.J.: Allow me to give a short answer by referring you to an article that I co-authored with Tom Farrell for the on-line journal TESL-EJ. It's titled "Paradigm Shift: Understanding and Implementing Change in Second Language Education."

J.E.: Please give us a brief summary of the article.

G.J.: Sure. Our main point was that CL is part of a larger paradigm shift in education. Other manifestations of that shift include learner autonomy and focus on meaning. Change in education is often slow and works best when understood and implemented holistically, rather than piece by piece.

J.E.: If that is the case, what are the prospects for CL in the future?

G.J.: I think the future for CL is bright in Singapore and elsewhere.

J.E.: Why do you believe that to be so?

G.J.: More teachers are actually using CL, more textbooks and teachers' guides include CL or at least group activities, more administrators are looking for CL when they visit classrooms, more professional associations and standards documents advocate CL, and fewer students are willing to sit through a steady dose of teacher talk. Plus, we're getting smarter about how to do teacher development for CL.

J.E.: Do you mean moving away from the isolated workshop or course?

G.J.: Yes. I still have schools that want me to come in and tell teachers everything they need to know about CL in twelve hours or even three. I explain why this isn't practical and why something more sustainable is required. What I prefer to do is to work with a small group of teachers in a school. First, I do a short workshop with them. At the workshop, they come up with some CL lesson plans for their own classes. Then, I visit their school five times and observe each of the teachers using CL in a lesson. At the end of each of the five days, the

teachers and I have a debriefing session. I also send them my observation notes via email. When we finish the five observation days, the five teachers and I do a workshop for the entire school.

J.E.: Nice idea. So what you're hoping is that these five teachers will be their school's experts and leaders in the use of CL.

G.J.: That's the hope. If I just do a 'hi-and-bye' workshop, maybe no one will ever use CL. This way, I know that at least five teachers have used CL five times. This builds their confidence.

J.E.: And I would guess that it might also build a kind of demand among students for more such lessons.

G.J.: Yes, teachers who have used CL often note that their students are asking them, "When are we going to do cooperative learning again?"

J.E.: Let's move on to another area that I believe you've recently become interested and involved in, namely, service learning. Could you explain this concept and also give us an idea of the kinds of things that are happening in this area of education?

G.J.: Service learning is a blend of the two words that make up the term. Students do service for others, such as helping younger children learn to write or working on a project to protect the environment. This is linked in one or more ways with the courses students are taking so that they are learning at the same time that they are doing service for others.

J.E.: Could you give us an example of service learning?

G.J.: Yes, science students can use and develop their science knowledge by monitoring the quality of the air or water in their community.

J.E.: For ESL students, adding the learning part is particularly easy, because whatever type of service students do, they can write about it, read about it, and discuss it.

G.J.: That's right. Also, from a cooperative learning perspective, service learning breathes life into the principles of positive interdependence and cooperation as a value.

J.E.: Looking again at Japan, do you think Japanese universities are fertile grounds for the initiation of service learning programs?

G.J.: From what I hear, Japanese university students have been involved in some impressive service learning projects. In 2001, I attended the JALT conference and went to a session organized by the Global Issues in Language Education Special Interest Group. People talked about service learning projects their students were doing both in Japan and abroad. There seem to be some very good things going on.

J.E.: What factors should teachers or administrators consider when arranging such projects for Japanese students?

G.J.: Service learning projects can be very time-consuming. This makes it particularly important that students are genuinely interested in the work they will be doing. So, giving students lots of input in selecting and developing projects makes sense. Also, it may be useful to give students some form of credit for their work. Another suggestion is to monitor students' work in an ongoing manner rather than only having an assignment due at the end of the project.

J.E.: Does CL have a role to play in the success of service learning?

G.J.: Absolutely. Service learning is normally done in groups. CL principles and techniques can help groups provide members with the support needed to undertake the challenges of service learning.



J.E.: Then it's a good idea for students to do some CL in everyday classroom tasks before working together on a major service learning project.

G.J.: That makes sense because these smaller tasks give students opportunities to get to know one another, to learn how to work together, to develop some degree of group autonomy, and to appreciate the benefits of collaboration.

J.E.: Dr. Jacobs, thank you very much for the insights and information that you have shared with us in this interview. Do you have any final words of advice or encouragement for those of us who are interested in getting involved with cooperative learning and service learning?

G.J.: Some teachers worry that CL won't work because their students aren't good at working together, and I've certainly seen many groups in which students seemed as though they'd rather waltz with a hungry lion than work with their partners.

J.E.: I've been there, too.

G.J.: But look at it this way. If students aren't good at reading, do we say, "Never mind, I just won't ask them to read"? No, of course not. We try all the harder to help them learn to read and to enjoy reading.

J.E.: Right. So if students are initially uncomfortable in working closely with others or simply don't know how to cooperate effectively, that's all the more reason for us to do CL.

G.J.: Yes. Educational institutions are influenced by society, and in turn they also influence society. How can we expect students to cooperate with people in other areas of their lives if they can't cooperate with their classmates? The world offers a wonderful range of opportunities and problems. We need the power of  $1 + 1 = 3$  (or more) to take

advantage of all those opportunities and to overcome some of those problems. CL gives us a starting point. So, please get started.

J.E.: Thank you very much for your participation in this interview.

G.J.: It's been a pleasure.

## Appendix

### Annotated List of Websites on Cooperative Learning

The following list of websites on cooperative learning was contributed by Dr. Jacobs:

#### **1. International Association for the Study of Cooperation in Education (IASCE)**

A site with an extensive list of resources for cooperative learning, including links to CL-related websites, research papers, journals, conferences, and organizations.

<http://www.iasce.net>

#### **2. Success for All**

The Success for All Foundation (SFAF) is a not-for-profit organization dedicated to the development, evaluation, and dissemination of proven reform models for preschool, elementary, and middle schools, especially those serving many children placed at risk. Cooperative learning is a key component of their model. The foundation was begun by Robert Slavin and his colleagues.

<http://www.successforall.net>

#### **3. Cooperative Learning Center at the University of Minnesota (USA)**

The Center offers research updates, a Q&A section, and many publications and other materials on CL. Co-directors: Roger T. Johnson and David W. Johnson.

<http://www.co-operation.org>

#### **4. Kagan Cooperative Learning**

This site offers a newsletter, a Q&A section, workshop information, and the chance to buy lots of materials on CL and related topics, e.g., multiple intelligences. Coordinated by Spencer Kagan and his colleagues.

<http://www.kaganonline.com>

#### **5. The Cooperative Learning Network**

The *Cooperative Learning (CL) Network* is an association of colleagues at Sheridan College (USA) which model, share, support, and advocate for the use of *cooperative learning*. It includes the TiCKLe (Technology in Cooperative Learning) Guide.

[http://www.sheridanc.on.ca/coop\\_learn/cooplrn.htm](http://www.sheridanc.on.ca/coop_learn/cooplrn.htm)

#### **6. Hong Kong Cooperative Learning Center**

Works with universities and schools throughout Hong Kong as well as in China and elsewhere in Asia. Their website includes a newsletter and publications by scholars associated with the Center. Principal investigator: Dean Tjosvold.

<http://www.ln.edu.hk/hkclc>

#### **7. Program for Complex Instruction, Stanford University (USA)**

This site features the work of Elizabeth Cohen, Rachel Lotan, and their colleagues which has focused on the sociology of cooperative learning groups, in particular the treatment of status differences among group members.

<http://www.stanford.edu/group/pci>

#### **8. Centre for the Study of Learning and Performance**

This a research centre at Concordia University, Canada. Their goal is to study and promote effective teaching/learning strategies through active association with schools, administrators, and teachers, particularly in the areas of cooperative learning and integrated technology. <http://doe.concordia.ca/csllp/Try.htm>

#### **9. Mid-Atlantic Association for Cooperation in Education (MAACIE)**

This organization promotes CL in the Mid-Atlantic region of the United States. The site includes articles from MAACIE's newsletter.

<http://www.geocities.com/~maacie>

#### **10. The Jigsaw Classroom**

This site contains information on Jigsaw, one of the oldest and best-known cooperative learning techniques. The site includes historical information about Jigsaw, a description of how to implement the technique, troubleshooting ideas, a list of books and articles about Jigsaw, and information of recent related work by Eliot Aronson, one of the originators of the technique.

<http://www.jigsaw.org/index.html>

### **11. Richard Felder's Homepage**

Richard teaches engineering at North Carolina State University (USA). The site contains a great deal of material related to CL.

<http://www2.ncsu.edu/unity/lockers/users/f/felder/public/RMF.html>

### **12. Ted Panitz's Homepage**

Ted teaches mathematics at Cape Cod (USA) Community College. His page includes two e-books, one on CL and one on writing across the curriculum. Also included are some of the wide-ranging internet discussions that Ted has put together across several Lists.

<http://home.capecod.net/~tpanitz>

### **13. Pete Jones' Home Page**

Pete is the retired Head of Modern Languages at Pine Ridge Secondary School in Ontario, Canada and presents cooperative learning strategies that he and others developed.

<http://www.geocities.com/Paris/LeftBank/3852/index.html>

### **14. Bibliography on CL in Science and Mathematics**

Compiled by Jim Cooper and Pam Robinson.

<http://www.cs.wpi.edu/~peer/cs/bibentries.html>

### **15. George Jacobs' homepage.**

Go to the CL section for a number of articles on CL.

[www.georgejacobs.net](http://www.georgejacobs.net)

### **16. ERIC**

If you go to <http://searcheric.org/> and type in 'cooperative learning', you will get over 1300 hits. That should keep you busy for a while.