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# A Meta-Analytic Review of Cooperative Learning Practices in Higher Education: A Human Communication Perspective

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A META-ANALYTIC REVIEW OF COOPERATIVE LEARNING  
PRACTICES IN HIGHER EDUCATION:  
A HUMAN COMMUNICATION PERSPECTIVE

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A Dissertation

Presented to  
the Faculty of Social Sciences  
University of Denver

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In Partial Fulfillment  
of the Requirements for the Degree  
Doctor of Philosophy

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by

William Patrick Huddy

August 2012

Advisor: Dr. Mary Claire Morr Serewicz

## ABSTRACT

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Title: A Meta-Analytic Review of Cooperative Learning Practices in Higher Education:  
A Human Communication Perspective

Advisor: Mary Claire Morr Serewicz

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The phrase cooperative learning refers to a pedagogical learning and teaching technique in use in schools from kindergarten through higher education. The technique involves the structuring of an active classroom environment with students working in groups to discover, solve, and at its basic, provide a framework for dialogue and conversation. Cooperative learning is grounded in the development of a theory of social interdependence (Morton Deutsch) which states that individuals, working in groups, can in most cases provide for greater productivity and ideas than individuals working alone. The development of cooperative learning was greatly expanded in the late 1960's and early 1970's with the invention of specific group learning techniques led by researchers David and Robert Johnson (Learning Together), Elliot Aronson (Jigsaw), and Robert Slavin (STAD). These researchers established guidelines (rules) and taxonomies that provided a basis for research in the area of cooperative learning. At the center of all of these techniques is an element of human communication, most often through the oral/aural communication channel, where group learning and discovery takes place.

Cooperative learning and collaborative learning techniques differ in the amount and implementation of teaching guidelines required in the methodology. This study (a meta-analysis) weaves through more than 14-hundred published pieces of literature in a variety of disciplines, narrowing it down to 19 published articles which investigate (through experiments) the effectiveness through learning outcomes of cooperative learning in higher education (college and university level).

With studies including more than 2-thousand student-participants in the research, data indicates no significant difference between those classrooms utilizing a cooperative learning format, and those using a traditional lecture/discussion format ( $d = 0.05$ , 95%,  $C1: -0.05$  to  $.14$ ,  $p > .05$ ,  $k = 21$ ,  $N = 2,052$ ). Though there is no statistical difference between the two teaching techniques, researchers do offer a list of positive classroom observations/variables, which provides a launching point for future research into the use of cooperative learning techniques in higher education.

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## TABLE OF CONTENTS

ABSTRACT.....	ii
ACKNOWLEDGMENTS.....	iii
CHAPTER I: INTRODUCTION.....	1
Statement of the Problem.....	1
The Promise of Cooperative Learning.....	7
Support from Feminist Scholars .....	8
More Evidence of Effective Learning.....	9
Roots of Cooperative Learning.....	12
First Among Equals: Human Speech and the Acoustic Trigger to Conceptualization.....	13
Elements of Human Communication.....	17
The Nature of Interpersonal Conflict.....	20
The Creation of a Classroom Dialectic in Cooperative Learning.....	21
Research Objectives.....	24
Preview of the Study.....	26
CHAPTER II: REVIEW OF THE LITERATURE.....	27
Types of Social Interdependence.....	29
Constructs of Cooperative Learning.....	30
Genesis of Cooperative Learning in Practice.....	31
Relational Communication in the Classroom.....	35
Zone of Proximal Development.....	39
Another Alternative to Lecture/Discussion.....	42
Social Interdependence Theory.....	45
Communication and the Child.....	46
Cognitive Development and Cooperative Learning.....	49
The Dynamic Whole.....	50
Group Investigation.....	51
Cooperative Learning vs. Collaborative Learning .....	52
Previous Learning Outcomes .....	54
Other Perspectives on Cooperative Learning.....	56
Current Trends in Teaching Speech.....	60
Cooperative Learning and Higher Education.....	65
Benefits in Socialization Skills.....	71
Cognitive Development of the Older Student.....	75
Research Question.....	78

CHAPTER III: METHODOLOGY.....	82
Why Meta-Analysis for This Study.....	83
Coding.....	84
Statistical Analysis.....	87
CHAPTER IV: RESULTS.....	89
CHAPTER V: DISCUSSION OF THE RESULTS .....	94
Cooperative Learning: Comparing Findings with Other Research .....	94
A Mixed Bag for Cooperative Learning In Higher Education.....	95
Cooperative Learning: Excelling in Other Areas.....	96
Flaws in the Application of Cooperative Learning.....	102
Should We Abandon Cooperative Learning in Higher Education? .....	103
Embrace All Teaching Pedagogy.....	107
Improving Cooperative Learning.....	107
Cooperative Learning: Not in Higher Education? .....	117
Piagetian Spatial Concepts: Changes at Adolescence.....	121
The Case for Multiple Intelligences: Cooperative Learning .....	122
CHAPTER VI: STRENGTHS, LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH .....	124
Practical Application.....	127
Cooperative Learning Classroom Exercises.....	128
Strengths of the Study.....	133
Limitations.....	134
Future Research.....	137
Conclusion.....	139
REFERENCES.....	140
APPENDICES.....	159

## CHAPTER I

### INTRODUCTION

#### Statement of the Problem

Human communication educators have long relied on the time-tested use of the lecture as the primary teaching method used in public speaking classes today. In some classrooms, lectures are coupled with companion recitation sections allowing for more personalized and intimate speech performance scrutiny. Of late, however, there is movement toward teachers emphasizing a more active and engaged classroom environment. “Lectures set up a dynamic in which students passively receive information that they quickly forget after the test (Barrett, 2012),” reports one researcher at a teaching and learning conference at Harvard University. “They’re not confronted with their misconceptions,” says Harvard Physics Professor Eric Mazur. “They walk out (of class) with a false sense of security (p. 3).

A Nobel prize-winning physicist says it’s an issue of teacher training. “In large part, the problem is that graduate students pursuing their doctorates get little or no training in how students learn (Wieman, in Barrett, 2012 p. 1). “When they become faculty members, they might think about the content they want students to learn, but not the cognitive capabilities they want them to develop.”



While the focus remains on how a teacher relates to her/his students (Ellis, 2004; Horan, et al., 2010; Titsworth, et al., 2010; Wei & Wang, 2010), few studies (Johnson & Johnson, 1994) have investigated the successes of alternative forms of teaching and learning techniques.

This includes how students communicate with each other in the classroom. “Lectures continue as the dominant form of university instruction” (Lammers and Murphy, 2002).

Today, researchers continue the work pioneered by social psychologist Morton Deutsch (Deutsch, 1949) and investigations into how people cooperate in teams. According to cooperative learning researchers David and Roger Johnson,

...much training time is devoted to helping teachers arrange appropriate interactions between students. How students should interact with one another is relatively ignored (Johnson & Johnson, 1985, p. 22).

Recent research suggests new directions in what appears to be a rapidly changing academic environment for colleges and universities.

Our next generation of students, shaped by a media-rich world, will be even less interested than the current college population in absorbing material through traditional lectures (Taylor, 2010, p. 9).

Others say the traditional lecture has run its course at the college level. “Lectures fail at prodding students to make meaning from what they learn, to ask questions, extract knowledge, and apply it in a new context (Barrett, 2012, p. 3).”

If this is indeed the trend for the future, is it changing because students themselves are changing or is it a case of exposing the relative failure(s) of the current educational system that is in place?

Most teacher education instruction focuses on helping teacher education students learn to structure interactions between their future students and the prescribed curriculum and interactions between students and themselves. Teacher educators spend little time showing prospective teachers how to structure interactions between students (Watson, 1995, p. 210).

One of the reasons for this may be a specific lack of teacher training.

McKenna (2006) highlighted the differences between K-12 teachers and university faculty and argued that because university faculty are predominantly subject-matter experts and few have training in learning methods and theories, there is a pressing need for learning science research (Smith, 2010, p. 17).

Cooperative learning (CL) is a teaching and learning method comprised of two or more students working communicatively within prescribed formats so that “...working together, they are able to maximize their own and each others learning” (Johnson & Johnson, 1991, p iii). In its essence, students are engaged in active deliberation to achieve a desired better pedagogical outcome.

Research on student-to-student interaction strongly supports structuring the classroom to facilitate students working cooperatively, talking things through with one another, and supporting one another’s learning (Johnson & Johnson, 1991, p. 22; Deutsch, 1962; Johnson and Johnson, 1983; Sharan, 1980; Slavin, 1977).

While CL is known widely as a teaching and learning method (Johnson & Johnson, 1974, Slavin, 1985, Sharan, 1980), it may best be understood as a classroom laboratory developing enhanced interpersonal communication skills for problem solving by human beings. Within CL, teachers still have important roles in the cooperative learning classroom, but that leadership role is reconfigured to that of a pre-planner and designer of curriculum; or as researchers put it, "...more of a guide on the side, than a sage on the stage" (Johnson & Johnson, 1994, p. 102).

The changed role of the classroom teacher in higher education within cooperative learning is one primary difference between CL and other classroom teaching/learning techniques, including the often juxtaposed, but less rule-driven, collaborative learning (Millis, 1998, p. 4).

Most cooperative learning research has focused on the primary grades (K-6). However, investigative studies have found their way into post secondary, college and university levels, but only in a selected few academic areas (Johnson, Johnson, & Smith, 1991). Very little cooperative learning research exists within the communication discipline even though much has been written about small group and team communication (LaFasto & Larson, 2001).

"Why hasn't cooperative learning been adopted as the preferred method of instruction in college classrooms?" (Watson, 1995, p. 211). Manera and Glockhamer cite lack of instruction for teachers as a main cause.

College instructors believe [mistakenly] that they are using cooperative learning when they implement group activities but demand no interdependence among the group members and have no way to assess the individual performances” (Manera & Glockhamer, 1989, p. 47).

David and Roger Johnson (1994) at the University of Minnesota suggest that individual accountability and social interdependence, along with effective group processing, are key elements to the successful CL classroom.

At Johns Hopkins University, educators recommend focusing on integrating “comprehensive cooperative learning approaches to three major curricula at the elementary school level: Reading, writing, and mathematics” (Slavin, in Sharan Ed., 1990, p. 262).

Other areas of instruction include bi-lingual cooperative learning approaches to teaching mathematics and science (Cohen, 1986), mathematics in groups of four (Burns, 1981), and peer response groups in the teaching of writing (Calkins, 1983; Graves, 1983). Recent research has also documented the use of cooperative learning in ESL (English as second language) classroom and in the teaching of computer technologies; but while CL has been used successfully in many specific academic disciplines, widespread use of CL throughout the curriculum in higher education has yet to occur.

Communication between human beings takes many forms in the college classroom today.

It may manifest itself in teacher-to-student communication (as in the classroom lecture); it may embody communication that is primarily student-to-teacher; or it might include student-to-student communication in a relational context. In perhaps its most broad application, communication is defined as,

...a social process in which individuals employ symbols to establish and interpret meaning in their environment. Communication involves people and interactions, whether face-to-face or online. It is ongoing, and unending, dynamic, complex, and continually changing (West & Turner, 2010, p. 5).

When investigating student learning, Mottet, et al., have found that "...for the past three decades, [research] focused on how teachers communicate to meet students' instructional and interpersonal needs in the classroom" (Mottet, Beebe, Raffeld, & Medlock, 2004; Waldeck & Kearney, 2001).

Other researchers have investigated,

...teacher immediacy (Ellis, 2004), perceived teacher caring (Tevin and McCroskey, 1997), teaching style, teaching questioning behavior, teacher expectancies, student /teacher apprehension, and teacher's use of humor (Ellis, 1998).

The perceived importance of a one-on-one teacher/student relationship within the traditional classroom is believed to be so important by the academy that even the relational subtlety of teacher confirmation (confirming and disconfirming behaviors with students) has found an important and often-referenced position in communication studies literature (Cissna & Keating, 1979; Ellis, 2004; Frymier, 1993).

Some studies cite the interdependent nature of the teacher-student relationship (Burgoon, Stern, & Dillman, 1995; Comstock, 1999; Mottet, Beebe, Raffeld, and Medlock, 2004)) and many highlight communication patterns in a relational classroom perspective. “How individuals communicatively adapt to each other is based on whether the relational partners are capable of meeting each other’s needs” (Mottet, Beebe, Raffeld, & Medlock, 2004, p. 151).

### The Promise of Cooperative Learning

Accepting these notions and the importance of relational dialogue within the classroom is a departure for educators who follow a traditional lecture/discussion format and those who believe in a “top-down” approach to classroom management.

Not so long ago, “...a quiet class was a learning class, when Principals walked down the hallway expecting to be able to hear a pin drop” (Slavin, 1991, p. 71).

Today, the opposite is true, as educators seem to prefer programs which emphasize dialogue, discussion and debate, which are pillars of cooperative learning methodology within the classroom. And while most research in CL has been conducted at the elementary and secondary school levels, there is overwhelming evidence that CL, formatted effectively, would do the same in higher education.

In cooperative learning, more students learn and remember material for longer periods of time, approach learning at higher cognitive levels, feel positive about themselves and the subject matter, and become more skillful in interacting with one another” (Glass & Putnam; In Watson, 1995, p. 209).

“For this reason,” suggests Watson, “university instructors should employ cooperative approaches to enable prospective teachers to experience the impact of these methods for themselves” (p. 209). But the promise of positive classroom outcomes using CL techniques is well documented.

Cooperative learning has been suggested as the solution for an astonishing array of educational problems, emphasizing thinking skills and increasing higher order learning; ...as a means of improving race relations; ...and as always, to prepare students for an increasingly collaborative work force (Slavin, 1991, p. 209).

#### Support from Feminist Scholars

Feminist scholars applaud the in-class activities and results found in cooperative learning classrooms, in part “...because feminism proposes fundamental change” (Walker, 1996, p. 327). Walker adds,

Feminist scholars have called for a pedagogy that minimizes the power instructors have over students, creates an atmosphere of support, and helps students to claim an education by involving them as active partners in the teaching process (P. 327).

Cooperative learning provides the framework for this to take place in the college classroom. Watson (1996) cites the work of M. Belenky, as data shows the teacher, as architect of the CL classroom, can have a huge impact on students.

Teachers can help students to develop their own authentic voices if they emphasize connection over separation, understanding and acceptance over assessment, and collaboration over debate” (Belenky, M., P. 334).

### More Evidence of Effective Learning

Cooperative learning management is very important, as a teacher who simply puts students in groups without structure is asking for problems. “As an undergraduate student at Florida State University in the 60’s, we knew the only reason a Professor told us to ‘get into groups and groove,’ was due to his lack of preparation” (Millis, 2009, p. 17). Millis also writes that it is very important to provide positive interdependence (because it gives students a vested reason to work together”), and individual accountability (to prevent “free-loading” or “social loafing”) in group work in the classroom (p. 17). Besides achievement, deeper thinking, better memory retention, and other benefits of cooperative learning includes the nurturing of positive interpersonal relationships, positive inter-ethnic relationships, and positive motivation (Peterson, Johnson & Johnson, 1989, P. 717).

With all the promising results of data in early education, the question remains, why hasn’t cooperative learning become a mainstay of college/university teaching programs?

There are many reasons; 1) colleges and universities are institutions, and institutional change is often slow and deliberate; 2) “Colleges are not buildings, curricula, and machines. They are relationships and interactions among people” (Johnson & Johnson, 1989, p. 115).



But colleges, like Emerson College in Boston (and many others throughout the country), have classroom architecture where students are seated forward in fixed positions (stadium seating) as if they are there to watch a feature movie.

The logistics of many college classrooms do not lend themselves to discussion or group work. Rather, students are asked to be “seated” as if to be entertained (Let the show begin!); also, 3) “colleges are loosely coupled organizations in which instructors and administrators function far more independently than interdependently, with little or no supervision, and engage in actions that do not determine or affect what others do” (Johnson & Johnson, 1989, p. 116).

There are a number of actions that can be done to help remedy, or otherwise improve cooperative learning conditions at the higher education level (which will be discussed later in this study). But on the surface, lack of planning, few professional discussions about curriculum design, and a lack of collegewide task forces make integrating these techniques possible. And finally, regarding joint planning and curriculum design in higher education, it has been said, “Well begun is half done” (Aristotle, in Johnson and Johnson, p. 118).

Since 1980, researchers have also provided data indicating CL to be a teaching method superior to both competitive and individual learning; but one of the fundamental requirements to insure CL effectiveness requires the importance in the training and teaching of interpersonal and small-group skills to students.

Johnson and Johnson (1994) suggest it is important that students "...1) get to know each other, 2) communicate accurately and unambiguously, 3) accept and support each other, and 4) resolve conflict constructively (Johnson and Johnson, 1994, p. 5)." All four points require a high degree of reliance on effective relational and interpersonal communication skills to be effective.

When compared to other forms of teaching, CL is said to provide a better foundation for achievement, better psychological health (Johnson, Johnson, & Holubec, 1984; Slavin, 1991; Stahl & VanSickle, 1992), increased motivation to learn (Sharan & Shaulov, 1990), improved inter-ethnic relationships (Sharan, 1980; Slavin et al., 1985), and positive peer relationships (Johnson & Johnson, 2009). Also reported are greater long-term retention of information and more creative thinking (Sharan, 1980). In 2010, researchers continued to affirm that CL allows for students to pursue "deep learning processes" recognizing the advantages of a "social approach" in the classroom which allows for active student engagement (Smith, 2010, p. 14).

Yet in spite of compelling data presented in research, teachers in communication and other disciplines tend to rely primarily on lecture/discussion as the dominant teaching/learning method.

Education researchers and social psychologists have compared the relative efficacy and student learning outcomes of cooperative learning (students working together) with individual learning formats (students working alone as in lecture/discussion) and competitive learning techniques (students working against each

other - independently) (Slavin, 1999; Johnson and Johnson, 1994; Sharan and Sharan, 1992). In many investigative reports data is presented which shows cooperative learning to be superior, especially in areas with high human communication components.

This study focuses on that area of cooperative learning literature published between the year 2000, and 2010. Much of that decision is based on the seminal work of David and Roger Johnson, "Cooperative Learning Methods: A Meta-Analysis," through the year 2000. Also, to provide insights into using cooperative learning in the teaching of speech, the meta-analysis for this dissertation focused on the latest ten year period to provide information on the latest CL techniques, and results.

### Roots of Cooperative Learning

In their investigation, David and Roger Johnson suggest there are four theoretical roots leading to the formation of Cooperative Learning, all evolving from the 1) social interdependence movement of the early 1900's starting when Kurt Kafka proposed that groups were "...dynamic wholes in which the interdependence among members could vary" (Johnson and Johnson, 1994, p. 39); 2) a cognitive development perspective led by the research of Lev Semonovich Vygotsky (1924-1934) and Jean Piaget and the notion of social conflict as an ignition point for problem-solving and cognitive creativity, and Vygotsky's notion of a zone of proximal development (Vygotsky, 1934); 3) a similar but distinctive line of thought by controversy theorists involving the controlled and formatted use of intellectual conflict in the classroom (Johnson and Johnson, 1972)

requiring group reconceptualization and a refined, more thoughtful outcome; and 4), a behavioral learning theory perspective highlighted by the work of B.F. Skinner, including the Symbolic Interactionists Mead, Dewey, and Blumer (1934) (Johnson and Johnson, 1994, pp. 39-40).

All of the above four perspectives are distinct, but all share a common element: social or group communication facilitated primarily by human beings and their use of speech and language--the spoken word.

#### First Among Equals: Human Speech and the Acoustic Trigger to Conceptualization

When researchers Johnson and Johnson refer to the "...five essential elements to make group activity truly cooperative" (Johnson & Johnson, 1999, p. 70), it's evident most of these elements require the use of human beings communicating orally through acoustic space. They report,

...certain cognitive activities and interpersonal dynamics only occur when students get involved in promoting each other's learning. These include orally (speaking/listening) explaining how to solve problems, discussing the nature of the problems, teaching one's knowledge to classmates, and connecting present with past learning (p. 71).

All of these activities require the developed use of speech and language in a dialogue.

Speech and the oral/aural mode is not the only form of communication among human beings, but it is arguably central (first among equals) to the normal ontogeny of student learners (Dance, 1975).

Modal equipotentiality maintains that among the various modes of human symboling (the spoken mode, the written mode, the gestured mode, etc...) all are equally important. Such a position has a surface attraction to it, but it is, in its foundations, erroneous. I speak of its “foundations” because it is at the beginning of life that the spoken word is central and dominant. There is a developmental modal hierarchy that elevates the spoken mode of symbolic interaction to the position of first among equals; however, once the spoken symbol has been developed, modal equipotentiality may exist...Although spoken words certainly may be transformed into other modalities such as script, print, or gesture, it is the spoken word that is of primary impact in the development of human communication (Dance, 1975, pp. 7-8).

Human beings are most likely to use normal linguistic skills (speaking/hearing) to be effective communicators within CL learning groups. Johnson and Johnson stress the importance of orality as essential elements of cooperative learning. As evidenced earlier, they emphasize the importance of interpersonal communication skills (including orality), which sets the stage for some degree of social (oral) interaction.

Sight-impaired students can adequately learn concepts and symbols through haptic/tactile channels, or a sense of touch, and considerations in the classroom may be made for those students who are profoundly deaf. The spoken word, considered “...first among equals” (Dance, 1975), is certainly not the only way humans communicate, but it’s the very nature of social interaction that speech between two or more human being is the primary and central element of thinking and learning that students rely on the most. Contrary to the fact that speech largely inhabits only a “one-way” link between teacher and student in lecture, students in CL embrace speech with an active “two-way”

transactional, dialectic approach (Johnson & Johnson, 2009, p. 38) that provides for the instantaneous exchange of the information.

The acoustic trigger to conceptualization provides every human being with the capacity to “contrast and compare” and for humans to create symbols (through speech and language) with shared meaning. “No other creature on earth has this ability and it sets human beings apart from all other animals” (Dance, 1975, p. 2). While definitive proof of the oral/aural mode being central to the construction of knowledge in human beings remains elusive (Dance, 1975, p. 9), the essential elements of cooperative learning posited by Johnson & Johnson lay the groundwork for why students learning in groups have greater success relying on the “dominant and central” means, the first method of conceptual thought; specifically, genetically determined speech and culturally determined language which serve as the gateway to advanced mentation. Once the pre-intellectual development of the roots of spoken language merge with the formerly parallel pre-spoken language development of the roots of conceptual thought, these uniquely human characteristics continue to develop and are considered to be the genesis of spoken language in human beings (Vygotsky, 1987, p. 110).

It is at this point in human development that researchers consider speech to be the prime marker, the difference, between the development of animal and man.

Karl Buhler (1930) wrote, “It has been said that speech stands at the initial formation of man” (p. 110), and German psychologist William Stern (1922) suggested that it is at this moment when there is demonstrated a ...

...vague consciousness of the significance of language, when the child makes what is the most significant discovery of his life, the discovery that ‘each thing has its name.’ It is at this critical moment, the moment when speech becomes intellectual and thinking verbal (Vygotsky, p. 111).

While this merging moment may be considered by Vygotsky and others to be “the” point where humanness and critical thought begins in human beings, the argument can be made that the centrality of the spoken word (while not the only mode of critical thought, but as ‘first among equals’) continues throughout one’s lifetime.

Vygotsky became best known for his investigation of how young children learn. He is noted for the development of what is called the Zone of Proximal Development, defined “... as the distance between a child’s actual developmental level as determined by independent problem solving,” and the higher level of, “potential development as determined through problems solving under adult guidance or in collaboration with more capable peers” (Vygotsky, in Wertsch, p. 68).

Vygotsky argued that it is just as important to measure the level of potential development as it is to measure the level of existing (actual) development in a child.

Speech as used in cooperative learning certainly provides the launching pad for discovery, to include the moment of invention found in the socially charged learning environments formatted by teachers of CL pedagogy.

Participants engage in open-minded inquiry characterized by rational (speaking/listening) argumentation and focused on creating a synthesis that incorporates the best reasoned judgments of everyone involved” (Johnson & Johnson, 2009, p. 43).

### Elements of Human Communication

All four of the theoretical perspectives making up cooperative learning (according to Johnson and Johnson) rely on the ability of human beings to make a symbolic connection with another human being.

That connection is primarily made in one of three ways: 1) through the spoken word (oral/aural), 2) through the written word (visual/haptic), or 3) with gestures (as in sign language – gestural/tactile) with a shared understanding of these symbols amongst group participants ensuring understanding of meaning.

In all group interactions, oral communication’s *raison d’être* is instrumental in that it is the “first among equals” in interactions and exchange of human symbols.

How we interact with each other is at the center of research in interpersonal communication today. At the center of cooperative learning research are human beings, exchanging information through the spoken word,



but engaging and expanding interpersonal communication to levels rarely approached in a lecture/discussion approach to education.

Research in the behavioral sciences gives consistent support to the principle that two-way, as compared with one-way, communication produces more accurate understanding, stimulates a greater flow of ideas, corrects misunderstandings more efficiently, and yields a higher level of morale (Barnlund, 1970, p. 37).

Two-way communication is a central tenet of cooperative learning. It is through this two-way communication that different perspectives (conflict or tensions) are addressed, discussed, and hoped-for better outcomes emerge.

Often when educators refer to lecture/discussion as the preferred method of teaching, the emphasis is on the lecture and there is very little discussion in the classroom. In cooperative learning, discussion and intellectual conflict are central; but that, too, can lead to problems if careful consideration is not given to the development of safety mechanisms within the classroom curriculum.

Recent research suggests unavoidable group conflicts emanating from economic and cultural differences (and discrimination) within group processes can bring learning to a complete halt. “Not everyone believes that intellectual conflict is constructive and will lead to desirable outcomes” (Johnson & Johnson, 2009, p. 37), yet the notion of this conflict is the centerpiece of effective CL instruction. Educators often say it can “...lead to anger, hostility, rejection, divisiveness, damaged relationships, distrust, and decreased commitment to learning” (p. 38).

Other reports suggest the CL activities prompt an atmosphere of “non-cooperation,” characterized by “...negative emotional tones, ignoring group members’ requests for assistance, and rejecting support offered them (Chiu & Khoo, 2003, p. 506). Some group members did not do their part of the work” (Liang, 2004, p. 648). Rudeness within a group can also be triggered by threats to status and hierarchy. “Lower status people typically are more polite. Likewise, higher status people can be ruder to lower status people” (Chiu & Khoo, p. 508).

In spite of these negative data, cooperative learning not only seems to hold much promise in the study of relational communication (improving interactional relationships as well as stimulating intellectual discussion), but in the teaching of communication courses throughout the discipline, including conflict, small group communication, and the teaching of speech. While there may be a continued debate about the effectiveness of this engineered conflict in the classroom, there is no dispute in identifying the primary communicative rail that provides this necessary information. That rail is argumentation and debate within groups, made possible with speech, the oral/aural mode, and central in CL with an emphasis on group interaction.

With recognition of the importance of speech in group settings to facilitate dialogue and communication between group members, it is important to note that it is not uncommon for disagreements to occur within the framework of idea exchange. This can be cause for interpersonal conflict and the need for group members to be able to recognize conflict and how to seek resolution.

## The Nature of Interpersonal Conflict

There are four types of interpersonal conflict identified in educational settings (Johnson & Johnson, 2009, p. 39). Controversy is said to occur when one person's ideas, information, conclusions, theories, and opinions are incompatible with those of another, and the two seek an agreement.

Mechanisms for group participants to seek that agreement, or incentives for them to do so, must be built into the exercise to ensure a positive outcome. Failure to build those mechanisms into the curriculum may be one reason why many educators are fearful of structuring conflict into classroom exercises and suffering the negative classroom consequences as described above (DeCecco & Richards, 1974).

Conceptual conflict occurs when incompatible ideas exist simultaneously in a person's mind. This may give rise to the notion of having and maintaining an open mind to new information when entering the group without fear of immediate rejection. It also ignites an intellectual environment characterized by the invention of epistemic curiosity, which is an immediate, active search for more information and new experiences, more adequate cognitive perspectives and reasoning processes.

This epistemic curiosity may indeed give rise to the "new discovery" of knowledge. It is important to keep in mind the continuous reference to time in these descriptions. The words and phrases "simultaneously," "immediate rejection," and "new information" lend support to the immediate exchange of information through the use of oral/aural symbols.

Within the framework of argumentation and debate (where time and turn-taking are primary), students are “time pressured” in a scholarly environment (a sense of urgency) to come up with an answer or solution. This urgency is a critical part of CL and differentiates it from other forms of group learning techniques.

Conflict of interests occurs when the actions of one person attempting to reach his or her goals, prevent, blocks, or interferes with the action of another person attempting to reach his or her goals (Johnson & Johnson, 2009. p. 38).

Finally, developmental conflict often involves the type of conflict which occurs between a parent and a child: “recurrent incompatible activities based on the opposing forces of stability and change within the child, cycling in and out of peak intensity as the child develops socially and cognitively” (p. 38).

The first two types of conflict (constructive controversy and conceptual conflict) apply to this research, making up what we refer to as Intellectual Conflict within the classroom environment. This is very similar to what Aristotle referred to as “deliberative discourse” when two parties engaged in constructive debate, with both parties seeking agreed solutions.

### The Creation of a Classroom Dialectic in Cooperative Learning

Dialectic is defined as the “art of discussion or debate” (Baxter & Montgomery, 1996). “In classical Greek philosophy, the primary method of intellectual discovery was through the dialectical method of argument, discussion and dialogue” (p. 19).

In developing an academic framework for intellectual conflict, procedures based on "...dialectical systems are used to create cognitive conflict by requiring students to witness a "debate" between at least two positions (Johnson and Johnson, 209, p. 38)." There are those who believe (oral) debate between individuals brings an improved outcome, in part, because of the possibility that two individuals from differing perspectives may come to agreement on a common solution. Johnson and Johnson suggest there is growing interest in "...argumentation and debate as an instructional procedure" (Huber & Snider, 2005), but adds, "...there are few empirical studies documenting the benefits of jurisprudential and dialectical procedures."

But the notion that a higher outcome or discovery can come from increased tension or debate in the classroom is one that is shared by researcher Leslie Baxter. "That idea is very Bakhtinian," says Baxter.

Meaning-making, according to Bakhtin, occurs through the interplay of different, often competing discourses or positionalities, or value systems....and that provides space for new meanings to emerge. When that interplay of competing meanings is closed down (as Bakhtin refers to as monologues), or the calcification of meaning...that would be semantic death. New meaning emerges out of uncertainty, not certainty. So the worst thing that could happen in a classroom environment would be an overdose of righteousness. (Baxter, 2012).

In a Bakhtinian perspective, the beauty of cooperative learning (as Leslie Baxter may view it) is that it provides a forum for the free exchange of ideas in a small group, a controlled uncertainty, which allows for meaning-making and discovery to emerge.

In terms of actual college debate outside of the classroom, colleague Barbara Montgomery says there's often a misunderstanding of relational dialectics in terms of the actual Marxist interpretation.

One thing we say over and over in the book *Relational Dialectics*, is that there is no resolution; no time, no point, no where, that the juxtaposing of multiple perspectives (not just two) is going to lead to resolution, because everything is always in process. I would think of this (classroom debate) much more in terms of traditional/political dialectics where we think of it as conflict (Montgomery, 2011).

Montgomery does say, however, that Relational Dialectics (as defined in "Relating: Dialogues & Dialectics, 1996) can occur within the individual (in terms of an attitude, like openness) within the context of a conversation. An individual can decide to be "open" to new ideas or perspectives, but remain set in a belief until convinced otherwise. This action could occur within a group setting within a cooperative learning format.

Kramer (2004) recognizes that although people spend much of their lives in interpersonal and family relationships, other people find those relationships as part of "...work settings, and third place or life enrichment groups (Kramer, 2002) such as religious, arts or other voluntary groups" (p. 312). A dialectical perspective recognizes that there are tensions between oppositions in human interaction, such as the varied life perspectives and opinions that may be found within a cooperative learning group.

### Research Objectives

With the above considerations in mind, the primary purpose of this study is to explore the student learning outcomes among those research studies investigating cooperative learning in higher education, and to identify and develop areas involving human communication behavior that may be appropriate for inclusion in speech curriculum design.

Specifically, I will review the recent scholarship of cooperative learning literature and report on the documented relational elements of interpersonal communication contained within the methodology, addressing the question, “How can cooperative learning contribute to the teaching of speech communication?” Toward that end, this dissertation will be conducted through a meta-analytic review of the most recent published research on cooperative learning to determine what instructional variables within CL positively impact the teaching of speech in a classroom environment.

### Significance of the Study

This study is significant for three reasons: First, the pedagogical importance of the relationship not only between teacher and student, but between students, is important to the enhancement of the higher education classroom using cooperative learning teaching methods. A compilation of the positive and negative outcomes in cooperative learning settings will greatly enhance an understanding of the role of student groups.

An analysis of the research will show a greater understanding and allow for identification of communication variables experienced in cooperative learning settings, and establish a base for developing new more effective teaching methods in speech communication.

Second, the study is significant because it may provide for a new base of theoretical and heuristic value for instructional communication scholars, highlighting alternative teaching methods which stress student engagement, intellectual tension and, in its ideal, the construction of knowledge within a classroom setting.

Third, cooperative learning teaching methods may hold much promise in the teaching of public speaking and speech. Aside from group/team presentations, the co-creation of topic selection, speaking outlines to allow for more complex presentations, presentation choices and feedback mechanisms in the classroom setting may allow for greater progress and competence on the part of the speaker. Some elements of students working in informal groups are used in many speech classes already, but central to the formation of CL is the pre-planning and adherence to other tenets and axioms, such as positive interdependence, individual and group accountability (sink-or-swim), face-to-face promotive interaction, adequate interpersonal skills, and effective group processing. In some ways, CL is similar to the training provided by the speech education methodologists almost a century ago "...and the likes of John Dewey (1915) and his emphasis on learning (speech) through participation" (Goldberg, 1968).



## Preview of the Study

Chapter II of this dissertation contains a literature review of relevant research regarding the three key elements of this study: (a) Social interdependence theory and its origins; b) cooperative learning, including its various forms of application in today's classrooms; (c) the theoretical origins of cooperative learning, from the Gestalt School in Berlin to its American evolution (including the work of Lev Vygotsky and Jean Piaget) to the application of Deutsch's social interdependence theory (1949) and David Johnson's application of that theory (1970) to an educational setting ; and (d) CL's natural connection to the development of teaching speech.

Chapter III outlines the methods used in this meta-analytic review of the cooperative learning literature and reports on the results of the meta-analytic statistical study.

Chapter IV discusses the results of the meta-analysis.

Chapter V involves a deeper discussion of the results as they apply toward cooperative learning in higher education.

Chapter VI reviews the major findings, discusses the implications of the findings, suggests areas for the inclusion of cooperative learning techniques into a public speaking classroom and the teaching of speech, grounded in theory, recognizes the study's limitations, and offers suggestions for further research.

## CHAPTER II

### REVIEW OF LITERATURE

Social Interdependence Theory is the grounding theory upon which cooperative learning rests. Developed from the work of Social Psychologist Morton Deutsch (1949) researchers have since adopted many of the guiding principles of the theory into other areas of research, including areas of interpersonal communication (primarily the notions of trust and interpersonal conflict).

Deutsch is said to have built his theory on the work of Kurt Koffka (1935) and Kurt Lewin (1935), the latter with whom he studied directly as a student, with origins in Gestalt Psychology and Lewin's Field Theory (Johnson & Johnson, 2006, p. 287)

Gestalt theory emerged from the University of Berlin in the early 1900's with an overriding principle that posits human beings are "primarily concerned with developing organized and meaningful views of their world by perceiving events as integrated wholes rather than a summation of parts or properties (p. 287)." Koffka (one of Gestalt's founders) is said to have forwarded the notion that groups were "dynamic wholes in which the interdependence among members could vary (p. 288)." And Lewin, later added the idea that the essence of any group, is its "interdependence" among members.

This notion of a social interdependence is a central facet of cooperative learning which seeks out greater productivity and ideas through individual human interaction as members of a group. As such, group members are made “interdependent” through common goals, and that there must be more than one person involved and that each person in the group must have an opportunity to in some way impact the other, either through direct dialogue, or some other form of communication. In the cooperative learning group, this state of “impact” usually happens through dialogue, or human beings embracing orality and the use of the spoken word in order to share ideas and information in the hoped for outcome of the creation of knowledge. This gives rise to the notion of the Principle of Contemporaneity;

This impact occurs in the immediate situation, as each person’s behavior is determined by how the situation is perceived, rather than by objective or historical factors. The principle of contemporaneity states that the only determinants of behavior at a given time are the properties of the person and that person’s psychological environment at that time. Thus, social behavior is inherently contextualized and cannot be understood outside of space to which it is calibrated (Johnson & Johnson, 2005, p. 288).

What is critical to an understanding of this principle within a communication context is its modern relationship to the Bahktian notion of dialectical reasoning, which will be discussed later in this chapter. It is the importance of this spontaneous sharing of information (usually in dialogue with one or more) which leads to a greater awareness of ones situational environment.

David and Roger Johnson have referred to this dialogue as an “intellectual tension” within the group, which, in the stream of dialogue and notion of “turn-taking” during talk, a heightened reasoning or intellectual discovery is achieved.

### Types of Social Interdependence/Tension Systems

Deutsch posited two types of social interdependence; positive and negative.

Positive interdependence exists when, 1) the goals of two or more individuals are the same, 2) individuals perceive they can attain their goals, and 3), only if the other(s) with whom they are ‘cooperatively linked’ can attain their goals also.

Negative interdependence (competition or individuals who are competitively linked) exists when 1) goals of two or more people are different, and 2) if the others with whom they are competitively linked fail to achieve their goals.

No interdependence (individual pursuit of goal achievement) exists when there is an absence of correlation among goals. According to the work of Deutsch and the team of Johnson and Johnson, “...the basic premise of social interdependence theory is that the structure of the goals of the people in the situation determines how participants interact and the interaction patterns determine the outcomes of the situation” (Deutsch, 1949; D.W. Johnson, 1970; D.W. Johnson & Johnson, 1989).

These assumptions (positive or negative interdependence) are key to the understanding of social interdependence theory, especially as it applies to the development of the teaching and learning method known as cooperative learning.

### Constructs of Cooperative Learning

There are several constructs attached to the above assumptions of social interdependence theory that must be posited before a further discussion of the theory can be resumed. The first is the notion of a defined goal structure. The type of goal structure determines the level or type of interdependence (positive or negative) within a group (Johnson & Johnson, p. 292). Also, the type of goal structure also determines the type of interaction within a group.

Will the individual share information with other group members (thus promoting a shared journey of discovery within the group)? This type of interaction is called promotive.

In the opposite, if information is retained and common goals within a group are not clearly delineated, this can lead to oppositional interaction, a type of group interaction inherent in a competitive or negative interdependent environment. Individual actions in this type of group environment will reduce the likelihood of others' successful achievement of the joint goal.

Both promotive and oppositional interaction within groups occurs only when there are defined goals. When there is no defined goal present, there is no interdependence and thus group interaction as this theory defines it no longer exists. This would be the absence of interdependence.

The above identification of the types of social interdependence and interaction patterns holds the key to cooperative learning as defined by Johnson and Johnson.

Many researchers have put forth notions of ‘group work’ or ‘collaborative learning’ that do not have the defined common goals identified in the theory. Cooperative learning embraces the basic assumptions of the theory, and without those assumptions present in a classroom environment, students are simply engaging in what might be described as group or team work, not cooperative learning. These are the assumptions upon which Johnson and Johnson (and others) have defined and built a classroom framework of teaching and learning called cooperative learning.

#### Genesis of Cooperative Learning in Practice

Starting around 1970, Educational Researchers David and Roger Johnson (David, a former student of Morton Deutsch) started applying critical elements of social interdependence and goal setting to the classroom environment. Prior to their research into cooperative learning, both did work in the areas of interpersonal trust and interpersonal conflict (which they have now developed into a core curriculum they call, peace studies).

If there is a key element in the success or failure of a cooperative learning group to provide superior outcomes, the emphasis would be on the ability of a student group to indeed, cooperate.

Also referred to as social skills (Johnson & Johnson) and interpersonal competence (Baxter and Montgomery), the notion of students automatically working successfully together in group work, is in itself, hard work. The Johnson's require five elements (assurances) in their definition of cooperative learning that are designed to bring a social level of maturity to students working together in a classroom environment.

1) Positive Interdependence (that students are linked together in such a way as to not succeed unless they do it together), 2) individual accountability (individual assessment, which is reported back to the group), 3) face-to-face promotive interaction (individual's promoting each others successes by helping, assisting, supporting, encouraging, and praising the other's efforts to achieve); 4) social skills (students must be taught trust-building and conflict management skills); and, 5) group processing (maintaining effective working relationships) (Johnson & Johnson, 1999).

Without strict adherence to these tenets, dysfunction may occur and a breakdown in the system that, supposedly, nurtures superior pedagogical and learning skills ensues. "The two most common forms of behavioral (social) problems include 'un-involvement' and 'taking charge' (often referred to in today's literature as "bullying") (Johnson and Johnson, 2002).

Team members with issues of 'un-involvement' (also called "laggards" or "motivationally challenged") are said to be students who work alone, do not attend team meetings, show no interest in the team's work or outcomes, refuse to do any of the work

themselves, and even attempts by some students to ‘sabotage’ the good efforts of the team (Hsiung, 2010). Team members who appoint themselves ‘king’ of the group often do all the work, refuse to let others participate or order others around, and bully other team members (Felder and Brent, 1996; Felder and Brent, 2001; Johnson and Johnson, 1999, Johnson and Johnson, 2002).

Other studies show a pattern of ‘non-cooperation’ or ‘mis-cooperation’ when working in groups. In one college level ESL course taught to recent immigrants to Canada,

Students sometimes divided up the group task instead of working together and thinking jointly. They wanted to complete the task rather than to spend time reasoning about why they were doing the work in a particular way or discussing different opinions” (Liang, 2004).

This led, according to Liang, to the formation of cooperative learning dilemmas or “dilemmic tensions” within the cooperative learning group.

The dilemmas these students encountered during cooperative learning tasks seem to derive from conflicting values and practices of the cultural, socio-economic, and educational worlds that these students experienced before and experience now (p. 637).

The effectiveness of cooperative learning pedagogy within a polarized and divided high school or college has come into question in the past. And it is important to recognize that the divisions between cultures and race existed prior to the implementation of the learning methods.



“Little empirical evidence exists about intergroup conflict in settings in which many different racial and ethnic groups coexist and in which the boundaries between groups are blurred by overlapping categories,” reports Slavin and Cooper.

Because cooperative learning groups encourage positive social interaction among students of diverse racial and ethnic backgrounds, they have great potential to facilitate the building of cross-ethnic friendships and to reduce racial stereotyping, discrimination, and prejudice (Slavin & Cooper, 1999, p. 648).

In spite of this encouraging research, problems in schools remain.

More research is focused today not only on cooperative learning, but teacher – student interactions and attitudes within the classroom, as well. Also, more attention is being given to the general “classroom climate.” “Classroom interaction dynamics are central to instructional communication” (Johnson, 2009, p. 146) and researcher Danette Johnson has coined a new construct called connected classroom climate. “Evidence exists that students desire positive classroom peer relationships and that student-to-student communication influences students” (p. 146). Student communication has been linked to such relational variables as support, openness, and respect.

In the past, the responsibility for the establishment of an acceptable classroom climate, which includes notions of clarity, task orientation, approachability and classroom control, has fallen on the shoulders of the teacher (Kerssen-Griep, 2008; Mazer & Hunt, 2008). This is the traditional top-down approach as outlined earlier in this literature review.

“Although teacher-centered conceptualizations of classroom climate are useful, an important dimension, student-to-student interaction, remains under-addressed (Johnson, p. 147).”

Student-to-student interaction is a centerpiece of cooperative learning pedagogy, and within that is the study of social skills in what is essentially an exercise in social immersion and peer-to-peer relational communication.

### Relational Communication in the Classroom

A renewed emphasis and awareness of an enlightened classroom climate which includes the establishment of in-class student relationships opens a new area to the research thread, one which has been brewing within the shadow of the traditional lecture/discussion umbrella. A new era of teaching and learning, encouraged not necessarily by the academic community, but by students as customers and receivers, and backed by communication research is coming to the forefront.

The traditional lecture-only format is losing its prevalence in the classroom, as it is replaced with mixed delivery methods which utilize group discussion, dyadic work, and peer review, to name a few, all of which minimize lecturing (Rocca, 2010, p. 186).

More indication as to this new “student-as-consumer” approach supported by communication research reveals that,

In-class participation has become increasingly important with millennial-generation students who demand more interaction from their classroom experience” (Allred & Swenson, 2006; Howe & Strauss, 2000).

While teachers await new research on student-to-student, in-class interaction, renewed emphasis is placed on the development of participatory exercises involving the development of peer relationships and perhaps a renewed interest in cooperative learning at the higher education level. One area of communication research that may be able to be of relevance is communication studies focusing on work relationships, dialogue, and the dialectic.

“Good (team) relationships are characterized as constructive... productive... embrace the notion of mutual understanding... and are self-corrective” (LaFasto & Larson, 2001, p. 38), reports two leading scholars in the area of teambuilding; but as we look closer to the basic building blocks of a good team, we must look at the individual relationship that makes up such a team.

Though their seminal book on personal relationships could, in part, apply toward other classroom relationships, Leslie Baxter and Barbara Montgomery (Baxter & Montgomery, 1996) offer insights into dialogue and the dialectical process that can very directly apply to a relationship found inside a cooperative learning classroom. They coin the term “dialectical contradiction” ( p. 7), a relational perspective not dissimilar to what Johnson and Johnson refer to as “constructive controversy.” Certainly in the classroom group setting, group members may experience intellectual conflict (as described in Chapter I of this dissertation).

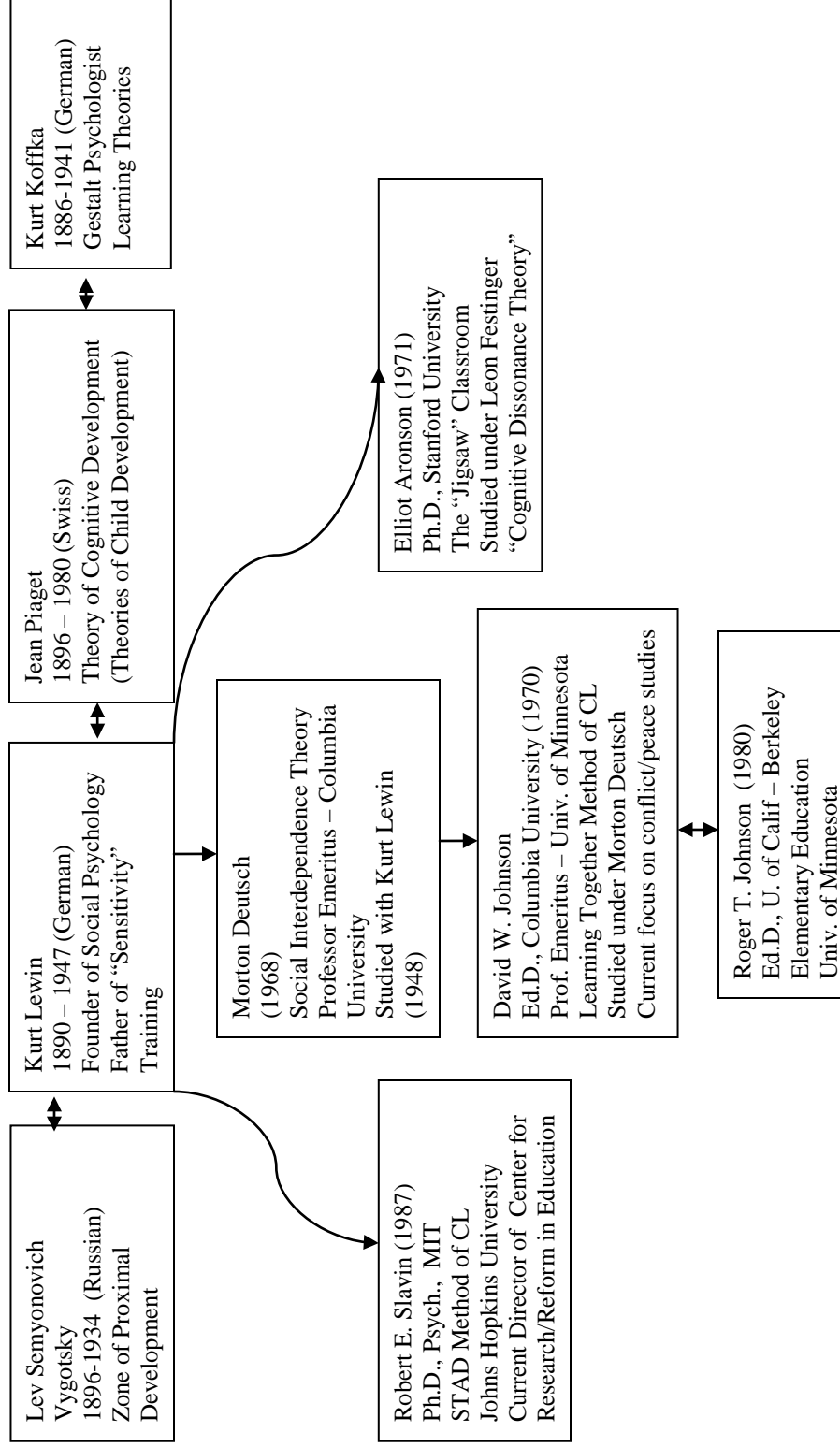
“Dialectical procedures are based on the assumptions that (a) individuals, because of their differing areas of expertise, value systems and perspectives, will make different inferences from the same data” (Johnson & Johnson, 2009, p. 38).

Students, when grouped together in the classroom, will often have an existing relationship (outside of the classroom) or a new one will be created within the parameters of classroom activities.

Baxter and Montgomery (p. 8) suggest “contradictory opposites are an inherent feature of sociality...they imply that contradictory forces are neither negative nor positive (although controversy theorists would hope the contradictions would turn positive in regard to student learning outcomes and discovery), and the dialectical view of contradictions as dynamic and not static (as Johnson and Johnson would argue).

It is in this research, and in an analysis of the works of Bakhtin, where communication scholars could contribute to the body of knowledge in this area of cooperative learning and the harnessing of intellectual conflict within the classroom. Cooperative learning (as a teaching and learning method) has roots set in early 20<sup>th</sup> century Gestalt School of Social Psychology with research in this application by the likes of Wolfgang Kohler (1929), Kurt Koffka (1935), Kurt Lewin (1935) and, later, Morton Deutsch (1949). Prior to his death, Lev Vygotsky (1934) reviewed the works of Koffka and the Gestalt School and praised the direction of the school as an “...advance over the atomistic mechanism of earlier stimulus-response theories” (Wertsch, 1985, p. 21).

**Figure I:** Origins and Development of Cooperative Learning Within Social Psychology



### Zone of Proximal Development

The Vygotsky/Koffka relationship is significant in that it provides a link between the research of Vygotsky and the Zone of Proximal Development,

...the distance between a child's actual developmental level as determined by independent problem-solving...and the higher level of potential development as determined through problem-solving under adult guidance or in collaboration with more capable peers (Wertsch, 1985, p. 67; Haenen, et al., 2003).

And the Gestalt school (Koffka) which is cited as the cornerstone for the development of social psychology in America and setting the stage for the development of cooperative learning. While Vygotsky recognized the research line of the Gestaltists, he also criticized some of its proponents for "...slipping back into the mistake of advocating a theory that rests on a single developmental factor and a single explanatory principle" (such as stimulus-response bonds highlighted by Koffka) (p. 21).

These schemes do not take into account the reorganization of the process of development itself, by virtue of which the importance and significance of any characteristic is continually changing in the transition from one age to another....Child development is a very complex process which cannot be fully defined in any of its stages solely on the basis of one characteristic (Vygotsky, 1972, in *Collected Works* vol. 1).

It was Vygotsky who highlighted the significant difference between the development of thinking and speech in ontogenesis of human beings, and the parallel but different phylogenetic speech of chimpanzees and apes.

Although coming from different genetic make-ups, it is observed that both humans and apes are affected (changed behavior) when immersed in a collective society. Psychologists of the time (1925) tried to derive “social behavior from individual behavior” (Vygotsky, 1982).

They investigated individual responses observed in the laboratory and then studied them in the collective. They studied how the individual’s responses change in the collective setting. Posing the question in such a way is, of course, quite legitimate; but genetically speaking, it deals with the second level in behavioral development. The first problem is to show how the individual response emerges from the forms of collective life (Vygotsky, 1982, in *Collected Works* vol. 1).

Through the early works, we are able to draw a connection between the developmental and dynamic phases of human beings (and the Zone of Proximal Development), the role of the collective and how responses (and perhaps thinking) of the individual is changed when placed in a group/collective, and how that social immersion process can bring about different, and perhaps improved, cognitive and pedagogical outcomes.

David and Roger Johnson, co-directors of the Cooperative Learning Center at the University of Minnesota, continued the early work of Morton Deutsch and the development of a theory of social interdependence coined the term, Cooperative Learning, in 1970.

While a primary focus of this dissertation is reporting on the development and implementation of cooperative learning, recent work of the Johnson's, Robert Slavin, and others have focused on notions of conflict resolution and peacemaking, areas which have strong ties to interpersonal communication and relational elements between students (peers) in a cooperative learning classroom.

Deutsch noted that the Gestalt perspective (or Gestalt thought) generally followed two fundamental guiding principles:

- 1) it envisages a complex (psychological) process with many part events that interact, and
- 2) (through these interactions) a certain best-end state is reached (Deutsch, 1965, p. 16).

Some of Deutsch's earliest work was initiated with wartime funding provided by the U.S. Department of Defense and private support from Bell Laboratories, Inc. The military, as well as executives in private industry, wanted more information about issues of trust in human beings (specifically, how sailors and soldiers of the time learned to depend and rely on the actions of their brothers in arms). This led to an initial funded study for Deutsch (following the experimental processes framed by the Gestalt School) into the effects of cooperation and competition upon group processes (Deutsch, 1949), and issues of trust and suspicion (Deutsch, 1958). Deutsch also conducted a research study for the Office of Naval Research titled "Conditions Affecting Cooperation (Deutsch, 1957)."



This research led to the identification of three primary elements of social interdependence (Deutsch, 1949) among human beings: cooperative, competitive and individualistic (Johnson, Johnson, and Holubec, 1984, p. 1:2). These three areas are the basis from which Johnson and Johnson identify learning in a classroom environment.

A cooperative learning environment embraces students working together with common goals, and competitive and individualistic teaching methods are centered in the time-tested lecture/discussion teaching formats found in most classrooms today.

Lecture/discussion typically highlights the work ethic and achievements of the student as an individual.

The competitive format also recognizes the work of the individual student within the lecture/discussion format, but rather emphasizes an academic environment where students compete with other students in the hopes of advancing classroom productivity and learning outcomes.

The third, which is the subject of this research, is a cooperative learning approach which immerses a student in a classroom setting emphasizing the notion of “students working with students” to co-create the construction of knowledge. It may be considered a “constructionist” approach to higher learning.

#### Another Alternative to Lecture/Discussion

One of the most ardent supporters of a constructionist learning design was Maria Montessori (1963), originator of the popular school and learning centers throughout the

world. Montessori believed that “Education is a natural process spontaneously carried out by the human individual. This is done not by listening to words, but by experiences upon the environment (Montessori, in Gagnon & Collay, 2001, p. 1).

Implied in this process is the notion that human beings learn best when information is communicated as “deep knowledge,” rather than surface information, as in lecture.

In constructionist learning design, the student creates knowledge instead of consuming information. Students want to learn and will risk making mistakes, even taking some falls in order to succeed. School learning is most powerful when it clearly parallels real-life learning. (Gagnon & Collay, 2001, p. 6).

Cooperative learning classrooms exemplify constructivist epistemology.

“Constructivists consider learning an interpretative process in which individuals engage in unique constructions of knowledge as they make sense of their experience” (Dana & Floyd, 1993).

While the lecture/discussion format highlighting individual achievement through individual accountability and competition has become the dominant method of teaching (Johnson & Johnson, 1994) and learning in the U.S., many researchers, including David and Roger

Johnson, felt compelled to experiment and report on various cooperative learning techniques that may have been “home-grown” in primary, secondary, and college/university settings. These “home-grown” techniques (many with roots in

constructionist learning principles) were then compared to the traditional lecture/discussion formats and learning outcomes were assessed primarily through statistical analysis using effect sizes (analysis of variance of many variables in a study).

These effect sizes were reported as “proofs” when, generally, techniques employing cooperative learning methods in the classroom proved superior to the lecture/discussion format.

Why, then, do academicians continue using the lecture/discussion method in college classrooms, a teaching and learning technique that is shown to be second best? Part of the answer may lie in the practice of recognizing only two instructional paradigms in teaching: the rhetorical tradition and a perspective involving relationships (Finn, et al., 2009). “The rhetorical perspective is more likely to emulate linear forms of communication in which teachers are the source of instructional messages and students are expected to be compliant receivers of instructional messages” (Mottet & Beebe, 2006, p. 23). Finn (2009), and others report this type of teacher/student tradition is more apt to be found in classrooms involving scientific or social-scientific disciplines.

A perspective involving a closer relationship with a student may be uncomfortable for some teachers. This challenge to an existing comfort level in the rhetorical perspective may involve student challenges to teacher credibility as the communication pathway now involves feedback in a relational perspective.

Traditionalists now face the prospect of abandoning an age-old teaching method “...where teachers are positioned as the primary sources of information and students as the primary receivers/learners”(Finn, p. 517).

Cooperative learning (and other pedagogical teaching/learning methods) embraces a relational perspective in which the system “...positions teachers and students (as well as students-and-students) as co-creators of shared meaning within the context of an interpersonal relationship” (p. 517).

### Social Interdependence Theory

Like others before them, David and Roger Johnson subscribe to a notion of social organization, such as symbolic interactionism led by George Herbert Mead, and later assembled by Blumer and Kuhn. Mead referred to recognition of the “self”, not in terms of self-awareness, but in terms of the “self” within a society or organized structure with that structure providing a “nurturing feedback” in which the self is improved, enhanced, and fulfilled.

Animals in a group will perform the grazing functions better than when alone. There seem to be instinctive tendencies on the part of these forms to move in the direction which other animals are moving, such as is found in any group of cattle drifting across the prairie together as they graze (Mead, 1934, p239).

Mead is able to observe the benefits of a group of animals working together (just as he observed a group of insects doing the same).

It is at this point that he makes a jump to human beings, suggesting that a “better outcome” can be produced by human beings working together.

In the case of the human group, on the other hand, there is a development in which the complex phases of society have arisen out of the organization which the appearance of the self made possible...It is the self as such that makes the distinctively human society possible. It is true that some sort of co-operative activity antedates the self. There must be some loose organization in which the different organisms work together, and that sort of co-operation in which the gesture of the individual may become a stimulus to himself of the same type as the stimulus to the other form (Mead, p. 240).

Mead aligned himself very closely to the Vygotskian notion of a combination of the human as a growing, dynamic organism, and the impact of a collective society working in harmony to develop not only a social self in humans, but cognitive thought as well. In a similar thread, Deutsch and David and Roger Johnson suggest that social interdependence exists when individuals' outcomes are affected by each other's actions (Deutsch, 1962; Johnson & Johnson, 1989), either by an acceptance of reasoning and decision making or by other influencing factors. Other views, however, embraced by Johnson and Johnson, make the following distinction between symbolic interactionists and social interdependence.

Symbolic interaction theorists posit that a person's self-perceptions are based on perceptions of how others view him or her, and social interdependence theory posits that individuals' perceptions of each other must be accurate in order to coordinate behavior in cooperative situations and to act strategically in competitive situations (Tjosvold, XueHuang, Johnson & Johnson, 2008, p412).

## Communication and the Child

The benefits of students working together in groups to construct knowledge (or in the least, to share information) was also intensely studied by Russian Social Psychologist Lev Semonovich Vygotsky (1887-1934) (Rieber & Carton, 1987) and Vygotsky's simultaneous analysis of the research of Swiss/French Psychologist Jean Piaget (1896-1980). It was from Piaget's research that Vygotsky examined the "ego-centric self" of the child up to the ages of seven to eight years and how the discussion of Piaget cites a "child's limited capacity for introspection – his difficulties with conscious reflection (p. 65)."

Both Vygotsky and Piaget imply in their research that after ages seven and eight, most children are able to experience value in the formation of social groups and develop personalities outside of their "unconscious, egocentric self."

Vygotsky examined Piaget's research and, rather than focusing on the young child as individual, he immersed his experimental observations in the area of children and groups and how the individual interacts (with a focus on thinking and speech) with others. Vygotsky valued Piaget's research so highly that it could be considered by outside scholars the basis for Vygotsky's own conclusions and the conceptual formation of what was to become the framing for the Zone of Proximal Development.

The direct link between the empirical observations of egocentric speech in childhood and Piaget's hypothesis of childhood egocentrism is fundamental. Thus, if we want to understand the foundation of the theory

we must consider its empirical premise, the concept of egocentric speech in childhood (Vygotsky, 1932, p. 68).

Vygotsky then focused on other questions--primarily on the development of egocentric thought (speech) of the child after years seven and eight. The working hypothesis then switches to the observation of egocentric speech as a “transitional stage in the development of speech from external to inner (p. 71).” But what happens to egocentric speech? Piaget argued that it simply atrophies into the future development of the human being. Vygotsky differed in his interpretation, setting forth the argument that the egocentric speech of the child is a necessary developmental and evolutionary stage as it necessarily precedes external or socialized speech (thinking).

It is the socialized speech (giving rise to socialization and the young human being working in groups) that provides the next step in information gathering and the formation of knowledge and the mind.

It is important to note (as explained in Chapter I) that while the study of cognitive development in young children has focused on the mind of the egocentric self and how it is maximized by children working in groups, what cannot be overlooked is the linguistic centrality of the enhancement of mentation through spoken language (Dance, 1978). Group work allows for not only active argumentation and debate, but unconsciously reinforces the notions of symbol formation and decentering in real time, “...to consider how one’s behavior might appear to others, or to assess one’s possible behavior in terms of the reaction of another (p. 5).” Real time, in this perspective, refers to the social

(communicative) pressure to react in conversation without delay, as one would in active deliberation within a cooperative learning group. This cannot be done alone.

### Cognitive Development and Cooperative Learning

Areas of agreement between Piaget and Vygotsky centered on what two or more people accomplish in the area of cognitive development. When two or more people work together (as in a group project), it is most likely that a socio-cognitive conflict occurs, creating what some call cognitive disequilibrium (Johnson, Johnson, and Holubec, 1984). This disequilibrium, in turn, stimulates perspective-taking amongst participants and leads to overall cognitive development

This developmental process, however, does not happen by ‘magic’. Johnson and Johnson make clear the perspective that their colleagues in the area of developmental theory agree upon, but break away in a turn toward a perspective of controversy.

Controversy theorists believe the conflict or questioning within a group of people (such as students) creates uncertainty and conceptual conflict---which in turn prompts a rethinking (cognitive restructuring) of the problem. The outcome, say these controversy theorists (including Johnson and Johnson), is a better, more refined product, and results that point to a “more thoughtful conclusion (Johnson & Johnson, p. 2:6) of the problem.”



### The Dynamic Whole

Group and team members must be able to interact in an effective, socially-acceptable atmosphere of cordiality to allow the information exchange in group processes to take place. Social skills such as "...tact, social poise, (being able to) create a sense of trust, respect and clarity of roles in the working relationship that is established (Deutsch, 1975, p. 264)" are necessary for not only for the researcher, but each group member who hopes to be an integral part of this dynamic group process.

Although the work of these researchers precedes the above date, it was in the publication "Cooperative Learning: Increasing College Faculty Instructional Productivity" (Johnson, Johnson, & Smith, 1991) that they focused this teaching/learning method toward higher education. Previously, most research in this area focused on children of primary ages (K-6).

Although in some cases researchers have embraced the banner of Cooperative Learning, Cooper and Slavin suggest that "...of all the cooperative learning methods, these (those developed by the Johnson's) are the closest to a pure 'cooperative' model" (Slavin & Cooper, 1999, p. 656).

Researchers Johnson and Johnson discount efforts by some who put forth the notion that simply placing "...students side by side at the same table and having them talk with each other" is not cooperative learning; neither is tasking students "who finish first and then help the slower students".

Simply assigning a group of students a topic for investigation and presentation, “with one person doing a majority of the work (Johnson, Johnson, & Smith, 1991, p. 6),” also is not cooperative learning.

### Group Investigation (Sharan & Sharan)

The notion of group investigation, or working collaboratively, was put forth by Israeli researchers Shlomo Sharan and Yael Sharan. It is referred to as a “...general classroom organization plan in which students work in small groups using cooperative inquiry, group discussion, and cooperative planning and projects (Stephan & Vogt, 2004, p. 66).”

Compared to the previous definition of CL, Sharan’s model has far less accountability and much more autonomy (in other words, less supervision by an authority figure and more independence for the student), thus the trend toward collaboration (creating together) rather than cooperation. Their studies do include aspects of students of different ethnicities (varying ethnic backgrounds) working together toward common goals.

“They found that students who experienced group investigation had significantly more positive ethnic attitudes than did students in traditional classes (p. 67).” The positive impact of either collaborative/cooperative or group investigation on inter-ethnic relationships is well documented and is mentioned as one of the positive outgrowths of these teaching and learning techniques.

## Cooperative Learning vs. Collaborative Learning

Another perspective on CL is posited by researchers who have investigated the classroom as a “learning community” with all participants as equals (including the instructor).

The creation of this learning community is one where

...the expert (instructor) and the learner (student) see themselves as fellow members of a learning community in which knowledge is constructed collaboratively (Wells, Chang, and Maher, in Sharan ed., 1990, p99).

In contrast to the Cooperative model, a Collaborative model deemphasizes the expertise and authority of a classroom instructor and emphasizes notions that all participants are equal in a quest for knowledge, “...in spite of having unequal knowledge about the topic under study (p. 99).” Within this model, it is hoped that the desirable outcome will be the opening up of the classroom to the pursuit of topics that may be outside of the instructor’s area of expertise.

“Thus, in collaborative settings, the distinction between expert and novice is no longer statically maintained, but is subordinate to a concern for the cognitive and attractive benefits of group learning for the individual learner (p. 99).”

What is difficult to assess from this method are the areas of accountability and assessment. Are individuals within the group participating wholly and are the group dynamics beneficial to all? Some may perceive this method as setting sail and then letting go of the rudder.

The researchers do recognize the contributions of Vygotsky and Piaget in their modeling, citing both for their contributions to the importance of conversational interaction in that "...conversation provides a forum" (p. 97) for an exchange of ideas between students, so they can be exposed to a form of "social modification" and undergo change and revision (Vygotsky developed the Zone of Proximal Development, in what is highlighted as a basic difference of the teaching/learning perspective between Soviet psychologists of the time and the distinctly American social psychological thread).

American researchers are constantly seeking to discover how the child came to be what he is; we in the USSR are striving to discover not how the child came to be what he is, but how he can become what he not yet is (Leont'ev, 1977, in Wertsch, p. 67).

Disagreement arises, however, in the role of the authority figure in the model. In the development of learning communities, the authority figure (teacher) is assimilated into the community.

Johnson & Johnson (1999, p. 70) have identified no fewer than eight variations of cooperative learning methods brought forth by researchers in use in classrooms today. They highlighted five axioms needed in their "Learning Together" CL method. Of those five, the one that is perhaps receiving more scrutiny today is that of the development of adequate social skills and group processing. How well a group (2-4 students) works together is largely dependent on the relational maturity or interactional competence (Baxter & Montgomery, 1996) of those engaged. This would also directly reflect on the

effectiveness of learning outcomes and how significant these learning outcomes would be perceived.

If there is a key element in the success or failure of a cooperative learning group to provide superior outcomes, the emphasis would be on the ability of a student group to, indeed, cooperate. Also referred to as social skills (Johnson & Johnson) and interpersonal competence (Baxter and Montgomery), the notion of students automatically working successfully together in group work is, in itself, hard work.

### Previous Learning Outcomes

So far I have addressed studies which have shown favorable learning outcomes using cooperative learning techniques – both within and outside the years which include higher education.

A 2000 meta-analysis of cooperative learning literature (Johnson, Johnson, & Stanne, 2000) identified 164 studies using eight cooperative learning techniques. “All eight cooperative learning methods had a significant positive impact on student achievement” (p. 1). And when compared with individualistic learning (such as the environment which is found in lecture/discussion, 5 of the 8 reported a significant difference (improvement) in effect size “...providing a strong validation for its effectiveness” (p. 2).

The Johnson and Johnson study embraced a wide breadth of grade levels (small children to adult learners), article types (journal articles, theses, technical reports,

unpublished reports) and included a large number of efficacy studies.” Unlike “effectiveness studies” (real world studies of how cooperative learning is delivered and the implications of outcomes), efficacy studies “...focus on laboratory studies of short-term effects” (p. 4). And while the emphasis of the Johnson and Johnson meta analysis was on the longer term studies (46% involved studies of more than 30+ sessions), 26% of the meta analysis included short term studies of 9 sessions or less.

Finally, the Johnson and Johnson study focused on the efficacy of each of the 8 different methods (vs. individualistic learning) and not on cooperative learning in its entirety. They did report that CL was more effective than individual learning methods, but it comes with an important limitation.

Knowing that cooperative learning can have powerful effects when properly implemented does not mean, however, that all operational actions of cooperative learning will be effective or equally effective in maximizing achievement. While many different cooperative learning methods are being advocated and used, educators have very little guidance as to which specific CL methods will be most effective in their situation (p. 4).

Despite the limitations of the study, the positive learning outcomes of CL reported warrant a closer look and possible guidance for future investigations into cooperative learning instruction, especially as they may apply forward to the higher grade levels (college and university level).

A second meta-analysis (Bowen, 2000), not included in this study, involved the examination of learning outcomes of high school and college chemistry students. It

showed significant differences in effect sizes between those learning under cooperative learning architecture, and those in traditional lecture/discussion. “The meta-analysis here shows ( $n=14$ ) that, on average, using aspects of cooperative learning can enhance achievement for high school and college age students” (p. 119), reports Clemson University Professor Craig Bowen.

The study also tested for “persistence and attitudinal outcomes” which also showed significant effect sizes in support of the cooperative learning strategy. Bowen also describes cooperative learning using the Johnson & Johnson definition.

#### Other Perspectives on Cooperative Learning

The phrase “promise vs. performance” comes to mind when reviewing current literature of cooperative learning. And it raises the question; does the implementation of a cooperative learning format automatically guarantee higher learning outcomes when compared to the traditional lecture/discussion approach to teaching? Johnson and Johnson say “No,” it doesn’t guarantee higher results. But that does not stop efforts by educators to find better, more effective ways of learning and knowledge acquisition.

In addition to the literature selected for this meta-analysis, a number of studies were left out for reasons having to do with missing data, or not meeting the age criteria of students (college/university, or adult learners). That does not, however, preclude a look at that literature for insights as to what variables may be valuable when considering the

study and implementation of a cooperative learning environment at the higher education levels.

One such area is that of student perceptions. Notions of ethnicity and cultural diversity within cooperative learning groups are one important area of possible benefit to an overall classroom environment.

One of the primary constructs or axioms of a cooperative learning classroom is the idea of positive interdependence. In a cooperative learning setting, "...students are encouraged to develop an appreciation for religious, ethnic, or cultural backgrounds" (Johnson and Johnson, in Putnam, 1998, p. 69).

While CL can enhance or bring together majority and minority ethnic classes in the education environment, a classroom climate not carefully thought out or implemented could be cause for disaster. Baker and Clark (2010) cite the need for more effective teacher training in curricula and assessment programs to better effect a CL classroom environment. "Domestic and International students need to be prepared more effectively ...specifically, the international students to bridge the gaps between their past educational experiences and typical education patterns" (Baker & Clark, 2010, p. 257).

The question facing educators today; are we doing enough to cater or personalize to the needs of the individual student and to eliminate all problems associated with learning styles and preferences? Cooperative learning groups help identify such differences, so that all students in class feel they are able to make the headway they need to lead in a competitive education environment.



While Johnson & Johnson are among the leaders in Cooperative Learning research, many others have been working to define the benefits of this alternative pedagogy. As mentioned previously, most studies focusing on cooperative learning strategies are conducted on the elementary and high school levels. One such study from The People's Republic of China, highlights many of the issues with regard to the Ali study (above), and other studies involving students from marginalized or invisible populations.

This study, which has been quoted earlier in this dissertation, is critically focused on areas where cooperative learning has much promise; primarily centered in dialogue and the important notion of promotive interaction between disparate social entities.

Liang (2004) suggests CL covers two parallel tracks, one focused on reflection, thinking, and knowledge acquisition; the other focused on the act of placing students in groups, and how we physically do that all-the-while constructing a classroom architecture which allows for such student learning. The study

...uses both reflection (theory) discourse and action (practice) discourse to reveal cooperative learning as an area which multiple and contradictory values collide and in which multiple and contradictory identities are constructed locally and discursively" (p. 641).

In other words, CL is a forum for creating and exchanging ideas from our various social and cultural identities, and where the outcome may involve the creation of new identities, and which may provide for a forum not only of social/cultural expression, but a

forum for conflict resolution and understanding which is very important in today's college classroom.

From an "action" perspective, one of the ways educational researchers look into implementing Cooperative Learning exercises into the college classroom is through the use of "games" or introductory group exercises which also acts as "icebreakers" (Ayotte, 2006).

Games are used as "warm-ups" at the initial stage of classes and it urges students to understand each other better. Games should be designed to complement topics covered in class and should be used to adulate variety (p. 3).

One such way to introduce topics (topic selection) in a public speaking class is to provide a political satire (such as Jon Stewart's "The Daily Show", or Stephen Colbert's, The Colbert Report) show at the beginning of class. These programs offer a comedic element to topics involving politics through the use of political satire, and satisfy the same social element that Ayotte may be looking for in setting up a classroom architecture for cooperative learning. The icebreaker or games at the beginning of the class can help bring students together in a classroom where uncertainty is reduced. This approach is most definitely non-traditional (when compared to lecture/discussion), and has not been studied, but holds promise.

A possible drawback or outcome of this suggestion is that not every student likes political satire. But many students already dislike public speaking (i.e. the fear of public

speaking) and the fear of presenting in front of a classroom. So the possibility exists to create or enhance the level of student interest, and not alienate others.

This type of program (whether it be political satire or some other type of comedy) is secondary to the hoped-for outcomes; a student classroom ready and eager to give a public speech.

Another issue facing groups according to Barr (2005) is the “lone-wolf phenomenon” in student teams. Student worldwide, but especially in America, have attended school with in a traditional teaching format (not groups). So many are educationally indoctrinated with the notion that individual (not group) achievement or learning outcomes are what is important.

The lone wolf is identified by a preference to work alone, a dislike of group process and the ideas of others, and a proclivity to see others as less capable and effective. The inclusion of the lone wolf in student teams is found to have a negative impact on student team performance (Barr, Dixon, et al., 2005, p. 81).

Lone wolves can be expected to emerge in every classroom environment. The key to this phenomenon is to identify it, and plan for it in curriculum and teacher training. This is yet another reason to seek adherence to a cooperative learning format such as the Learning Together format outlined by Johnson and Johnson.

### Current Trends in Teaching Speech

Methods of teaching speech at the college and university level have changed little since the transition from the age of the elocutionists. As late as the 1940's, it was argued

that every man had the ability to develop his own speech personality and not developing that personality could have devastating consequences.

A student may possess brilliance of intellect; have an understanding of the social and economic world in which he lives; have an appreciation of the fine things of literature, art and music; understand human nature; have high ideals; and, in other respects, be a potentially superior person, yet fail to contribute fully to society” (Murray, 1941).

What was emphasized in the early 20<sup>th</sup> century was the development of skills that included “...poise and emotional control, emotional responsiveness, vocal quality, bearing and directness, gestures, enunciation, grammar and diction.”

This was a time of tremendous change in lives and livelihoods.

When your grandfather lived on his farm, the element of human relations was only incidental to his income. With your father, his very livelihood, his entire welfare, may depend on how he gets along with his superiors (p. 3).

It was recognized that going forward, speech (and use of language) was a key element in the development of refined social skills that would hopefully lead to “...smooth and efficient social relations” (p. 3).

As American society changed, so did the demands of academia, and communication researcher’s started looking at the way students received information from instructors. “There is strong evidence for the importance of participating in class as

a way of bringing students actively into the educational process...and bringing life into the classroom” (Rocca, 2010, p. 188).

Issues of fear and inadequacy while students made in-class presentations were taken into consideration, along with recognition of stage fright and apprehension (which previously was considered a personality defect). “As far back as 1958 (Brown & Pruis), seating arrangement (in the classroom) was identified as a factor which impacted student participation” (p. 190).

In 1971, leading speech scholars were criticized for publishing a teaching anthology that excluded any mention of communication theory. Contributions from the likes of Theodore Clevenger, Gerald Phillips, William Clark Trow, and Loren Reid were cited as not “keeping up with the dynamic changes or philosophy that (was) taking place in the discipline of speech communication.”

R. Samuel Mehrley (Indiana State University) wrote,

The exclusion, for example, of any serious discussion of the contributions of communication theory and research to the study of speech, or an article dealing with behavioral objectives, are serious omissions (Mehrley, 1971).

Over time, teachers of speech communication seemed to always question, and seek out, better methods of teaching their discipline.

Today, greater recognition of the importance of peer engagement and student-to-student communication is being shared. In *Communication Education*, Frisby and Martin

(April, 2010) investigate instructor-student and student-student rapport in the classroom.

They cite Ellis (University of Denver, 1998) reporting that the role of the

...college instructor is to encourage student learning. However, Ellis argued that the primary job of an instructor is to promote learning, and thus called for more research to identify the instructor behaviors that contribute to that primary goal of promoting learning (Frisby & Martin, 2010, p. 146).

“The relationship between an instructor and student has been labeled an interpersonal one” (Dobransky & Frymier, 2004; Frymier & Houser, 2000; Nussbaum & Scott, 1980), “where both instructors and students enter the classroom with relational goals.”

The development and recognition of a positive rapport between instructor and student is now recognized in the literature, specifically “...operationalized using two dimensions: a personal connection and enjoyable interaction” (Gremier & Gwinner, 2000). Not only is a positive rapport expected in today’s college classroom, but students today enter the classroom “...with relational goals.

That is, students have a need for both instructors and classmates to like them” (Frisby & Martin, p. 157). This gives rise to the notion that instructors, when creating a classroom curricula for the upcoming term, must give serious consideration to how students will not only connect with the instructor (as in a relationship), but how students will connect with each other, as in “classroom connectedness” (p. 157).

Taken together, these findings support the notion that an instructor serves to meet both relational and rhetorical goals of the student. An instructor's behavior dictates the type of learning environment that is constructed, the type of relationships that bloom, and the academic outcomes that students achieve (p. 157).

Greater attention is being paid today by teachers of speech to consider not only the rhetorical goals of vocal quality, delivery, and critical thinking skills when coordinating a classroom, but to also consider the relational and interpersonal factors which make up the classroom environment. Positive classroom connectedness, rapport, and relationships in and outside of the classroom affect learning outcomes.

“Interpersonal relationships between instructors and students increased out-of-class communication, and that out-of-class communication was positively related to learning and student engagement (Dobrinsky & Frymier, 2004).

More recently, recognition of the value of dialectical tensions in the classroom is receiving more notice (Kramer, 2006; Prentice & Kramer, 2004).

A dialectical perspective recognizes that there are tensions between oppositions in human interaction, such as the need for independence and the need for dependence (Kramer, 2006, p. 311).

Kramer, recognizing the harnessing of these ‘group tensions’ highlighted by Johnson and Johnson (“Energizing Learning: The Instructional Power of conflict”), believes a dialectical approach in a classroom or group setting is a worthy area of study. “Much of the research on classroom dynamics has treated pedagogical technique as if the

human beings involved in education are somehow removed from the realm of interpersonal communication (Prentice and Kramer, 2006, p. 339).”

Dialectical tensions are not solely dyadic; when people join groups they experience dialectical tensions that are unique to groups. Thus, the classroom provides a place to study dialectical tensions as they affect both instructional and group interactions (p. 340).

Earlier, Johnson and Johnson suggested there wasn't much scholarship or research involved in jurisprudential or dialectical procedures (Johnson & Johnson, 2009, p. 38).

Clearly this is one area where the tensions created in dialectic can be studied within the realm of cooperative learning.

### Cooperative Learning and Higher Education

While most of the literature covered in this review highlights the promise and positive learning outcomes of cooperative learning at the elementary grade levels, comparatively little research exists in investigating CL in higher education (Slavin, 1990). And published literature gives us a mixed outlook for the challenges faced. Johnson, Johnson, and Smith's 1998 meta-analysis suggests there is promise for CL in higher education despite the lack of data.



Although much research has focused on cooperative learning at the elementary and high school levels, cooperative learning may also be a viable teaching strategy for promoting achievement among college students (Johnson, Johnson & Smith, 1991, p. xix).

The Johnson, Johnson, and Smith study remains a centerpiece for cooperative learning research. Though most of the data supporting its conclusions come from age groups other than higher education, they suggested that there are only limited differences in application and implementation at the college and university levels.

In their 1991 book, “Cooperative Learning: Increasing College Faculty Instructional Productivity” (Johnson, Johnson, and Smith, 1991), the authors rely heavily on data which supports successes at the elementary and secondary school levels. And in their meta-analysis, Johnson, Johnson & Stanne document several research limitations, specifically in relation to the literature assessing the effect of cooperative learning on student learning outcomes:

While a number of people have reviewed the research supporting their cooperative learning methods (e.g., Cohen & Lutan, 1997; Sharan & Sharan, 1992, Slavin, 1991), there has never been a comprehensive and complete review of the effectiveness studies on all the different cooperative learning methods. It is unknown, therefore, how much of the existing research specifically focuses on cooperative learning methods and achievement (p. 4).

Offering even a more uncertain assessment of the effectiveness of cooperative learning in higher education, Ahmed Assanien (2008) suggests the lack of research studies is troubling, and also calls for further research into the area of CL in higher education.

There is little empirical evidence regarding its (CL) effectiveness and success as a learning and assessment method within the context of higher education. Moreover, higher education institutes are not adequately prepared to provide the essential requirements and support for effective group learning. As a result, student learning often falls below their expectations (Hassanien, 2008, p. 20).

A meta-analytic study of cooperative learning methods in 2000 (Johnson, Johnson, & Stanne, 2000) focuses nearly all of its analysis on grades K-12, with only 24 per cent of the studies including post-secondary or adult learning research (p. 8). Of the studies in higher education, up to 72% of that data came from studies more than 20 years old, with some data recorded up to 40 years ago.

Earlier research documents attempts to implement CL in to the college level curriculum, expecting many of the same positive results (deeper learning skills, higher self-esteem, improved learning outcomes) as were reported at the elementary levels. But even the authors of the study cite possible flaws in that research.

“Although much has been written about cooperative learning, little is aimed at the college level (Johnson, Johnson, & Smith, 1991, p. xix).” An attempt to remedy that void in the literature was made this year when Johnson and Johnson (2012) published a book about increasing college faculty instructional productivity. In it were facts drawn from numerous studies of Instructional Productivity and various ways to provide CL architecture in the university classroom.

While the same five axioms (Johnson, et al., 1991, p. 16) provide the back-stop for cooperative learning implementation at the college level as in elementary, other researchers look for different outcomes in the adults; outcomes like motivation to achieve, levels of interpersonal trust between adult students, and critical thinking competencies.

Student participation, teacher encouragement, and student-to-student interaction positively relate to improved critical thinking. These three activities confirm other research and theory stressing the importance of active practice, motivation, and feedback in thinking skills as well as other skills. This confirms that discussions, especially in small classes, are superior to lectures in improving thinking and problem solving (McKeachie, 1988, p. 1)

McKeachie also cited and named: “(1) discussion among students, (2) explicit emphasis on problem-solving procedures and methods using varied examples, and (3), verbalization of methods and strategies to encourage development of metacognition” (p. 1). This verbalization hints back to the importance of turn-taking in conversation (as it relates to meta-cognition), and the notion of “constructive controversy” (such as in debate).

Other studies (Buchs & Butera, 2001; Carroll & Williams, 2007; Hancock, 2004; Rodger, Murray, & Cummings, 2007) show the same mixed picture for students in higher education as those surveyed elsewhere with no clear common evidence why it may be different.

Some researchers have found mixed or negative results in studies of learning outcomes of cooperative learning as compared to traditional methods. For instance, the Buchs and Butera (2001) study compared notions of resource independence between 64 groups of dyads. One group worked independently while sharing identical resource information to achieve learning goals; the other group worked with different sets of information, interdependently, to achieve superior learning outcomes. Researchers Buchs and Butera found "...direct performance was higher when students discussed identical information" (Buchs & Butera, 2001, p. 335), but in the interdependence condition, "...listeners displayed poorer levels of direct performance" (Buchs & Butera, 2001, p. 335). Thus, students in the cooperative learning condition actually fared worse than the students in the independent learning condition in this study.

Another example can be found in the study conducted by Rodger, et al., (2007), who investigated gender differences in learning outcomes in achievement tests. Data in that study showed no gender differences in tests involving multiple choice examinations. But in a companion mini-assignment test, women were shown to have higher learning outcomes when working in the cooperative learning format, compared to women working individually.

Men scored about the same in both treatments (p. 157), demonstrating only "...partial support to the hypothesis that cooperative learning methods would be more effective than competitive methods for women" (p. 169).

In contrast, other studies provide evidence of the success of cooperative learning teaching techniques in improving learning outcomes.

In Turkey, students grouped together in a “jigsaw-type” cooperative learning format, saw higher achievement scores in the area of physical sciences that students in a non-jigsaw group did not experience (Doymus, 2008). The jigsaw method of cooperative learning is slightly different than just having students work in groups; they actually teach other students. Developed by Elliot Aronson (1978), jigsaw allows for students to assume responsibility to teach a segment of the course to the rest of the group with hands-on teaching responsibility. The study (Doymus, 2008) reported on

...the fact that students in the jigsaw groups gave more correct answers to the open-ended questions, had the chance to contribute their knowledge on the subjects as they did research, and benefitted from previous research was positive” (Doymus, 2008, p. 56).

Results of this study lend credence to the idea that student activity within a classroom environment can lead to higher learning outcomes.

Another study in a public health distance education course showed “consistently higher learning outcomes” (Riley & Anderson, 2006, p. 142) from students participating in cooperative learning groups versus individual study. The data revealed “cooperative learning groups showed consistently improved performance when compared to the individual study group,” (Riley & Anderson, 2006, p. 142).

And the researchers went on to report that they “hypothesized that learning in distance education is better accomplished through cooperative learning than a self-paced independent learning environment” (p. 143).

Yet while these studies revealed promise for cooperative learning techniques in terms of advantage in learning outcomes, others were not as successful. Many studies, however, have reported success in areas involving classroom talk, the collaboration of minds in a group setting involving problem solving, and a greater “liking” of one another creating the active classroom. It is in these areas (socialization) where students and teachers saw their greatest successes.

#### Benefits in Socialization Skills

Several research studies involving students in higher education demonstrate there are benefits aside from learning outcomes or achievement. Educational Psychologists Erin Carroll and Robert Williams (2007) suggest there are segments of the student population that respond well to the classroom architecture of cooperative learning. But, there are others who do not. In their study conducted in the Southeastern U.S., and involving more than 300 students in an undergraduate human development course using a combination of STAD and jigsaw II cooperative learning methods over two years...

...high performing students fared least well when individual improvement was primary in the cooperative contingency. Low performers generally, had the highest rate of success of all performance groups (Carroll and Williams, 2007, p. 298).

Another study (Hancock, 2010) focused on measuring student achievement and motivation. Unlike the Carroll and Williams study, these graduate students enrolled in a research methods class in a Southeastern U.S. university which integrated cooperative learning methods highlighted by Johnson and Johnson's five contingencies (face-to-face promotive interaction, positive interdependence, individual accountability, collaborative skills, and group processing).

Achievement scores in this class showed an insignificant difference between teaching methods. However, the socially constructed variable of motivation within a peer-oriented environment did make a difference.

Differences in the achievement (levels) of students with high and low peer orientation were not significant. However, students with high peer orientation were significantly more motivated to learn than students with low peer orientation (p. 164).

The researchers did conclude that at the graduate level, cooperative learning strategies are difficult to implement and interpret if student achievement is the goal of the instruction.

Professors who are more interested in their student's achievement than in their motivation, may not need to consider the extent to which their classroom strategies match students' desires to work collectively or alone. However, if student's motivation to learn is a goal, professors may want to determine their peer orientations of their students before designing their instructional strategies (p. 164).

As demonstrated in the previous two research studies, the social/peer makeup of the cooperative learning classroom is important to the sought-after learning results, whether it be achievement, or other variables. At its essence, social (peer) support is intimately woven into the cooperative learning architecture...

Cooperative learning is positively correlated with the perceived degrees of academic and personal support provided by teachers and peers, along with Johnson & Johnson's notion of positive social interdependence (Ghaith, 2002, p. 263).

And though a teacher's role is as Johnson and Johnson suggests, "a guide on the side, rather than a sage on the stage" (Johnson, Johnson, & Smith, 1991, p. 81), it is no less important than in any other teaching format when it comes to academic and personal support in the classroom.

Much of the literature focused on cooperative learning strategies in higher education focuses less on learning outcomes or achievement, and more on the socialization process.

Cabrera (2002) recognizes this, and is one teacher who uses CL to promote the advantages of having an "active" classroom environment; one where students actively participate in dialogue and the establishment and development of peer relationships. As such, students at that level (higher education) are more mature, have developed personalities, and have formed, in some cases, very strong opinions.



“Cooperative learning may be an important force to promote tolerance among college students” (p. 23) reports Cabrera. The study cites testimony that “certain classroom practices can be perceived by the students as discriminatory and prejudiced” (p. 23). Notions of discrimination and prejudice go largely undeveloped in students ages 4-7. But for students in higher education those notions are usually recognized and developed.

Cooperative learning is also said to “foster the development of a wider breadth of knowledge through discussion, clarification of ideas, and evaluation of others ideas” (Hassanien, 2008, p. 17). But this research study also warns that there is a down side to group work. “Students consider poor communication and poor attendance at group meetings a problem,” reports Hassanien (p. 17).

With common knowledge that most CL research has focused on the younger student (K-6), researchers now focus on the differences and/or problems it may pose for curriculum designers of higher education (college/university).

Research shows us that “...older students are more likely to be dissatisfied with a group grade experience, when compared to the opinions of middle and younger age students (Barfield, 2003, p. 366).

In fact there are documented biases for both, the younger and the older student. Younger students (according to their older peers) were immature, irresponsible, lacked real-life experience and had misplaced priorities – younger students said older students were too serious and rigid (p. 366).

Some research suggests two inherent educational obstacles in developing cooperative learning strategies in the higher education classroom. The first is student perceptions and willingness to accept new teaching and learning strategies implemented at the collegiate level. What is the level of openness to group learning at that age?

How willing are students in the young adult population to try something new in the classroom, when for the most part they are steeped in the lecture/discussion tradition? And an even more relevant question; are students psychologically the same, whether it be grades K-6, or first or fourth year students at the collegiate level? And are both age groups expected to benefit from this group/cooperative learning?

#### Cognitive Development of the Older Student

One of the most important aspects in the success of cooperative learning is the initiation and monitoring of face-to-face promotive social interaction among group participants. The frequency, enthusiasm, and content of that dialogue can be monitored and altered (group participants) if disfluencies or intra-group tensions occur. One of the early researchers of group learning, Jean Claude Piaget, focused his research on the learning and development of young children in dyads and group situations.

During that time, Piaget developed a “spatial representational problem,” later known as the Piagetian water-level task.

The test was designed to monitor how people observed that water, within a container, maintained a relatively steady level. The task was then to monitor how research participants described the action of the water.

Piaget and Inhelder (1948/56) argued that children's representation of space was structured by an emergent reference system of horizontal and vertical relationships. They maintained that by adolescence, children construct an implicit coordinate reference system for comprehensively organizing spatial relations in the physical world (Golbeck & Sinagra, 2000, p. 23).

So, Piaget's argument was that as children (4<sup>th</sup> thru 6<sup>th</sup> graders) aged, their spatial reference system also changed, so that all adolescent children viewed and saw things differently than in earlier years. Why is this important in peer relationships?

Peer interactions offer an important context for the disequilibrium of thought, the search for logical coherence, and the transformation of ideas leading to new understanding or development (p. 22).

At the 4<sup>th</sup> through 6<sup>th</sup> grade levels, research has shown that peer collaboration (as in cooperative learning groups) has been shown to "...enhance the emergence of this spatial knowledge" (Golbeck, 1998). This can, in part, account for the widespread success of learning outcomes and achievement data produced by cooperative learning researchers at that age level.

In the study of gender differences and spatial task, it is noted that "...by adolescence, boys consistently outperform girls on the (Piaget) water-level problem" (p. 24). And when the test was given to college students working in collaborative groups, Golbeck's hypothesis was not supported. "Our findings failed to support our prediction that students would show greater improvement on this problem after exploring the problem with a peer, than would students engaging in a similar activity alone" (p. 30). In summary,

Information about how students work together on a task and what they say to each other as they work might be useful for future instructional endeavors, even if performance following collaboration is no higher than performance after working alone (p. 32).

The significance of this study is that at the onset of adolescence (ages 12-14), physical changes occur within the human brain which indicates a change in the thinking process, not only horizontally (between men and women), but vertically along the age/time continuum.

By analyzing communication during collaboration, we found interesting differences between men and women in their conceptualization of the water-level problem. Men and women talked about the problem differently and focused on different aspects of the visual spatial field (p. 34).

And while much of this study focused on gender differences, differences in collaborative patterns (dialogue in interaction) was in evidence as communication and thinking patterns changed.

A second study, made possible with the technological developments of magnetic resonance imaging, confirm that young adult brains don't fully overcome the biases that lead to incorrect performance during cognitive development (LaRoux, G., et al., 2009), biases based on learned behavior as a child.

A third study documents continued brain changes in adolescence, studying a young adult population (17 years to 34 years) and the relationships between cognitive complexity, sex, and spatial task performance in college students (Thompson, Mann, and Harris, 1981).

Results confirming other studies show that the brains of men develop differently than those of women in spatial complexity. What is important in these studies is that through time, maturation of the brain is cause for cognitive changes (the way we learn), which may provide clues as to why elementary age students perform better in cooperative learning situations than do adults when it comes to learning achievement and outcomes.

### Research Question

This review of literature examined the development of cooperative learning strategies in the modern classroom, particularly examining those methods of cooperative learning as posited by David and Roger Johnson.

Johnson and Johnson cite core relational factors for the success of cooperative learning, of which four of the five directly link to current literature in the communication

discipline (positive interdependence, face-to-face promotive interaction, social skills, and group processing).

Recent literature was reviewed that documents a significant turn in the methods of how teachers of public speaking construct a classroom curricula and the importance of including interpersonal and relational considerations, not only between teacher and student, but the advantages and positive learning outcomes of developing rapport and classroom connectedness in relationships among students.

Also, recent studies were reviewed which identified and examined interpersonal and relational factors within the speech class.

Cooperative learning is one such teaching and learning method that combines a documented record of higher student learning outcomes, high levels of student accountability, and promotes notions of inclusiveness, connectedness, and the maintenance of a positive rapport with students.

“It remains unknown exactly which instructor behaviors lead to building rapport with students (Frisby & Martin, p. 160). A meta-analytical review of published literature in the area of cooperative learning may add to the breadth of instructional communication research in this area.

This investigation includes such a review of current literature that identifies and reviews relational interpersonal communication variables which may affect, positively or negatively, learning outcomes in the cooperative learning classroom focused on the teaching of speech.

Most literature in the past decade has focused on learning achievement and outcomes in cooperative learning at the K thru 6 level. This follows a history of human communication research literature that got its start in the early part of the 20<sup>th</sup> century (Vygotsky, Piaget, Lewin), and has continued to this day. Research of cooperative learning in higher education (college and university level) is less plentiful, but nonetheless available and continuing.

An issue with research in higher education has been the relative lack of teacher training and lack of assessment of cooperative learning techniques in teaching the young adult population.

While data showing learning outcomes may be mixed, a consensus seems to be building among researchers that cooperative learning offers benefits to students which are social/relational in origin, benefits that may prove beneficial in the teaching of public speaking in the college classroom. Also, as Piaget's early experiments reveal, the question of brain development (including memory and perception) during adolescence may prove to provide clues as to the relative efficacy of teaching and learning methods involving cooperative learning. While that may be the case, a review of the existing literature of learning outcomes in cooperative learning in higher education would prove invaluable.

RQ1: How do the various types of cooperative learning and traditional instruction techniques in higher education compare in terms of student learning outcomes?

The results section of this dissertation (Chapter IV) will be followed by a discussion of the findings in Chapter V.

In addition, it is a goal of practical application of this dissertation to seek out effective and demonstrated pedagogical classroom techniques as they may apply to the teaching of speech in higher education.

This goal will be addressed in Chapter VI of this dissertation focusing on cooperative learning techniques for the public speaking classroom.



## CHAPTER III

### METHODOLOGY

Much has been researched about cooperative learning in the past 50 years. Studies have focused primarily on education with students in grades K-6 (elementary education), but more recent research throughout all grade levels using a quantitative methodology called meta-analysis, is making its way through scholarly journals. “Meta-analysis provides in an organized way, the handling of information from a large number of study findings under review” (Lipsey & Wilson, 2001, p. 6). It is a research methodology that’s been used in many disciplines, researching the relationship of many different variables, in numerous contexts. With regard to cooperative learning, researchers have used the methodology to help grasp big picture data, combining many studies into one comprehensive study. Meta-analysis is a method of statistically analyzing the results of a set of independent studies that test the same hypothesis (or research question), “...using inferential statistics to draw conclusions about the overall results of the studies” (Cohen, 1987, p. 16). This method differs significantly from a narrative literature review in that rather than allowing a researcher’s bias (for instance the assumption that the success of a specific teaching and learning method applies to all grade levels), it quantitatively examines data in a systematic way. It summarizes large amounts of data into one concise quantitative output.

### Why Meta-Analysis For This Study?

The notions of quantitative synthesis (1940), or what is now referred to as meta-analysis (1976), is nothing more than an “assembling” of a large amount of data into a single, authoritative, statistically valid report, usually reported with one outcome variable called effect size.

Some of the early studies involving meta-analytic reviews included the assembling of data concerned with notions of ESP, extra-sensory perception (Pratt, 1940), and the early studies finding aspirin to be effective in warding off heart attacks (Ellwood, 1976).

There have been a number of studies involving a meta-analysis of cooperative learning data (Lou, 2001; Johnson, Johnson, & Stanne, 2000; Howard, 1996; Abu, 1997; Nurrenbern, 1997; Springer, 1997; Qin, Johnson, & Johnson, 1995). But these come on the heels of hundreds of individual research papers and published articles examining many aspects of the teaching and learning method. Like ESP and aspirin, scholars sought and found an effective method of assembling this data into a concise, valid measurement and report.

Effect size is a measure of the strength of the relationship between two variables in a statistical population; in this case cooperative learning outcomes vs. learning outcomes in the traditional lecture/discussion approach. Effect sizes represent the “magnitude” of a relationship.

Once the effect size of each study is determined, meta-analysis calculates a weighted average effect size for the entire body of research studies. Significance tests determine whether the magnitude of the average effect size is large enough to justify the claim that a relationship between variables exists in the population. Meta-analysis, then, is the summary of research of a given population of separate studies in a given area. And with that comes the knowledge that the results of the new meta-analysis is only as good (accurate) as the original studies conducted. It is a direct reflection of a large body of evidence (data) already collected over time.

### Coding

The studies included in the meta-analysis of the literature were coded for independent variables of teaching methods (various forms of CL and traditional learning methods). Dependent variables related to student learning achievement were identified in the meta-analysis (see Table 1).

**Table I:** Outcomes Associated with Cooperative Learning Teaching Methods ( $k = 21$ ,  $N = 2,052$ ).

<u>Study</u>	<u>Learning Outcome Variables</u>
Abu Seileek (Computer Mediated)	Skills scores in Oral Delivery (EFL) <ul style="list-style-type: none"> <li>• Listening skills scores</li> <li>• Speaking skills scores</li> </ul>
Abu Seileek (Traditional)	Skills scores in Oral Delivery (EFL) <ul style="list-style-type: none"> <li>• Listening skills scores</li> <li>• Speaking skills scores</li> </ul>
Artut	Math Teaching Skills Achievement
Bahar	Overall Achievement Scores in Parapsychology Course
Brewer/Klein	Achievement Scores in Management Course
Buchs	Achievement Scores in Psychology Class <ul style="list-style-type: none"> <li>• Mid-achievement scores</li> <li>• Post-achievement scores</li> </ul>
Doymus I	Achievement Scores in General Chemistry Class <ul style="list-style-type: none"> <li>• Modules A-D</li> </ul>
Doymus II	Post-test achievement Scores in General Chemistry Class
Gomleksi	Achievement Scores: English as a Foreign Language Class (EFL) <ul style="list-style-type: none"> <li>• Post-test scores</li> <li>• Delayed post-test scores</li> </ul>
Jalilifar	Final Exam Scores: English as a Foreign Language Class (EFL)
Klein	Pre/Post Test Performance in Psychology Course
Study	Learning Outcome Variables

**Table I:** (continued...)

Krause I	Post-Test scores in E-learning Statistics Class with Feedback <ul style="list-style-type: none"><li>• Post-test performance</li><li>• Problem-solving tasks</li></ul>
Krause II	Post-Test scores in E-learning Statistics Class w/o Feedback <ul style="list-style-type: none"><li>• Post-test performance</li><li>• Problem-solving tasks</li></ul>
Mentz	Final Exam Scores in Student Training
Moreno	Module Exams in Educational Psychology Course <ul style="list-style-type: none"><li>• Retention Test</li><li>• Transfer Test</li></ul>
Naughton	Post-Test Scores in Second Language Acquisition (SLA) Course
Nembhard	Final Exams Scores in Project Engineering Class
Rodger	Mini-assignments in Psychology Class
Smialek	Tests in Music Appreciation Class <ul style="list-style-type: none"><li>• Meter</li><li>• Texture</li><li>• Genre</li><li>• Period</li><li>• Composer</li></ul>
Thompson	Daily quiz scores in Psychology Class

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The statistic selected for the effect size estimates was the standardized mean difference. Two coders collaborated on coding of statistical data. For the vast majority of studies, the statistics of mean, standard deviation, and sample size for each group was reported. A few exceptions to the coding protocol should be noted.

First, one study (Klein, 2000) did not include data about group means, so the effect size was estimated using a calculation based on the reporting of ANOVA statistics (Lipsey & Wilson, 2001). Second, some studies included multiple cooperative learning groups (using different methods), but only one comparison group. Because the sample is treated as the unit of analysis, an overall group mean, standard deviation, and sample size was calculated across all cooperative learning groups in a particular sample.

### Statistical Analysis

Effect size indicates "...the relative magnitude of the differences between means, or the amount of the total variance in the dependent variable that is predictable from knowledge at the levels of the independent variable (Tabachnick & Fidell, 2007, p. 54). Meta-analysis allows for the calculation for an average effect size across a body of studies. A single effect size for each sample was included in the final dataset. In several cases (Buchhs, 2001; Doymus, 2008; Gromelski, 2007; Moreno, 2009; Smialek, 2006), multiple learning outcome-dependent variables were measured, so individual effect sizes were computed for each dependent variable, then the average effect size for the sample

was calculated and included in the dataset. Once all sample effect sizes were included in the dataset, the effect sizes were corrected for sample size.

This correction compensates for a slight upward bias in standardized mean difference due to small sample size (Lipsey & Wilson, 2001). The mean effect size was calculated following the methods of Lipsey and Wilson (2001), which weighs each effect size by the inverse of its variance. A homogeneity analysis was then conducted. The homogeneity test assesses whether the individual effect sizes differ from the mean effect size by sampling error alone.

This test is a chi-square statistic and a significant result indicates that the individual effect sizes differ from the mean effect size by more than just sampling error (Lipsey & Wilson, 2001). The researcher who discovers that the effect size distribution is heterogeneous typically conducts further tests to assess the causes of the heterogeneity, often including tests for moderating variables.

## CHAPTER IV

### RESULTS

The research question asked how various approaches to cooperative learning and traditional instructional methods in higher education compare in student learning outcomes. A meta-analysis was conducted to explore the impact of cooperative learning classroom techniques in higher education on achievement when compared to a traditional lecture/discussion classroom format. Results were obtained from 21 samples in 19 published studies of adult learners, ages 18+, enrolled in colleges around the world (see Table II). Calculated from these studies was a mean effect size ( $d = 0.05$ , 95% CI:  $-0.05$  to  $.14$ ,  $p > .05$ ,  $k = 21$ ,  $N = 2,052$ ), which indicates no significant difference in learning outcomes between students using cooperative learning techniques and those taught by traditional lecture/discussion teaching methods. The homogeneity test revealed that the effect sizes distribution is homogeneous,  $X^2(20) = 11.28$ ,  $p > .05$ . Thus, the individual effect sizes did differ from the mean effect size by sampling error alone and further tests of moderating variables (e.g., specific cooperative learning method) were not warranted. The tests indicate that cooperative learning and traditional instructional methods in higher education do not differ significantly in terms of student outcomes.



**Table II:** Descriptors and Mean Averages for Studies included in Meta-Analysis ( $k = 21, N = 2,052$ )

Author(s)	Year	CL Method	Variable	Cooperative Group		Control/Traditional Group			
				M	SD	n	M	SD	n
Abu Seileek (Computer Mediated)	2007	Other	Listening Skills	76.46	29.45	36	69.34	29.83	30
			Speaking Skills	70.67	27.23	36	61.67	23.43	30
Abu Seileek (Traditional)	2007	Other	Listening Skills	56.23	18.70	30	45.33	19.70	34
			Speaking Skills	36.71	20.62	30	35.43	15.67	34
Artut	2007	Jigsaw II	Math Teaching Skills Achievement	33.51	4.22	45	28.00	5.69	36
Bahar	2006	STAD	Overall Achievement Scores	0.76	1.54	67	0.12	1.90	83
Brewer/Klein	2006	LT	Mgmt Achievement scores	21.40	3.33	229	20.62	3.49	60
Buchs	2001	LT	Mid-Achievement Scores/Psych	11.42	2.46	32	13.45	3.34	32
			Post-Achievement Scores	15.30	2.04	32	17.12	2.30	32

**Table II:** *(continued)*...

<u>Author(s) Group</u>	<u>Year</u>	<u>CL Method</u>	<u>Variable</u>	<u>Cooperative Group</u>		<u>Control/Traditional</u>			
				M	SD	n	M	SD	n
Doymus I	2008	Jigsaw	Chem. Achievement Scores						
	Module A			72.60	11.60	16	51.20	29.00	20
	Module B			89.80	12.40	16	64.60	20.00	20
	Module C			73.40	21.20	16	54.00	28.20	20
	Module D			61.70	23.00	16	39.40	25.20	20
Doymus II	2010	Jigsaw	Post Achievement Scores	2.75	1.64	36	0.81	0.84	37
Gomleksi	2007	Jigsaw	Post Achievement Scores (EFL)	23.18	2.42	34	17.44	2.26	32
Hsiung	2010	LT	Delayed Post-Test Z-scores	17.97	1.77	34	13.91	1.67	32
Jalilifar	2009	STAD	Final Exam (EFL)	10.875	9.88	60	-0.05	0.63	21
*Klein	2000	LT	Pre/Post Psych.				10.66	5.26	30

**Table II:** *(continued)*...

<u>Author(s) Group</u>	<u>Year</u>	<u>CL Method</u>	<u>Variable</u>	<u>Cooperative Group</u>		<u>Control/Traditional</u>			
				M	SD	M	SD	n	n
Krause I	2008	LT	Pre/Post E-Learning	13.18	2.28	14.51	2.15	52	18
			w/feedback Problem Solving	27.19	7.32	25.06	8.89	52	18
Krause II	2008	LT	Pre/Post E-Learning	11.31	3.06	10.25	3.41	50	17
			w/o feedback Problem Solving	29.06	8.89	21.47	9.62	50	17
Mentz	2008	LT	Final Exams	62.80	17.80	48.70	16.10	23	27
Moreno	2009	LT	Module Exams	7.18	1.64	6.93	1.73	60	27
			(Psych) – Retention Transfer Test	16.90	3.76	17.70	4.05	60	27
Naughton	2006	LT	Post Scores (SLA)	18.58	3.46	12.24	4.75	24	21
Nembhard	2009	LT	Final Exam Scores (Engineering)	10,090	774	9,265	1,110	100	60
Rodger	2007	LT	Mini-Assignments (Psych)	17.90	4.20	15.80	3.80	80	80

**Table II:** *(continued)*...

<u>Author(s)</u> <u>Group</u>	<u>Year</u>	<u>CL Method</u>	<u>Variable</u>	<u>Cooperative Group</u>		<u>Control/Traditional</u>		
				<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>n</u>
Smialek	2006	LT	Tests in Music Appreciation –					
			• Meter	71.70	16.62	72.94	22.60	68
			• Texture	78.11	19.42	70.83	20.44	68
			• Genre	67.99	22.97	60.29	19.96	68
			• Period	78.77	19.61	76.23	20.02	68
			Composer	77.10	20.55	75.49	21.06	68
Thompson	2004	GI	Daily Quizzes (Psych)	5.94	1.31	6.36	0.92	7

Note. \*Klein (2000) did not include mean and standard deviation scores for each group. Effect size was calculated using:  $F = 4.25$ , Group  $n_s = 60$  and 62

## CHAPTER V

### DISCUSSION OF RESULTS

The findings in this study show no significant effect when comparing achievement and learning outcomes using cooperative learning methods and those of traditional lecture/discussion methods. That is, cooperative learning was no better and no worse than traditional learning methods. The learning outcomes represent, in this study, knowledge and information as measured by end of term tests. These findings, however, should not be construed as a call for educators to spurn the methods we use to teach classes today. Both teaching methods offer distinct advantages to teachers and students; and as outlined in some studies, both have specific areas of strength.

#### Cooperative Learning: Comparing Findings with Other Research

Improvements with cooperative learning methods were reported in several studies. Research data having to do with second language acquisition (Abu Seileek, 2007; Gromleksi, 2007; Jalilifar, 2009; and, Naughton, 2006.) showed cognitive improvement through the use of cooperative learning techniques. But these scores

were also balanced by slightly lower retention scores (ability to retain information) when compared to the individual or competitive treatments.

Specifically in applications having to do with this study, it is in these disciplines (English as a second language) that most closely resemble speech/public speaking training, as opposed to the language of mathematics, psychology, or the social sciences.

Also, all four studies originate in areas of the world with very diverse cultural standards (Malaysia, Turkey, Iran, Spain), and possibly more culturally diverse than what is found here in western culture in the United States.

Lecture/discussion remains the most prevalent teaching method in the world today because the transfer of information takes the most direct route; teacher to student. However, cooperative learning, or the use of learning groups, has significant social and relational benefits when introduced into the classroom (see Table III). Overall data indicates cooperative learning to have much promise. But in studies limited to areas of higher education, results have been mixed. Why?

#### A Mixed Bag For CL in Higher Education

A prime factor which must be considered may be a lack of training for graduate students and faculty in the area of curriculum design, cooperative learning, group learning, and the active classroom environment. In order to provide the necessary classroom architecture for cooperative learning (in any discipline), an

instructor needs training in the ways of successful cooperative learning (training in the areas of teaching social skills, individual accountability-curriculum design, feedback mechanisms), before the actual training within the desired discipline.

A second reason may be the lack of research in the area of cooperative learning in higher education.

When considering the amount of literature available on cooperative learning, only a small fraction is dedicated to designing and implementing for the cooperative learning classroom in higher education.

Even a 1991 text written specifically for cooperative learning in higher education (Johnson, Johnson, and Smith, 1991), authors offer very little new information about the challenges of groups in college age/adult populations, and instead, review research in the primary grades along with suggested classroom practices.

One such study was a 1990 report which showed African-American students at Xavier University participating in a CL study which demonstrated the efficacy of the CL technique solving a complex problem by using a computer. By reporting that all three “CL student groups ( $n=49$ ) resulted in greater success in solving the problem than the students performing individually” (Johnson, Johnson, and Smith, 1991, p. 23), Johnson and Johnson hereby demonstrated the efficacy of the technique.

### Cooperative Learning: Excelling in Other Areas

A third reason why CL may work better in the primary grades than in higher education may be that while learning outcomes may be the same (or better, or worse), discovery is made in many other areas (other than just learning outcomes) to show that cooperative learning actually has many more benefits than it did originally (see Table III).

Among those areas as outlined in Johnson and Johnson's meta-analysis;

...higher level reasoning, retention, time on task, transfer of learning achievement motivation, intrinsic motivation, continuing motivation, social and cognitive development, moral reasoning, perspective-taking, interpersonal attraction, social support, friendships, reduction of stereotypes and prejudice, valuing differences, psychological health, self-esteem, social competencies, internalization of values, the quality of the learning environment, and many other outcomes. There may be no other instructional strategy that simultaneously achieves such diverse outcomes (Johnson, Johnson, and Stanne, 2000, p. 3).

Many of these same variables were also discussed by researchers in their experiments involving students in higher education (see Table III).

Also, to make a claim that one method of cooperative learning is "better", or produces higher learning outcomes than another; that claim would require much more research than is currently available. Johnson and Johnson do make such a claim in their meta-analysis, suggesting that the "Learning Together" method (Johnson & Johnson, 1981) "...promotes higher achievement than do competitive or



individualistic efforts” (p. 10), and higher effect sizes than any of the eight other CL methods tested (including Slavin, Aronson, and Sharan).

But a check of this data in our meta-analysis found the Jigsaw method (Aronson) performed slightly better than others (vs. individual outcomes), but still did not produce a significant effect size.

There are some aspects of cooperative learning as a method that may cause it to perform more poorly in higher education than in K-12. Some of the reasons CL has performed poorly in higher education may involve student dissatisfaction with group work, a different classroom environment between elementary and higher education, and significant differences in cognitive development among students of different ages.

All too often in the academic setting (appendix B), working in groups can be perceived as a teaching pedagogy focused at the elementary school level.

And it seems to reason, because most of the early research in student group learning (Piaget, Vygotsky, Lewin) focused on student populations in orphanages (usually in the elementary years). Also for those students, teachers expose them to many forms of teaching; individual work (both solitary and competitive) and group work through collaboration and cooperative learning architecture. Unfortunately, many of those groups can be poorly organized leading to the creation of a negative work/learning environment. Some students have conveyed to me a feeling of drudgery and disappointment upon hearing they will be working in groups (Appendix

B). This anecdotal evidence is supported by two studies cited earlier by Hassanien (2008) and Barfield (2003) reflecting student reluctance to work in groups.

Hassanien cited poor in-group communication and poor attendance as problematic for student groups, and Barfield reported on older group dissatisfaction with group grading processes.

Those negative feelings were often instilled in the minds of students during those early years – perhaps one reason why group work in higher education is rare, and when it is incorporated into the curriculum, it often receives partial support of group participants. This is one very important reason why Johnson and Johnson required the active placement of its 5 axioms, to include group processing, individual accountability, and promotive interaction.

**Table III:** Selected positive outcomes associated with cooperative learning methods ( $k = 21$ ,  $N = 2,052$ ).

<u>Type of outcomes</u>	<u>Variables included</u>
1. Group processing outcomes:	<ul style="list-style-type: none"><li>• Group production usually exceeded that of the individual (Abu Seileek)</li><li>• Group members came to class more prepared (Artut).</li><li>• The nature of the interpersonal leadership within group members, citing “co-operational caring” (Buchs).</li><li>• “In-class” and “out-of class” discussions proved beneficial for knowledge acquisition in chemistry classes (Doymus).</li><li>• The cooperative learning method proved more “supportive” than traditional learning (Gromleksi).</li><li>• Cooperative learners encourage each other and exert more effort to achieve group success (Jalilifar).</li><li>• Individual feedback mechanisms within CL helped in learning, but did not affect learning outcomes (Krause).</li><li>• Jigsaw (CL) method produced more “consensual interactions” within the group than the other methods (Moreno).</li><li>• Negative comments about CL manifested themselves primarily in men, not from women (Rodger).</li></ul>
2. Individual psycho/social outcomes:	<ul style="list-style-type: none"><li>• Each individual member usually benefitted from “within-group” interactions (Abu Seileek).</li><li>• Each group member appeared more “conscientious” in their activity (Artut).</li><li>• Study indicates a significant improvement in attendance (Artut).</li><li>• Students in cooperative groups received peer encouragement and support from their more competent partners (Jalilifar)</li><li>• Adding CL methods greatly reduced the incidence of failing students within the classroom (Mentz).</li></ul>

Another reason why cooperative learning may not be as effective at the college level may be due to a very different classroom environment. An aspect of classroom management which all teachers must address is the issue of motivation and production, especially with regard to the academically “weaker” student. In his study on the computer-assisted cooperative learning environment, AbuSeileek (in our meta-analysis) reported that the “...production of the group is generally more than an individual’s production,” and that the cooperative format is “advantageous to weak students who are usually too embarrassed to ask or speak” (Abu Seileek, 2007, p. 509). But something is reported to be happening in that group situation to actualize and transform the capability of the weaker student. There is also an argument that this could be some form of Zone of Proximal Development (Vygotsky, 1984) where faculty or student mentors are able to assist the weaker student at a more productive point in his/her schooling.

At the elementary level, students are likely to have closer monitoring of classroom activities by their teachers than students in higher education. That closer contact may further ensure that all aspects of CL are more strictly adhered to.

Still another consideration that has not been addressed within the cooperative learning community is the issue of a changed student.

Is it possible, through the normal maturation process of the human being, that the brains of young adult students have matured to the point where normal social biases, thoughts just taking shape in childhood, have firmly rooted themselves in the

minds of the adult student, and CL no longer has the appeal, challenge, or focus to motivate found in children ages 4 thru 7 (Golbeck & Sinagra, 2000)?

In another study Goldbeck (1998) found that college men and women showed evidence of communicative thought patterns that made their collaboration different from that of younger students. Thus, due to cognitive differences, differences in classroom environments, and differences in attitudes in group work, cooperative learning may be less effective in higher education than in elementary education.

#### Flaws in the application of Cooperative Learning

Another reason why CL failed to outperform traditional methods in this meta analysis is poor application or measurement of cooperative learning.

A prime factor which must be considered is the lack of training for graduate students and faculty in the area of curriculum design, cooperative learning, group learning, and the active classroom environment. In order to provide the necessary classroom architecture for cooperative learning (in any discipline), an instructor needs training in the ways of successful cooperative learning (training in the areas of teaching social skills, individual accountability-curriculum design, feedback mechanisms), before the actual training within the desired discipline.

A second reason may be the lack of research in the area of cooperative learning in higher education. When considering the amount of literature available on cooperative learning, only a small fraction is dedicated to designing and implementing for the cooperative learning classroom in higher education.

Even a 1991 text written by Johnson and Johnson specifically for cooperative learning in higher education (*Cooperative Learning: Increasing College Faculty Instructional Productivity*), the authors offer very little new information about the challenges of groups in college age/adult populations, and instead is a review of their research in the primary grades along with suggested classroom practices.

One such study was a 1990 report which showed African-American students at Xavier University participating in a CL study which demonstrated the efficacy of the CL technique solving a complex problem by using a computer. By reporting that all three “CL student groups ( $n=49$ ) resulted in greater success in solving the problem than the students performing individualistically” (Johnson, Johnson, and Smith, 1991, p. 23), Johnson and Johnson hereby demonstrated the efficacy of the technique.

#### Should we abandon CL?

It would be premature at best to suggest that cooperative learning in higher education be abandoned. More research with improved methods is needed to further investigate the merits of CL when compared to traditional methods.

Furthermore, while learning outcomes may be the same (or better, or worse), discovery is made in many other areas (other than just learning outcomes) to show that cooperative learning actually has many more benefits that it did originally (see Table III).

Among those areas as outlined in Johnson and Johnson's meta-analysis;

...higher level reasoning, retention, time on task, transfer of learning achievement motivation, intrinsic motivation, continuing motivation, social and cognitive development, moral reasoning, perspective-taking, interpersonal attraction, social support, friendships, reduction of stereotypes and prejudice, valuing differences, psychological health, self-esteem, social competencies, internalization of values, the quality of the learning environment, and many other outcomes. There may be no other instructional strategy that simultaneously achieves such diverse outcomes (Johnson, Johnson, and Stanne, 2000, p. 3).

Many of these same variables were also discussed by researchers in their experiments involving students in higher education (see Table III).

Johnson and Johnson do make such a claim in their research, suggesting that the "Learning Together" method (Johnson & Johnson, 1981) "...promotes higher achievement than do competitive or individualistic efforts" (p. 10), and higher effect sizes than any of the eight other CL methods tested (including Slavin, Aronson, and Sharan). But in a check of this data in our meta-analysis found the Jigsaw method (Aronson) performed slightly better than others (vs. individual outcomes), but still did not produce a significant effect size.

A study outside of this meta-analysis focused on the teaching of physics to twelfth grade students, found that

...students in the cooperative classroom felt more competent, more autonomous, and more socially related to their classmates. However, there was nevertheless no correlation between method of instruction (lecture or Jigsaw/cooperative) and academic performance (Hanze & Berger, 2007, p. 37).

So while the learning outcomes did not differ from those of lecture/discussion, this study reported specific areas (some communication based) where dialogue in the group process may add to feelings of competence, and confidence in a given skill set area. Why this happens is unclear in this study.

This study failed to show positive effects of the Jigsaw puzzle on academic performance. However, there were strong effects of cooperative learning on the experience of basic needs, intrinsic motivation, and activation of deeper level processing. In particular, the experience of competence seemed to be central as a psychological mechanism in explaining the benefits of cooperative learning in Jigsaw groups (p. 41).

Abu Seileek also reported in his study (contained within the meta-analysis) that stated group participants generally felt better about their classroom efforts (at the end of the day) than individuals or non-group students. This is confirmed in a study by Bertucci, Johnson & Johnson (2010) that reports higher levels of social self-esteem were witnessed by researchers



Participants working in pairs had higher levels of self-esteem than participants in the individualistic and groups of four. It seems that social self-esteem (self-image of being skillful and effective in social relationships) responded more to a single relationship than from having three groupmates (Bertucci, et al., 2010, p. 270).

But while the research here shows improvements in self-esteem with small groups (pairs), productivity jumps with the organization of larger groups in a cooperative learning setting.

As the size of the group increases, so do the range of abilities, expertise, skills, and the number of minds available for acquiring and processing information (p. 257).

But the authors suggest a paradox in the data develops, as not only can productivity increase with the size of the group, but productivity can decrease with the size of the group also.

...the difficulties in coordinating members' behaviors and using their resources also increase and, therefore, the less productive the group tends to be (p. 257).

So even within any given study, the data can reflect an increase or decrease in productivity, with a corresponding increase or decrease in the size of the group; a statistical paradox, to say the least. So while much research indicates a cooperative learning environment enhances learning outcomes, perhaps these results suggest not only more research is needed but requires more study to look at how cooperative

learning can be used for specific identified group variables (not just learning outcomes) in higher education.

### Embrace All Teaching Pedagogy

While some of the data on cooperative learning may be contradictory (as above), it is clear that the teaching and learning technique that embraces the active classroom with social constructs such as dialogue, motivation, and self-esteem, and reports positive impacts on those constructs, should find a place in the college curriculum.

Perhaps relying on cooperative learning to, in itself, provide for higher learning outcomes is expecting too much, and that there is a scientific argument to implement both lecture/discussion and group learning in a college classroom. The data above seems to support that notion.

### Improving Cooperative Learning

A number of observations by researchers and theorists suggest modifications to cooperative learning that may improve its effectiveness in higher education. It was earlier discussed that teacher training in designing the cooperative learning classroom was critical in the success of higher learning outcomes. That viewpoint was echoed by a study in our meta-analysis focused on the teaching of adult learners in a psychology class (Thompson, 2004). One class recorded a slight increase in its

achievement scores using a cooperative learning environment. But a second class scored significantly lower scores using cooperative learning.

Why was that? Thompson provided a specific reason...

Anecdotal evidence indicated that the skills required for successful implementation of cooperative learning differed markedly between the two teachers. Teacher A used effective probing to draw out comprehensive and elaborated answers on theoretical assumptions and applications during the student presentations, and in doing so conveyed a sense of importance about the task. Teacher B frequently failed to provide elaborated feedback on the student presentations, and as a result, these students may have been less motivated to prepare high-quality group reports in the class (Thompson, 2004, p. 144).

A second example of teacher management came in the classes when it was determined that students did not really have a preference for the traditional lecture/discussion method, or the cooperative learning method; their preference was for whichever method required the least amount of effort and work on the part of the student.

Students in the cooperative learning class may have preferred to work “in a group,” but did not necessarily enjoy working “as a group.” This again suggests the importance of teacher management skills to ensure that students motivation to work as a group does not diminish during the cooperative learning tasks (Thompson, 2004, p. 144).

A legitimate question then, is that in a college economic environment of increasing costs (salaries, technology, facilities), do colleges have the resources to train (separately) college teachers the art of teaching in a cooperative learning environment

with data indicating it is no more effective in learning achievement and outcomes than the traditional lecture/discussion method? Unless the Thompson study can be replicated with teachers possessing the same skill level in the classroom, the data reflecting no significant differences will remain.

In another class, cooperative and individual learners were compared in a college level botany class (Moreno, 2009). Moreno found that scores in a transfer test were comparable between students working individually and students working in a cooperative learning environment...running contrary to his original hypothesis that small group learning would produce higher scores.

The first hypothesis is that in order to make the engagement time the same for all three learning groups, we asked students who learned individually, to self-explain their solutions to the problems. It is possible that this additional review facilitated students' organization of the materials prior to the testing session that followed. For instance, several studies have shown that self-explanations can deepen students understanding (Moreno, 2009, p. 441).

So rather than spending money retraining instructors to teach in a cooperative learning environment, all we have to do as educators to improve learning is to add a post-discussion period to the existing lecture/discussion format. Is it then that active oral discussion in the classroom the key to learning? Also, Moreno adds that by increasing active feedback in the classroom, an instructor can reduce the amount of student interaction, thereby saving valuable classroom time for more lecture/discussion.

Another study relied on the quality of the interpersonal relationship formed in a 2-person group.

And it raises the question, with time demands and increasing financial squeeze of college funding, can students actually take the time to form an interpersonal relationship to satisfy the goals of the course. Buchs and Buterra (2001) conducted a study which focused on the role and quality of that relationship in the teaching of a social psychology class.

The hypothesis that dependence upon a partner is a crucial matter is supported by results concerning the effect of the perceived quality of the relationship. Results indicated that this relationship can influence the detrimental effect of not reading information directly...it is only when the relationship is perceived as less positive that listeners performance decreased...it is clear that the quality of the relationship becomes a crucial dimension for performance (Buchs & Butera, 2001, p. 351).

This is more evidence that perhaps, in today's college environment where digestion and individual construction of knowledge is paramount, the group process where students must depend on their partner may prove to be too much for college educators.

In summary, there are a number of factors within the meta-analysis that have pointed to areas or evidence why cooperative learning has not performed well when compared to lecture/discussion at the higher education level. 1) Dependence on relationships for success in the classroom may be unrealistic at the collegiate level,

2) feedback and successful (positive) student interaction is required to achieve higher level scores from students, and 3) extensive teacher training may be required for instructors in designing and implementing the cooperative learning classroom (and the prevailing question), can educators then train teachers (who are already accomplished in their fields) to teach in the CL format---and can colleges afford that training?

All three are identified stumbling blocks to effective learning in higher education, and may be reflective of larger problems when implementing CL at the higher education level.

One of the leaders in the design of the cooperative learning classroom (Spencer Kagan), believes educators should stop designing CL classrooms with the old one-dimensional design in mind, but rather one with several dimensions. Kagan (along with Howard Gardner) believe that prior to 1993 educators tended to view intelligence as existing along one dimension that could be represented as a single source on an intelligence test. Kagan believes Gardner hit it right when asked the question, “What is smart?” (Kagan, in Putnam, 1998, p. 111).

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In cooperative learning, researchers say much more time needs to be spent by educators to design the classroom curriculum to include all of the architecture discussed in this study. To ask the question: Should we abandon cooperative learning because it failed to provide higher learning outcomes? The answer is no. We should incorporate those aspects of cooperative learning into the classroom to capture the different intelligences found in the average classroom. Too much work? That's a question for educators to discuss with administrators.

But there is plenty of evidence to suggest that CL does well in certain areas of curricula, competition does well in certain areas (and with certain students), and working alone (no competition) works well with segments of the classroom.

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Perhaps relying on cooperative learning to, in itself, provide for higher learning outcomes is expecting too much, and that there is a scientific argument to

implement both lecture/discussion and group learning in a college classroom. The data above seems to support that notion.

Other meta-analyses of cooperative learning outcomes have also proved inconclusive, largely a result of studies which were not methodologically sound, or investigated variables having to do with social contexts and not necessarily learning outcomes. A 2001 meta-analysis involving studies of gifted elementary age students found benefits in cooperative learning for learning variables connected with a social context.

Learning achievements and socio-emotional variables like attitudes toward peers and self-esteem were measured as outcome variables. Most pronounced were the consequences for attitude and self-system variables as well as social interactions. The investigations reviewed considered only elementary school students as participants. Even these few studies suffer some methodological weaknesses (Nebar, 2001, p. 205).

The meta-analysis included 12 published studies (commenting on how few studies in the area were available)....

The review of the studies as well as the meta-analyses indicate that cooperative forms of learning can result in small to medium positive effects on learning achievements of gifted and high-achieving students in lower and middle grades. At the same time, current research is insufficient for deriving more precise and detailed recommendations. Another weakness of the current research is the lack of explanatory, theory-oriented studies (p. 210).

So while researchers using the meta-analytical methods for covering a large amount of data are finding, in the end, a lack of qualified, publishable data, they at the same time are opening a crack in the window to see what has been reported, and then in turn, drawing larger research conclusions from the small studies available.

Another meta-analysis focused on peer assisted learning along with cooperative learning pedagogy in the study of elementary school students (Ginsburg-Block, et al., 2006). It found small to medium effect sizes in several outcome variables associated with classroom performance, but not learning outcomes. 36 studies were reviewed in connection with social, self-concept, and behavioral outcomes of the cooperative learning treatments.

The data showed interventions were more effective for lower income students vs. higher income, urban vs. suburban-rural, minority vs. non-minority, and grades 1-3 students vs. grades 4-6 students. Results suggest that interventions focused on academics can also improve social and self-concept outcomes (Ginsburg-Block, p. 732).

These results lead to another question: Does cooperative learning help lower performing students more, over higher performing students? Does this mentoring of students by higher performing peers do a better job of bringing the lower half up within the classroom. These results indicate that may be the case. But in the previous study, even the gifted students of the same age group, also improve in terms of social immersion and relational communication issues.

### Cooperative Learning: Not In Higher Education?

While many of the positive studies leading to significant differences in learning outcomes have come in the grade school/elementary levels, is there a body of evidence to suggest it should stay there?

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#### Piagetian Spatial Concepts: Irretrievably Changed at Adolescence?

Still another consideration that has not been addressed within the cooperative learning community is the issue of a changed student. Is it possible, through the normal maturation process of the human being, that the brains of young adult students have matured to the point where normal social biases, thoughts just taking shape in childhood, have firmly rooted themselves in the minds of the adult student, and CL no longer has the appeal, challenge, or focus to motivate found in children ages 4 thru 7? (Golbeck & Sinagra, 2000).

Several studies included in this meta-analysis, cognitive achievement and outcomes within the cooperative learning architecture failed to exceed that of the lecture discussion method (Bahar, 2006, p. 346; Hsiung, 2010; Klein, 2000; Krause, 2008; Thompson, 2004). All researchers agree that further studies in the area of cooperative learning and higher education are warranted.



## The Case for Multiple Intelligence Cooperative Learning

One of the leaders in the design of the cooperative learning classroom (Spencer Kagan), believes educators should stop designing CL classrooms with the old one-dimensional design in mind, but rather one with several dimensions.

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## CHAPTER VI

### STRENGTHS, LIMITATIONS, AND DIRECTIONS FOR FUTURE RESEARCH

In this chapter, the results of this study will be reviewed in the context of today's public speaking classroom and the teaching of speech, with special attention to the positive CL outcomes highlighted in Table III (below), and some closing comments relating the results to the Speech Theory of Human Communication (Dance).

While the statistical analysis in this study suggests no significant difference in learning outcomes between the uses of cooperative learning and traditional lecture/discussion teaching methods in the higher education classroom, the reports do suggest certain aspects of CL which may be applicable and beneficial to the teaching of public speaking. In fact, many speech teachers may employ aspects of "group" learning (as in group exercises), without actually labeling it "cooperative."

Effective cooperative learning programs emphasize not a laissez-faire attitude toward teaching (simply grouping students together and calling it "cooperative"), but rather teachers should use a more strict adherence to the guidelines set forth by David and Roger Johnson within the Learning Together (LT) method.

Slavin referred to Johnson and Johnson's research into the "Learning Together" method as perhaps the "purest form" of cooperative learning in use today. What Johnson and Johnson highlighted in their research were five classroom elements which must be worked into the classroom curriculum.

At the top of the list is the notion of positive interdependence.

This task falls onto the classroom teacher to not only place students in groups, but to craft exercises that make them dependent on each other for their successes (and failures), and for student-participants to understand and realize the value of working together. This recognition might come in the form of one group grade for the exercise. Another method would be for the instructor to attach the individual students grade with the learning outcomes of another fellow group member. This may be perceived as "unfair" to some students in the classroom (particularly the high achievers – that they are somehow accountable for the outcomes of lower performing students).

However, what CL has shown is that the act of tutoring or mentoring others is actually beneficial toward solidifying cognitive processes in the high-achieving student, as well as sharing information that may allow the lower-achieving student to construct knowledge like never before.

King and Behnke (2005) suggest a number of reasons for placing students in groups:

...increasing student motivation (Nichols and Miller, 1994); development of individual responsibility (Oldfield and MacAlpine, 1995); co-constructing knowledge as a result of member interactions that produce new viewpoints (Vygotsky, 1978); improving democratic skills and citizenship education (Fertig, 1995); and improving skills for communication, organization, presentation, leadership, and so on (Butcher, Stefani, and Tario, 1995; King and Behnke, 2005, p. 57-58).

At the same time, King and Behnke argue there are inherent problems with students working in groups. They include:

- Despite how random or systematic in the selection of groups, some groups will be at an advantage, others disadvantaged.
- A “one grade fits all” philosophy (for the group) would send the message that “weaker” students would contribute less.
- Factors such as “teamwork” and “contribution to the group” are hard to define and difficult to assess.
- Rating students on “perceived” performance has as much to do with perception as performance; for example, the student who contributed the least to the problem solving may give the most compelling presentation.
- Some assessment factors can actually promote dishonesty and competition.

Following King and Behnke's observations, the speech teacher should be able to avoid these classroom pitfalls if there is a recognition and adherence to the five prerequisites outlined by Johnson & Johnson, which includes positive interdependence AND the notion of individual accountability within group/classroom exercises; i.e., the delivery of a group speech. Effective group processing (also a key element posited by Johnson and Johnson) during the exercise, and afterward, remain important guidelines to effective cooperative learning in performance-based groups.

### Practical Application

Often there is a wide variety of individual talent or experience levels in the speech classroom (especially at the higher education level). Some students may have participated in high school debate and experienced the pressures of time and an audience to craft responses in an informative or persuasive manner. Organizing one's thoughts is a key element in effective extemporaneous or impromptu speaking. Some literature refers to the act of "grouping students," either by sex, achievement level, or some other affiliation.

In speech, it can be very helpful to group one student who has effective speech or debate experience with student(s) who may be new to the discipline.

This added group member may provide additional confidence to the individual speaker, and be a connected or cohesive factor for the group as a whole.

Positive interdependence can be graded by the instructor from the outside (in the form of a graded exercise), but that assessment can be aided by the addition of peer group feedback or the confidential grading of one another within the group after the exercise.

It's the effective formation of the student group that interacts well that can lead toward the creation of an interdependence, that the experienced speaker will assist those with less experience, and that those who are new (or low achieving) recognize the need and benefit to listen and heed the words of a peer who has achieved some success previously.

The jigsaw method of CL (Aronson) is one most readily developed to lead to positive interdependence, as group members may be assigned individual parts (as in pieces of a puzzle) to complete an entire assignment.

In this way, group members are required to speak with each other in conversational dialogue in an effort to achieve some sort of result.

### Cooperative Learning Classroom Exercises

Topic Selection – For every teacher of public speaking, the issue of topic selection is foremost in the minds of most students. “What am I going to talk about,” is a common refrain heard in the Basic Public Speaking Course. The opportunity to select a topic cooperatively offers a number of possibilities that would satisfy the goals of the class and offer a sense of comfort (and often familiarity) with the student speaker.

The exercise should provide for the five elements highlighted by Johnson & Johnson in this study (p. 23).

- Positive Interdependence – In groups of two or three (selected at random), students consult each other on their favorite hobbies, areas of study, music, travel, and movie themes. Each member of the group offers suggestions to the other, establishing rapport, and insuring that each member of the group arrives at an acceptable speaking topic (this is the element of positive interdependence satisfied in the CL learning format).
- Individual Accountability – By arriving at that topic, each individual speaker is now set to do research/outlining to satisfy the goals of the assignment.
- Face-to-Face Promotive Interaction – The exercise provides the collegial support needed to boost self-esteem and confidence in the process.
- Social Skills – The group processing allows for the development of social skills in a collegial atmosphere. Keeping the groups to two or three members is optimum in that it would be more difficult for a group member to lag, or not fully participate.



- Group Processing – This occurs in two areas: 1) It is important for the teacher to allow a “sharing” of topic ideas in the large classroom setting. This provides an opportunity for the student to take ownership of the topic (by arguing its efficacy) and to perhaps provide newer ideas for others who remain unconvinced of the topic they arrived at; and 2) students are required to provide written (critical) and oral (constructive/affirming) feedback immediately after the speech presentation. Again, this helps in the processing of the exercise, where students can “make meaning” of what they have accomplished.

Introductory/Progressive Speech - Often called the speech of self-introduction, this speech can be crafted so that students are grouped in threes, actively seeking out information about each other (as they will each be required to give an introduction of “the other,” as well as themselves). This satisfies that element of promotive interaction.

Individual accountability is achieved through the written grading of the exercise by the instructor (clarity, flow, disfluencies – if any,) on an individual basis.

Face-to-face promotive interaction is achieved because students will be side by side to correct any inaccuracies or misinformation in the introduction (“No, I’m

not from Oxnard, California...it's Thousand Oaks). Social skills are again practiced by the required information-seeking of "the other" and group-processing at the conclusion ("...did I get it right?").

Some instructors may provide a confidential check-list for each speaker to submit at the end of the exercise, which may include questions such as, "Did you feel nervous or anxious in front of your audience? If so, why or why not?" Or, "Do you feel you had effective eye contact with your audience?"

These questions are designed to help the student become more aware of her/his public speaking delivery and to perhaps discover ways to modify or improve delivery.

The progressive element of this speech lies in the area of unintended pauses (sometimes common with beginning speakers). If a student gets "stuck," the others are allowed to assist one another in fulfilling her/his timing requirement.

Outlining – Though not quite as interactive as the topic selection process, CL can be used effectively to provide a more complete grasp of the outlining process. In the case of the persuasive speech using Monroe's Motivated Sequence, students in small groups can reinforce the major elements of the format (Attention-Getter, Need, Satisfaction, Visualization, Call-to-Action), and discuss (through conversation and dialogue) ideas for each element of the process. Accountability occurs with the completion (draft) of a working outline from each student.

Face-to-face promotive interaction occurs in the discovery process (the seeking and exchanging of ideas to fill each segment of the outline), the development of social skills within the interaction, and group processing where students will compare/contrast their outlines with each other.

Group Informative Speech (Jigsaw) – Elliot Aronson’s work with the cooperative learning technique known as Jigsaw has seen extensive work in the early elementary age years, but it is also regarded highly in some studies within the meta-analysis at the college level.

In groups of three or four, students can identify major points or topic areas to cover in their informative speeches. Group processing occurs when, after each individual performs research, they are then left with the task of developing effective transitions and hand-offs to the next speaker. This element also satisfies that area of promotive interaction, working together to provide a desired outcome.

Student/Peer Feedback Forms – In the ideal, students should receive no fewer than six forms of feedback on each speech presentation. These would include:

- Written feedback (critical) from the instructor
- Oral feedback (constructive) in class from the instructor
- Written peer feedback (6) from student colleagues
- Oral feedback (constructive) in class from peers
- Video self-review (7 competencies) of the public speaking presentation

- Video review with a trained peer or instructor (critical)

These feedback elements are very important in taking full advantage of the tools and processes of cooperative learning.

It allows for the continued development of social skills (tact), group processing (students will often take to heart comments from peers, which may carry more weight than comments from their instructor), and individual accountability (public speaking, in the end, is the act or result of individual mentation delivered in acoustic space).

### Strengths of the Study

This study demonstrates the widespread (worldwide) acceptance of cooperative learning as a teaching/learning method. But as the results of the meta-analysis suggest, it still presents mixed data about whether or not the CL classroom is more effective in terms of learning outcomes than the traditional lecture/discussion classroom.

The strengths as outlined (even by those researchers who report minimal effect on learning outcomes – Table III) suggest superior socialization, relational, and interpersonal outcomes related to students working in groups. These positive attributes could lend themselves positively toward the teaching of public speaking, and could lend themselves toward better organizational skills for outlining and

planning of presentations, possible reduced anxiety and apprehension by reducing uncertainty through socialization prior to a presentation, and greater modification of presentational skills by individual speakers brought on by efforts to improve individual performance through group participation (group processing).

None of the studies represented the teaching of speech in a public speaking class. However, several were involved in speech exercises (orality) included as part of English as a second language (ESL) or English as a Foreign Language (EFL) classroom. But researchers in those two areas found positive improvement in the above-mentioned areas.

### Limitations

In spite of the promising data in specific areas, when applied to a cross-section of disciplines (as in this study), cooperative learning fails to live up to often inflated claims of cognitive superiority through advanced learning techniques. Johnson and Johnson have posited, through their research, that active deliberation and “controlled conflict,” or “intellectual tensions” in a cooperative learning classroom can lead to enhanced pedagogical outcomes. While this may be true under certain conditions, it is very difficult to assess, even under experimental research conditions, whether those elements are being met with the strict guidelines set forth in their “learning together” methodology. In most cases, not all five conditions are being met (positive

interdependence, individual accountability, face-to-face promotive interaction, social skills, and effective group processing).

In addition, most of the studies included in the meta-analysis (while identified as bona fide experiments comparing cooperative learning and traditional learning methods) do not last more than an academic year (Doymus, 2008) and one exercise lasting as little as 4-hours (Krause, 2009). Rodger's study was based on an analysis of a twenty-six minute video tape (Rodger, 2007).

**Table IV:** Length of time given for each experiment in this study. ( $k = 21, n = 2,052$ )

<u>Study Author</u>	<u>Length of Experimental Period</u>
Abu Seileek	16 weeks
Artut	9 weeks
Bahar	2 weeks
Brewer/Klein	1 week
Buchs	3/2 hr. sessions within 28 hour course
Doymus I & II	One academic year
Gromleksi	14 weeks
Hsiung	One semester
Jalilifar	2 months
Klein	One semester
Krause I	4 hours
Krause II	2 weeks
Mentz	2 years
Naughton	Eight weeks
Nembhard	2/2 hr. sessions
Rodger	Analysis of 26 minute videotape
Smialek	1 semester
Thompson	Six weeks

### Future Research

Research in this study was limited to cooperative learning experiments involving college students. From more than 14-hundred studies originally filtered from the database, only 21 were found to meet the criteria set forth. More original research in the use of CL techniques in higher education is certainly warranted.

Also, Michael Kramer's work on the "classroom dialectic" (Kramer, 2004), corresponding with Johnson & Johnson's work on classroom conflict should be studied for more insights into what goes on in a classroom during debate, tension, and dialogue within a student-student setting. Is there a higher level of discourse in this type of active classroom, especially when compared to traditional "top-down" lecture/discussion classrooms? Also, what role does "orality," or the use of oral language in the active classroom play in the construction of knowledge? Does active dialogue impact the level of critical thought in the classroom when compared to the traditional form of teaching in lecture/discussion?

And in its essence is orality (as in student-to-student dialogue in an active CL classroom), specifically as it applies to the notion of human conceptualization (Dance, 1982), the best way to transmit and discover knowledge in the classroom? Zak-Dance reports that when used as a primary mode of human communication, young children "...will be at a higher developmental level of self-concept than preschool children with the gestural/visual mode (Zak-Dance, 1979)."



While lecture/discussion continues to incorporate the use of visual aids supplementing the classroom lecture, is this more effective in the teaching of public speaking than the benefits suggested in an active CL classroom emphasizing dialogue?

## Conclusion

Overall, this project (1) illustrates that that cooperative learning in higher education shows no significant difference in learning outcomes over traditional teaching methods, but (2), CL does provide certain socialization and relational benefits for students engaged in such a classroom environment. These interpersonal factors, which were shown to be of benefit in classes involving speaking (foreign language training), may have promise in the formation of CL exercises in public speaking classes.

Hopefully, as a result of this research project, institutions of higher learning and faculty will consider continuing the search for better ways to build pedagogical strength within an active classroom setting, including the integration of cooperative learning activities.

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APPENDIX A

Cooperative Learning (CL) meta-analytical variables/code book

ID \_\_\_\_\_ Study Identification Number (1 - )

SEX \_\_\_\_\_ Sex (DV)

1 = Female

2 = Male

3 = Female/Male (mixed student group)

99 = Missing/Unknown value

PUBTYPE \_\_\_\_\_ Publication type

1 = Book

2 = Journal Article

3 = Thesis/Dissertation

4 = Technical Report

5 = Conference Paper

6 = Other

PUBYER \_\_\_\_\_ Publication Year

1 = 2000

2 = 2001

3 = 2002

4 = 2003

5 = 2004

6 = 2005

7 = 2006

8 = 2007

9 = 2008

10 = 2009

11 = 2010

CLMETH \_\_\_\_\_ Cooperative Learning Method (IV)

- 1 = CL Instruction/Learning Together (LT) – Johnson & Johnson
- 2 = CL Instruction/Academic (Constructive) Controversy (AC) – Johnson & Johnson
- 3 = CL Instruction/Student-Team-Achievement Divisions (STAD) - Slavin
- 4 = CL Instruction/Teams-Games-Tournament – DeVries & Edwards (TGT)
- 5 = CL Instruction/Group Investigation – Sharan & Sharan (GI)
- 6 = CL Instruction/Jigsaw – Aronson & Assoc. (JSW)
- 7 = CL Instruction/Team – Accelerated - Instruction (TAI) – Slavin & Assoc.
- 8 = CL Instruction/Cooperative Integrated Reading and Composition (CIRC)

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Stevens, Slavin, & Assoc.

- 9 = CL Instruction/Cooperative Learning Structures (CLS) – Kagan
- 11 = CL Instruction/Complex Instruction (CI) - Cohen
- 12 = Other

CLOC \_\_\_\_\_ Cooperative Learning Outcomes (DV)

- 1 = Positive Self-Esteem
- 2 = Negative Self-Esteem
- 3 = Positive Oral Competency
- 4 = Negative Oral Competency
- 5 = Positive Critical Thinking/Deep Thinking Skills
- 6 = Negative Critical Thinking/Deep Thinking Skills
- 7 = Positive Intercultural Effect
- 8 = Negative Intercultural Effect
- 9 = Positive Socialization Effect
- 10 = Negative Socialization Effect
- 11 = Positive Interracial Relational Effect
- 12 = Negative Interracial Relational Effect
- 13 = Positive Motivational Effect
- 14 = Negative Motivational Effect
- 15 = Other outcomes

EDLEV \_\_\_\_\_ YR/GRADE OF PARTICIPANTS (DV)

- 1 = 2 Yr College/Community College
- 2 = 4 Yr College/University level
- 3 = Graduate/Post-Graduate Education

- 4 = Adult Learners/Trade/Vocational Education
- 5 = Other Learners

REGION \_\_\_\_\_ Country of Origin (DV)

- 1 = United States
- 2 = China
- 3 = Taiwan
- 4 = Canada
- 5 = United Kingdom
- 6 = France
- 7 = Germany
- 8 = Japan
- 9 = Hungary
- 10 = Spain
- 11 = Romania
- 12 = Australia
- 13 = Malaysia
- 14 = Saudi Arabia
- 15 = Ireland
- 16 = Botswana
- 17 = Singapore
- 18 = Italy
- 19 = Other
- 20 = Sweden
- 21 = Lithuania
- 22 = Finland
- 23 = Turkey
- 24 = New Zealand
- 25 = Brazil
- 26 = Iran
- 27 = South Africa

DISCI \_\_\_\_\_ Academic Discipline (DV)

- 01 = Computer Technology(CMC)
- 02 = ESL/Language Learning Training (ESL)
- 03 = Mathematics Curriculum (MATH)
- 04 = Biological Sciences (BS)



- 05 = Nursing Training/Education (NURS)
- 06 = Disabilities, Physical Rehabilitation (DISA)
- 07 = Public Speaking/Speech (SPEE)
- 08 = Writing, Literature Exercises (WLIT)
- 09 = Social Sciences (Political Science, Economics, Sociology, History, Philosophy) (SOCD)
- 10 = Trade/Vocational Job Training (VOCA)
- 11 = Other (OTH)
- 12 = Teacher Education (TE)
- 13 = Communication (COMM)
- 14 = Business/Accounting (BUS)
- 15 = IT/Information Technology (IT)
- 16 = Education (EDU)
- 17 = Physician Training (PT)
- 18 = Engineering (ENG)
- 19 = Music (MUS)

## **Appendix B:** First-hand student account of CL implemented in speech classroom

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In the beginning of my public speaking experience, I was enrolled in an individual-based environment of public speaking. In this situation I experienced higher levels of tension, discomfort, fear, and apprehension when preparing to give my speech and also through the duration of my speech. I would be nervous for up to two days before and would feel nauseous and anxious about the impending speech. The students did not converse with each other and they simply got up to present their information and then received a critique. This was very unsettling to me because I felt very alone and I think it made my anxiousness increase.

I was moved to a collaborative-based environment where the entire atmosphere was different. As soon as I walked in-(to the classroom), people were conversing with one another and the group all together seemed more relaxed. I still felt a little discomfort, but overall more satisfied with the new class. In this type of teaching style, I would give my speech and then the students in my class would give me feedback on what I did well and what I could improve upon. The instructor would read me her critique, positives and negatives. The fact that she did this for everyone helped me to see that many people have the same fears and common mistakes as I did.

**Appendix B: continued...**

I found commonalities linking me with other kids in the class and was able to learn off of them in order to better my speaking skills. The instructor offered encouraging tips and always delivered negative feedback effectively and delicately.

This is the third time I have taken public speaking (in my education) and by far the most enjoyable. The collaborative approach creates a feeling of unity and also helps you to feel connected and comfortable around the people you speak to the entire semester. My speaking abilities have definitely improved and while I still feel nervous before a speech, I am able to handle it whereas before, the fear had the control. I feel I am a much more effective and confident speaker and now I look forward to each new speech and the opportunity it presents for furthering my speaking skills.

---A University Freshman (UCCS)

Fall semester (12-05-07)