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*Collaborative learning is a powerful method of teaching and learning and much is written about the method at the elementary and secondary levels. Thanks to Bruffle (1999), Johnson and Johnson (1987), MacGregor (1990), Miller, Trimbur, and Wilkes (1994) and others the method is now being used by many at the college level. However, Panitz (1993) argues that the use of collaborative methods is resisted by some educators because of lack of training and possible lack of losing control. Review the origins of collaborative learning in higher education and delineate the critical attributes of the method in theory and practice. Analyze why this method is accepted by some and rejected by others.*

## Introduction

One of the most frequently made observations regarding adult education is the fact that it should be collaborative or participatory in nature (Brookfield, 1986). Support for collaboration and participation in adult learning is based upon a philosophical approach to adult education emerging from the progressive education movement, one of several movements upon which adult education's philosophical foundations are based (Elias and Merriam 1980). Although the need for collaboration and participation is emphasized in much of the adult education literature, there is little empirical support for collaborative learning as the best way to educate adults. There is also little discussion of collaborative learning itself—that is, what it is, how it is implemented, and its strengths and weaknesses. This paper will provide a definition of collaborative learning along with the ideas and attributes unique to its theory and practice. The second section of this paper will review why the approach is accepted by some and rejected by others. Finally, a plan will be provided on how this method of learning can be applied to the adult learner.

## Collaborative learning defined

Collaborative learning is a personal philosophy, not just a classroom technique. It is a philosophy that requires all participants to change their role in the learning process (Panitz & Panitz, 2004). Smith and MacGregor (1992) views collaborative learning as an umbrella term for a variety of educational approaches involving joint intellectual effort by students, or students and teachers together, that represents a significant shift away from the typical teacher-centered or lecture-centered approach in college classrooms. Zachary (2000) views the collaborative process as creative work, “where people labor together in order to construct something that did not exist before the collaboration, something that does not and cannot fully exist in the lives of the individual” (p. 126). Proponents, such as Brookfield (1986), Bruffee (1999), Taylor, Marienau, and Feddler (2000), and MacGregor (1990), argued that it promotes active learning, critical thinking, conceptual understanding, long-term retention of material, and high levels of student satisfaction (Taylor, et al., 2000; MacGregor, 1990). According to Smith and MacGregor (1992) regardless of the subject matter, students working in small groups tend to learn more of what is taught and retain it longer than when the same content is presented in other instructional formats. Students who work in collaborative groups also appear more satisfied with their classes (Johnson & Johnson, 1987; Bruffee, 1999). Collaborative learning, learning community curricular structures, and assessment of student learning are reform efforts that are each beginning to have important effects on college classrooms and curricula. Hence, students learn best when they are actively involved in the process. According to Wiersema (2000),

[c]ollaborative learning is a philosophy: working together, building together, learning together, changing together, and improving together. It's a philosophy that

fits today's globalized world. If different people learn to work together in the classroom, then I believe they will become better citizens of the world. It will be easier for them to interact positively with people who think differently, not only on a local scale, but also world-wide.

Springing from different roots, these initiatives have expanded in the past decade to include multiple approaches used in diverse educational settings. Each of these reforms asks faculty members and students to consider teaching, learning, and curriculum issues in new frameworks. According to MacGregor (1990), “collaborative activities range from small groups of students working together for part of a class period to formal semester-long group projects, with countless variations between these two extremes” (p. 22).

Rather than review the various definitions, it is more important to analyze their shared attributes that may already exist in the classroom. Underlying nearly all collaborative learning experiences is a distinctive set of assumptions about the educational process, learning, and the nature of knowledge is. The most pivotal is the assumption that knowledge is created through interaction, not transferred from teacher to student. Hence, it typically follows that instructional activity must build on students' current levels of background knowledge, experience, and understanding. These attributes build upon the key characteristics of the adult learner. Also the teacher has the role of creating a context in which learners can make the material their own through an active process of discovery. Effective collaborative activities promote individual learning through the group process (Bonwell & Eison, 1991, p. 89).

The following form the basis for collaborative learning:

- 1) Both facilitators and learners become active participants in the educational process (Brookfield, 1986).
- 2) The hierarchy between facilitators and learners is eliminated (Bruffee, 1999).
- 3) A sense of community is created (Kaplan, 2002).
- 4) Knowledge is created, not transferred (Sheridan, 1989).
- 5) Knowledge is considered to be located in the community rather than in the individual (Whipple, 1987).

Collaborative learning draws heavily from the schools of experiential learning and student-centered learning that are based on the work of the philosopher Dewey and the social psychologists Piaget and Vygotsky (Bruffee, 1999). The process also uses information from the field of social psychology, particularly small group theory advanced by Lewin (Bruffee, 1999; Panitz, 2004). Critical thinking, as a form of education, and problem-centered learning have also contributed to collaborative learning (MacGregor 1990; Sheridan, 1989).

Collaborative learning assumes that knowledge is socially, rather than individually, constructed by communities of individuals and that the shaping and testing of ideas is a process in which anyone can participate (Bonwell & Eison, 1991; MacGregor, 1990; Novotny, Seifert, and Werner, 1991). Furthermore, the process stressed the importance of common inquiry in learning, a process through which learners begin to experience knowledge as something that is created rather than something that is transmitted from the facilitator or teacher to the learner (Sheridan, 1989). Collaboration in the classroom is adaptable in that it can involve groups of almost any size working on

one project together or on several individual projects. Table 1 lists some of the difference between collaborative learning and traditional group learning.

Table 1: Collaborative and traditional learning dynamics compared

<b>Collaborative learning dynamics</b>	<b>Traditional learning dynamics</b>
Positive interdependence	No interdependence
Individual accountability	No individual accountability
Heterogeneous membership	Homogeneous membership
Shared leadership	One appointed leader
Responsible for each other	Responsible only for self
Task and maintenance emphasized	Only task emphasized
Social skills directly taught	Social skills assumed or ignored
Teacher observes and intervenes	Teacher ignores groups
Group processing occurs	No group processing

Collaborative learning environments can even be informal study groups that meet periodically, enabling students to study together and learn from each other. Perhaps the most typical form of collaborative activity is formal problem-solving groups or teams, in which students work in groups to complete extended, and often applied, projects (Vella, 1998; Taylor, 2000).

Collaborative learning addresses the issue of how authority is distributed and experienced in the learning setting (Bruffee, 1999). The preeminent idea behind collaborative learning is that learning is significantly enhanced when knowledge that is

created and transmitted is shaped by the activities and perspectives of the group, so the facilitator's role as an authority and source of knowledge is reduced (Romer, 1985).

The best source of the theoretical and practical foundations on collaborative learning is by Bruffee (1999) in his book Collaborative Learning: Higher Education, Interdependence, and the Authority of Knowledge. Bruffee presents a definition of collaborative learning by asking what it is and what it is about. Bruffee defined collaborative learning as “a reacculturative process that helps students become members of knowledge communities whose common property is different from the common property of the knowledge communities they already belong to” (p. 7) and urged a shift from a foundational to a nonfoundational, social constructionist understanding of knowledge, which requires a different kind of authority on the teacher's part. He further argued that collaborative learning puts into place changes in our understanding of knowledge and learning that are already taking place in our society (Bruffee, 1999). According to collaborative learning theory, the process of reacculturation tends to work better if it involves peer group interactions as well as direction by authority figures.

Bruffee's model of collaborative learning consists of a consensus group work. Bruffee illustrated other models including peer tutoring, collaborative project work, writing peer review and consensual response to lectures as other examples. He argues that this approach can initiate students into the real adult world of the creation, preservation, and transmission of knowledge in the professions, in academic disciplines, and in the culture at large. According to Bruffee, “collaborative learning strategies can begin as early as junior high school, and they should be the principal pedagogy of higher education” (Bruffee, 1999, p. 8).

In his discussion of writing and collaboration, Bruffee suggested that collaborative groups give students opportunities to learn to converse better. He explains that conversing better is a crucial first step in learning to think better which leads to learning to write better. "If thought is internalized conversation, then writing is internalized conversation re-externalized" (Bruffee, 1999, p. 61).

In the chapter "Toward Reconstructing American Classrooms," Bruffee lists all of the various conventions that are followed in traditional teaching. Bruffee believed that given the flaws in traditional conventions of learning, that collaborative learning best serves the learner, teacher, and the process of learning. "Collaborative learning implies that teachers have to rethink what they have to do to get ready to reach and what they are doing when they are actually teaching" (Bruffee, 1999, p. 69). According to the traditional, foundational understanding of knowledge, "teachers tend to think that the most important thing they have to do to prepare for teaching is to fill their own heads to overflowing with disciplinary knowledge and expertise so that they will have plenty in reserve with which to fill the heads of their students" (p. 69).

Although Bruffee makes a good case for building the pedagogy of higher education on nonfoundational assumptions, this analysis also suggests that there is an appropriate place for the recognition of foundational knowledge in higher education. The foundational basis of the normal discourse of academic disciplines is typically a combination of shared interpretations of history, theory, and method. And those foundations are typically the subject matter of introductory courses. At the same time, disciplines vary greatly in the degree to which common interpretations of history, theory, and method are widely agreed upon. Furthermore, the ever-present possibility of

paradigm shift suggests the value of introducing the idea of the nonfoundational nature of knowledge, as well as the experience of nonfoundational pedagogy, even in introductory courses.

Collaborative learning builds upon the following key aspects of the adult learner that reflects a changing relationship between the teacher-student (Brookfield, 1986; Tinzmann, M.B., Jones, B.F., Fennimore, T.F., Bakker, J., Fine, C., & Pierce, J., 1990):

- 1) Shared knowledge among teachers and students,
- 2) Shared authority among teachers and students,
- 3) Teachers as mediators,
- 4) Heterogeneous groupings of students

The idea of the teacher as a facilitator is a hallmark of adult education (Apps, 1991; Brookfield, 1986; Knowles, Holton, & Swanson, 1998). This central principle charges adult educators to go beyond the role that the teacher takes in traditional classroom settings and stipulates the need to treat adults as equals in the classroom. Yet, the method is resisted by some educators and learners.

### Why do educators resist collaborative learning?

Given the overwhelming number of benefits created by the use of collaborative learning methods, it is surprising that so few teachers use this paradigm. To address why most faculty at the college level have not embraced this method of learning one must

look at the core cause: the current educational system, which emphasizes the traditional behaviorist approach of content memorization and individual student performance through competition. Collaborative learning is not without problems and issues (Guskey, 1986). Those most frequently mentioned in the literature include cultural biases toward competition and individualism that militate against collaboration; the traditional class structure that frequently does not allow sufficient time for true collaboration to occur or for group members to establish trust and a sense of group security; the difficulty in providing feedback that accommodates the needs of both the group and the individual; the reluctance of learners to accept their peers as legitimate sources of knowledge; the inability of facilitators to relinquish their traditional role; and the development of appropriate and meaningful collaborative learning tasks (Guskey, 1986; Bruffee, 1999; Sheridan, 1989). Because they did not give sufficient time and attention to this last issue, some adult educators have been accused of providing “warm and fuzzy” learning experiences that did not necessarily result in any real learning (Sheridan, 1989).

Few teachers or students have had any exposure to the collaborative learning teaching/learning technique. Teachers are not trained during their certification processes in collaborative methods and those that are often receive incomplete training (Panitz, 2004). If teachers are taught by the lecture method while at teachers’ college, then it is hardly surprising that this will be the method of choice when their turn arrives to take over the classroom (Panitz, 2004). And the fact that most students have been exposed only to the competitive, individualistic approach used in our school systems today at all levels constitutes a major problem (Panitz, 2004; Bonwell & Eison, 1991). Students are not likely to change their attitudes from one class to another unless they are trained in

collaborative learning techniques. Other reasons why the collaborative method of learning is resisted can be attributed to the following reasons: loss of control in the classroom; lack of confidence; lack of familiarity with alternative assessment techniques; lack of familiarity with alternative assessment techniques; and student resistance.

### Loss of control in the classroom

Perhaps the biggest impediment to collaborative learning lies in the fact that many teachers feel they give up control of the class if they give more responsibility to the students for their learning. When a teacher lectures and otherwise controls the information-data flow from teacher to student, he/she feels that it is the best approach in covering the required prescribed material (Bonwell & Eison, 1991). Collaborative learning techniques encourage students to formulate their own constructs and ways of understanding the material. The constructivist ideology is foreign to most teachers who have been trained in the didactic method of lecturing (Brookfield, 1986). Smith and MacGregor (1994) argue that:

[c]hallenges to collaborative learning at the classroom level are compounded by the traditional structures and culture of the academy, which continue to perpetuate the teacher-centered, transmission of information model of teaching and learning. Collaborative learning is a philosophy: working together, building together, learning together, changing together, and improving together.

Faculty can successfully overcome these obstacles by using collaborative learning methods and reduce the possibility of failure by gradually incorporating teaching strategies involving more activity from students and greater risks into their regular teaching style” (Bonwell & Eison, 1991).

### Lack of self confidence by teachers

It takes a great deal of confidence in one’s self and one’s students to transfer the responsibility of learning to the student or even to share some of the responsibility. Many teachers lack the self-confidence to try methods that may expose them to potentially difficult situations (Panitz, 2004). These may occur when students ask unanticipated questions or act in socially unacceptable ways. Collaborative learning redefines the role of teacher from expert to facilitator (Smith & MacGregor, 1992). The focus on the student reduces the opportunities teachers have to demonstrate their expertise and might call into question their teaching ability. He/she has to be sure he/she has something to offer, as a person, before a class can be allowed to take some control. Some people cannot face the risk.

Teachers are defined as being experts in their fields, able to answer any and all questions. In a collaborative learning environment, students may ask questions in a manner that is difficult for the teacher to understand. Sometimes it takes another class member to articulate a question or answer a fellow student's question using vocabulary which they can understand. Allowing and encouraging students to answer each other's questions is contrary to the typical teacher centered class. Collaborative learning

contradicts the concept that teachers are repositories of subject knowledge, whose role is simply to pour into the open, empty and willing minds of students their vast reservoir of knowledge. Teachers who use collaborative learning approaches think of themselves less as expert transmitters of knowledge to students, and more as expert designers of intellectual experiences for students-as coaches of a more emergent learning process (Smith & MacGregor, 1992).

#### Lack of familiarity with alternative assessment techniques

Assessment is a major concern frequently expressed by teachers who are unfamiliar with collaborative learning. They assume that individual accountability will be lost or that one student will dominate the group or do all the work for the group. They are unfamiliar with how to assess group efforts and assign grades to groups. Often they assume that only one process is appropriate for assessing student performance (Bonwell & Eison, 1991).

Within the context of courses involving collaborative learning, assessment may have either of two rather different focus points:

First, since collaborative learning represents a relatively new pedagogical approach, assessment is needed to determine the relative effectiveness of various techniques. For example, within a structured, CS1 environment, are small groups (2-3 students per group) better than large groups (6-10 students per group)? Within multi-window environments, are integrated development environments more effective than multiple, independent tools running in separate windows? Controlled experiments are

needed to determine if some techniques and computer-support environments produce better results for specific stated goals.

Second, within a specific class, assessment of student knowledge and skill is essential for the grading process. In traditional courses, where goals focused upon competencies of individuals working in isolation, tests of individual mastery often were considered to provide an adequate basis for grades.

In collaborative learning contexts, where individual mastery, interpersonal communication, and team-participation are all considered important, grading may be based upon many factors. In this broader context, new assessment vehicles may be necessary. Further, grading standards may need to be changed as new goals replace old ones and as new pedagogical approaches are found to be more effective than traditional ones.

Collaborative learning as defined by Johnson and Johnson (1987) specifically calls for individual accountability as one of its five major components. Another one of the five elements is interdependence, which includes group grading and a reward system for group improvement. The two ideas are complimentary, not contradictory. Because teachers are not trained in alternate assessment techniques they naturally assume the worst, i.e., that the students will not be able to understand and deal with these testing procedures. Perhaps the most distinctive characteristic of adult learners is that they bring rich and varied experiences to the learning setting (Knowles, et al., 1998). Kasworm (1997) offers five key principles that can guide adult-oriented assessment practices:

1. Learning is derived from multiple sources.

2. Learning engages the whole person and contributes to that person's development.
3. Learning and the capacity for self-direction are promoted by feedback.
4. Learning occurs in context; its significance relates in part to its impact on those contexts.
5. Learning from experiences is a unique meaning-making event that creates diversity among adult learners (p. 7).

The collaborative learning method lends itself to this type of assessment. Table 2 goes into more detail on the attributes of adult learners and key ideas of assessment for each.

Table 2: Premises of adult learning and interrelated principles of adult-oriented assessment practice

Key premises of adult learning	Key principles of adult-oriented assessment practice
Learning is derived from multiple sources	Recognizes multiple sources of knowing, that is learning that occurs from interaction with a wide variety of informal and formal knowledge sources
Learning engages the whole person and contributes to that person's development	Recognizes and reinforces the cognitive, conative, and affective domains of learning
Learning and the capacity for self-direction are promoted by feedback	Focuses on adults' active involvement in learning and assessment processes, including active engagement in self-assessment
Learning occurs in context; its significance relates in part to its impact on those contexts	Embraces adult learners' involvement in and impact on the broader world of work, family, and community
Learning from experiences is a unique meaning-making event that creates diversity among adult learners	Accommodates adult learners' increasing differentiation from one another given varied life experiences

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Techniques available for assessing groups include: teacher observations during group work; group grading for projects; students grading each other or evaluating the level of contribution made by each member to a team project; extra credit given when groups exceed their previous average or when individuals within a group exceed their previous performance by a specified amount; use of a mastery approach whereby students may retake tests after receiving extra help from their groups or the teacher; and the use of individual quizzes, exams, or assignments.

Alternate assessment techniques provide an additional benefit in that teachers can build in reward systems for individual performance and group performance (Angelo & Cross, 1993). These reward systems may consist of extra points toward a grade, certificates of achievement, extra time to work on special projects, class recognition for good group efforts or special recognition for work well done.

#### Student's resistance to collaborative learning techniques

When learning a subject area unfamiliar to them, students may resist taking control of their learning until they are more familiar with the subject. In a heuristic case study of adult views of their own learning, Ellsworth (1992) found that self-directedness varies with the subject matter being learned. With more intimidating subjects such as math or physics, adult students desired more teacher-directed situations. With familiar

subject matter such as social relations or business, they desired more self-directed learning situations.

Facilitators may help learners feel more comfortable with a new topic by providing a frame of reference for course material. Michel (1992) suggests using a structured overview, graphics, or a conceptual map. The structured overview is an outline of the topics to be covered. Graphics representing the main concepts may be used as reference points or to introduce the material. Similarly, a conceptual map shows the relationships between concepts and provides a “schematic summary” (Michel, 1992) of what is being learned.

Students feel that the lecture method is “easier” because they are passive during the class while apparently receiving the necessary information. In contrast, interactive classes are very intense (Pantiz, 2000). The responsibility for learning is shifted to the student, thus raising the level of critical thinking by each student. This situation is both mentally and physically tiring. The students initially respond by complaining and lobbying for a return to the good old lecture days. For a new collaborative learning practitioner this can be very disconcerting. To the more experienced teacher, this is just part of the process all groups go through as they learn how to use collaborative learning techniques, and begin to see and appreciate its benefits as they move away from the comfortable paradigm of the lecture method.

Application: Collaborative and experiential learning

Collaborative or group learning in the traditional face-to-face classroom refers to a set of instructional methods in which students are encouraged or required to work together on academic tasks (Johnson and Johnson, 1975; Slavin, 1986). It is the interaction among learners that distinguishes collaborative settings from other learning environments. Collaborative learning theories view the learner as an active participant in the learning process, involved in constructing knowledge through a process of discussion and interaction with learning peers and experts. "An optimum context for learning provides learners with frequent opportunities to create thoughts, to share thoughts with others, and to hear others' reactions" (Bouton and Garth, 1983, p 76). Knowledge according to this view is something that emerges through active dialogue, by formulating ideas into words and building ideas and concepts through the reactions and responses of others to these formulations.

Collaborative learning supports active learning. The approach that is presented by Kolb is attractive to many people in that it utilizes a holistic approach that integrates cognitive theories and behavioral approaches to the learning process. Kolb created a model to measure learning styles that relies on the way of perceiving and processing information. Learners can perceive information in two ways:

- 1) Using concrete experiences (like feeling, touching, seeing and hearing).
- 2) Using abstract conceptualization (logical analysis of the information).

In addition, they can process the information in two ways:

- 1) By active experimentation (doing something with the information).
- 2) By reflective observation (thinking about it).

As a result, we have the following styles:

Concrete experience. The learners perceive information from specific experience. For example they perceive information by feeling, touching, seeing and hearing. They are learning also by relating to people and being sensitive to feelings. These learners can learn easily by experimenting in the laboratories, and in the field of work. Finally, they learn better with audio-visual media like films and multimedia applications.

Reflective observation. The learners process information by thinking about it. They observe carefully before they make a judgment. They view things from different perspectives and they look for the meaning of things. Finally, they like to develop observations about their own experiences. A reflective observer can use logs, and read journals in order to learn easier and better.

Abstract conceptualization. The learners perceive information abstractly using mental or visual conceptualization. They also analyze logically the ideas, plan systematically, and act on the intellectual understanding of a situation. Finally, they are creating theories to explain observations. They are learning through lecturing, reading, researching.

Active experimentation. The learners perceive information by doing something with it. They have the ability to get things done, to take risks and to influence people and events through action. In addition, they use theories to solve problems and to make decisions. They learn better with simulations, case studies and homework.

In order to identify where a learner resides, Kolb developed the Learning Style Inventory (LSI). This inventory helps to identify the learner's preferred quadrant; in identifying this quadrant, a learner can plan for the best possible way to attack learning

situations. Collaborative learning works by building on the strengths, uniqueness, and experiences of each learner. Truly collaborative classrooms encourage all students to ask hard questions; define problems; take charge of the conversation when appropriate; participate in setting goals, standards, benchmarks, and assessments; have work-related conversations with various adults in and outside school; and may engage in entrepreneurial activities. This vision contrasts sharply with classrooms in which students respond to questions posed by the teacher. Collaborative classrooms also contrast with cooperative learning settings, which involve highly structured tasks and student roles defined and controlled by the teacher. Collaborative work may be most powerful when it involves flexible, learning-centered investigations that bring students together with practicing professionals and community members.

According to Johnson and Johnson:

“When individuals take action there are three ways what they do may be related to the actions of others. One's actions may promote the success of others, obstruct the success of others, or not have any effect at all on the success or failure of others. In other words, individuals may be: 1) Working together cooperatively to accomplish shared learning goals; 2) Working against each other (competitively) to achieve a goal that only one or a few can attain; 3) Working by oneself (individualistically) to accomplish goals unrelated to the goals of others.”

Kolb's model as illustrated in table 3 list teaching activities that support different aspects of this learning cycle. Any of these can be further adapted for individual or group, competitive or collaborative, in-class or out-of-class activities.

Table 3: Teaching activities that support different aspects of Kolb's learning cycle

<b>Teaching Activities that Support Different Aspects of the Learning Cycle</b>			
<u>Concrete Experience</u>	<u>Reflective Observation</u>	<u>Abstract Conceptualization</u>	<u>Active Experimentation</u>
readings examples fieldwork laboratories problem sets trigger films observations simulations/games text reading	logs journals discussion brainstorming thought questions rhetorical questions	lecture papers projects analogies model building	projects fieldwork homework laboratory case study simulations

Anderson, J.A., & Adams, M. (1992). "Acknowledge the Learning Styles of Diverse Student Populations: Implications for Instructional Design." In L.L.B. Chism, Teaching for Diversity. New Directions in Teaching and Learning. no. 42, San Francisco, CA: Jossey Bass.

### Review of Kolb' model and collaborative learning

The model takes very little into account regarding different cultural experiences/conditions (Anderson 1988). The Inventory has also been used within a fairly limited range of cultures (an important consideration if we approach learning as situated i.e. affected by environments). As Anderson (1988, cited in Tennant 1997) highlights, there is a need to take account of differences in cognitive and communication styles that are culturally-based. For collaborative learning to be an effective medium, the cultural

backgrounds must be taken into account when creating a positive learning environment and for assessment to be fair and educationally sound.

Second, the idea of stages or steps does not sit well with the reality of thinking. There is a problem here - that of sequence. Empirical support for the model is weak (Jarvis, 1987). The initial research base was small, and there have only been a limited number of studies that have sought to test or explore the model such as Jarvis (1987). Furthermore, the learning style inventory 'has no capacity to measure the degree of integration of learning styles' (Tennant, 1997).

The relationship of learning processes to knowledge is problematic. As Jarvis (1987) pointed out, Kolb is able to show that learning and knowledge are intimately related. However, two problems arise here. Kolb doesn't really explore the nature of knowledge in any depth. In chapter five of *Experiential Learning* he discusses the structure of knowledge from what is basically a social psychology perspective. He did not connect with the debates about the nature of knowledge that raged over the centuries within philosophy and social theory. This means that I do not think he really grasps different ways of knowing. For example, Kolb focuses on processes in the individual mind, rather than seeing learning as situated. Second, for Kolb, learning is concerned with the production of knowledge. "Knowledge results from the combination of grasping experience and transforming it" (Kolb 1984, p. 41). Tennant (1997) pointed out that "the model provides an excellent framework for planning teaching and learning activities and it can be usefully employed as a guide for understanding learning difficulties, vocational counseling, academic advising and so on" (P. 92).

## Forming collaborative learning groups

When forming groups for collaborative learning, it is important to consider both the kind of group needed and how members will be selected. Collaborative learning groups may be formal or informal (Imel, 1994). Formal groups have a defined structure, are asked to perform complex and challenging tasks, and meet together over a period of time. They are usually required for cooperative learning strategies but many of the other collaborative approaches discussed earlier also require formal groups. Informal groups are usually formed quickly and spontaneously to work on limited tasks for brief periods of time. Following task completion, they are usually dissolved. Examples of the use of informal groups are buzz groups, brainstorming, and decision-making. In general, you will want to use formal groups for tasks or assignments that complex, ambiguous, or multi-faced. Use of informal groups, however, is a great way to introduce collaborative learning to students, to help them get to know each other better, and to allow them to develop skill in group or team work. It is also a helpful way for teachers to get quick information on how much they need to prepare learners for this form of learning.

How groups are formed and the individual members that make up a group are important considerations in collaborative learning strategies. These issues are more important when using formal groups but are often less important in the use of informal groups. While many teachers often rely on the learners to form their own groups or use some kind of random process, collaborative groups should be formed using fairly explicit criteria which will produce fairly heterogenous groups. Formation of collaborative learning groups depends heavily on what the groups are expected to do. The particular activities appropriate for these learners and the nature of the material that can be

effectively covered in the small group format will influence who is put into which group, when the groups form, and how they should work together. Groups that are student-selected generally do not work as well groups that are put together by the teacher, when the teacher gives consideration to age, race, sex, achievement levels and so forth. When students are allowed to spontaneously form their own groups, the groups tend to be more homogeneous with respect to these important characteristics.

When forming collaborative groups, it is also important to attend to the desired size of the group. Group size will depend on the nature of the task and the activities in which the group is expected to engage. In general, however, groups should consist of no less than three members and no more than eight members. Groups in which you are looking for quick feedback or the creative generation of ideas (e.g. buzz groups) should be smaller, so that all members can participate extensively and no one member can dominate the generative process. Groups that are engaged in more complex problems (case studies, problem-based learning, and discussion groups) will require different kinds of group roles and more members are desired for these kinds of groups.

Groups in their early phases of formation are also influenced by subtle, often unexpressed needs of their members. These needs may be psychological, informational, or interpersonal (Forsyth, 1999). For example, some members will feel a strong need to be included as part of and accepted by the group (need for inclusion). Others may feel a need to control the group's content or process (need for control). Still, others may be seeking warmth and support within the group (need for affection). Some members may feel a need to compare themselves to the others in their group, particularly they are uncertain about the appropriateness or validity of their positions or beliefs (need for

information). Learners may also use the small group context as a form of social support, lessening their general sense of stress or painful emotions that may stem from feeling lonely. While it may not always be practical or feasible, at times it is helpful to consider what needs are present among your learners and then to form groups in which complementary needs are present and competing needs are avoided. Individuals will also weigh the costs and benefits of being part of a group. Such an analysis may influence the degree to which they fully engage and enter into the work of the group. Learners may quickly develop a sense of the extent to which a particular group will be able to provide for or address the particular needs they expect from the group. When they perceive that their needs might be met, learners are usually more willing to become involved with and a part of the group process.

Finally, a consideration of goals is paramount in the successful formation of collaborative learning groups. One of the most important and perhaps difficult ideas for learners and even teachers to grasp is the notion of a collaborative goal structure. Collaborative group learning is based on cooperative goal structures, as opposed to independent or competitive goal structures. Goal structures are critical in understanding what goes on in a small group and how it approaches its assigned task. Even though a great deal of group work is used in various settings of adult learning today, the underlying assumption guiding this work is that each learner has his or her own learning goals and needs and this "group learning experience" should be directed and guided by these individual goals and objectives. Talk of a group goal, one which is common to all group members and not reducible to the goals of any single member, often is met with glazed over looks or the suggestion that the teacher has less than a firm grasp of reality. It

seems that modern education remains one of the few social institutions in current society which remains fiercely structured around independent or competitive goal structures. Family, community, and even work groups are either implicitly or explicitly structured around cooperative goal structures but when we join an educational group, we apparently leave our collaboration at the door.

### Types and roles of interaction

Collaborative learning, although gaining momentum in the classroom, has long been associated with student affairs outside of the classroom. Advocates of the universal approach to collaborative learning call attention to the link between instructional technique and different student outcomes. What is critical in this relationship involving this link is that between the teacher-facilitator and the student-learner. Effective use of a collaborative approach to learning requires a shift in one's assumptions about the nature of knowledge, and the roles of teachers and learners in acquiring knowledge. Letting go of product oriented approaches will require diligence, patience, support, and courage. It is necessary to build a broader context which is supportive of this view of learning among one's peers and administrative staff. It is also important to give oneself time, and permission to make mistakes.

### The role of the teacher

As educators of adults, we work within specific contexts that serve to shape and influence what and how we teach. In addition to our own personal contexts and that of our learners, what we do is often significantly influenced by or organizational, socio-cultural, and political contexts (Merriam & Caffarella, 1991). Collaborative learning challenges the cultural ethos of individualism so prevalent in our society. In traditional classrooms, the dominant metaphor for teaching is the teacher as information giver; knowledge flows only one way from teacher to student. In contrast, the metaphor for collaborative classrooms is shared knowledge. The teacher has vital knowledge about content, skills, and instruction, and still provides that information to students. However, collaborative teachers also value and build upon the knowledge, personal experiences, language, strategies, and culture that students bring to the learning situation.

#### The role of the student

Students also assume new roles in the collaborative classroom. Their major roles are collaborator and active participator. It is useful to think how these new roles influence the processes and activities students conduct before, during, and after learning. For example, before learning, students set goals and plan learning tasks; during learning, they work together to accomplish tasks and monitor their progress; and after learning, they assess their performance and plan for future learning. As mediator, the teacher helps students fulfill their new roles.

Students prepare for learning in many ways. Especially important is goal setting, a critical process that helps guide many other before-, during-, and after-learning activities.

Although teachers still set goals for students, they often provide students with choices. When students collaborate, they should talk about their goals. For example, one teacher asked students to set goals for a unit on garbage. In one group, a student wanted to find out if garbage is a problem, another wanted to know what happens to garbage, a third wanted to know what is being done to solve the problem of garbage. The fourth member could not think of a goal, but agreed that the first three were important and adopted them. These students became more actively involved in the unit after their discussion about goals, and at the end of the unit, could better evaluate whether they had attained them.

While teachers plan general learning tasks, for example, to produce a product to illustrate a concept, historical sequence, personal experience, and so on, students assume much more responsibility in a collaborative classroom for planning their own learning activities. Ideally, these plans derive in part from goals students set for themselves. Thoughtful planning by the teacher ensures that students can work together to attain their own goals and capitalize on their own abilities, knowledge, and strategies within the parameters set by the teacher. Students are more likely to engage in these tasks with more purpose and interest than in traditional classrooms.

Self-regulated learning is important in collaborative classrooms. Students learn to take responsibility for monitoring, adjusting, self-questioning, and questioning each other. Such self-regulating activities are critical for students to learn today, and they are much better learned within a group that shares responsibility for learning. Monitoring is checking one's progress toward goals. Adjusting refers to changes students make, based on monitoring, in what they are doing to reach their goals. For example, a group of students decided that the sources of information on the Civil War they selected initially

were not as useful as they had hoped, so they selected new materials. Another group judged that the paper they had planned to write would not accomplish what they thought it would the way they had organized it, so they planned a new paper.

While teachers have assumed the primary responsibility for assessing students' performance in the past, collaborative classrooms view assessment in a different way. That is, a major goal is to guide students from the earliest school years to evaluate their own learning. Thus, a new responsibility is self-assessment, a capability that is fostered as students assess group work.

Self-assessment is intimately related to ongoing monitoring of one's progress toward achievement of learning goals. In a collaborative classroom, assessment means more than just assigning a grade (Angelo & Cross, 1993; Brookfield, 1986; McCarthy, 2000). It means evaluating whether one has learned what one intended to learn, the effectiveness of learning strategies, the quality of products and decisions about which products reflect one's best work, the usefulness of the materials used in a task, and whether future learning is needed and how that learning might be realized.

Collaborative classrooms are natural places in which to learn self-assessment; and because decisions about materials and group performance are shared, students feel free to express doubts, feelings of success, remaining questions, and uncertainties than when they are evaluated only by a teacher. Furthermore, the sense of cooperation (as opposed to competition) that is fostered in collaborative work makes assessment less threatening than in a more traditional assessment situation. Ideally, students learn to evaluate their own learning from their experiences with group evaluation.

Adults can learn throughout their lives

Unfortunately, adults are frequently their own worst enemies when it comes to doubting their ability to learn new things (Hudson, 1999). Older adults, particularly, may need encouragement to engage in learning activities. One advantage adults have over youth in their ability to learn is a broad range of experience. These experiences enhance their ability to perceive, process, and use information and provide a foundation for gaining additional knowledge. With traditional teaching and learning methods learning is generally static as learners passively receive knowledge in a sponge-like fashion. The constructivist perspective helps us understand how learning can be facilitated through certain types of engaging, constructive contexts. Active learning involves learners engaging with content through various learning activities while attempting to construct knowledge. Active participation through situated collaborative activities such as simulations, modeling, discourse and Socratic dialogue, role-play, decision-making, and interactive multimedia environments are necessary to support the negotiation and creating of meaning and understanding. Collaborative learning projects by their very nature exploit many of these activities. When people work collaboratively in an authentic activity they bring their own framework and perspectives to the activity. They can see a problem from different perspectives, and negotiate and generate meanings and solutions through shared understanding (Selinger, 2001). Collaboration requires us to think of the participants, not simply as individuals, but also as a community that works towards shared goals, the achievement of which depends upon collaboration.

## Adults' life cycles influence learning

Every adult progress through a series of life phases (Hudson, 1999; McCarthy, 2000). In each phase of life, certain behaviors and skills—known as developmental tasks—need to be learned. Life-cycle phases influence how individuals approach learning as well as what they want or need to learn. Designers of instructional programs should consider the developmental needs of adult learners at specific developmental stages.

## Adult life cycles influence learning

## Adults learn what they consider important

Adult learning is usually motivated by the need to acquire a new skill or make a decision. When adults perceive a need to learn something, they are generally capable of working very hard. Since most adult learning is voluntary, adults also have the prerogative of dropping out of programs that do not meet their needs.

## Adults are often time-conscious learners

Adults have many roles (e.g., spouse, parent, employee, community member) in addition to that of learner. Therefore, most want to meet their educational goals as directly, quickly, and efficiently as possible. But they also want to be a part of the learning process. A strong facilitator is one that can make the learning experience

purposeful and hence offer the motivation needed to continue in the learning process (Zachary, 2000).

Adults wish to be treated as such—sometimes

By adulthood, individuals have developed an independent view of self, and most adults want to be treated as if they were responsible individuals with the capacity to determine things for themselves. Adult learning situations should be designed to allow adults to retain as much autonomy as possible. Because some adults have experienced only structured and teacher-centered learning environments, they may need assistance in accepting responsibility for their own learning.

Under collaborative learning students also assume new roles in the collaborative classroom. Their major roles are collaborator and active participator. It is useful to think how these new roles influence the processes and activities students conduct before, during, and after learning. For example, before learning, students set goals and plan learning tasks; during learning, they work together to accomplish tasks and monitor their progress; and after learning, they assess their performance and plan for future learning. As mediator, the teacher helps students fulfill their new roles.

## Conclusion

Collaborative learning is not a panacea for higher education. It does, however, offer an additional instructional strategy for college instructors. Positive outcomes of this strategy include:

- 1) Critical thinking skills

- 2) Problem solving skills
- 3) Group process skills
- 4) Mutual support and motivation
- 5) Peer accountability
- 6) Laboratory for 'real life' knowledge work
- 7) Reflective insight into the learning process

Collaborative learning is a strategy that permits students and instructors to make good use of new information technologies. However, it does so while keeping human relationships, both among students and between students and instructors, at the center of the educational process. As such, it is a particularly important approach for faculty who are interested in preserving the traditional social and intellectual values of a liberal education.

Studies indicate that positive results in student achievement are observed in college-level courses (Johnson, et al., 1991; Johnson, et al., 1987). The most recent data for the impact of small-group learning strategies in SMET college-level courses comes from the meta-analysis by Springer (Springer, Stanne, & Donovan, 1998) which showed a "significant and positive" effect on three factors: achievement, persistence, and attitudes. More research is needed in collaborative learning and attendance and retention rates. How does the method contribute to higher attendance and retention rates?

The positive impact on student achievement is tied to the strategy of both establishing group goals and requiring individual accountability. In this way, the group

members are given incentive and motivation to help one other through the task at hand. Relations between different ethnic groups are also improved when individuals from diverse backgrounds are brought together in a respectful cooperative manner to discuss specific and non-trivial concepts. To contrast this, the traditional alternative to small-group learning is a competitive relationship that typically sets one student against another as they compete to achieve academic success. The effort to mainstream academically handicapped special students also finds positive effects with cooperative learning. With these teaching methods, academically handicapped special students are more integrated and socially accepted by their peers as revealed by sociometric measures. Finally, the research on students' self-esteem is somewhat mixed: most studies show a positive effect on either academic, social, or general self-esteem though some studies revealed no resulting change in self-esteem (Slavin, 1995; Cooper, Prescott, Cook, Smith, Mueck, & Cuseo, 1990).

As yet, there is little empirical evidence on the effectiveness of collaborative learning as it relates to learning outcomes in adult education. However, research at the primary and secondary levels reveals that students learn better through noncompetitive, collaborative group work than in classrooms that are highly individualized and competitive (Bruffee, 1999). Whether or not this is true with adults is still largely untested. As an approach, collaborative learning represents a philosophical perspective about the appropriate goals and methods of education. Adult educators choosing to employ collaborative learning should be fully aware of the related issues and problems as well as the careful planning and preparation needed to implement it effectively.

Finally, in order to have a continued and increasing impact on the education of adult learners, more training is necessary. How professors are trained all depends on the amount of resources devoted to faculty development. However, in for the method to be embraced by faculty of institutions of higher learning, the administrators of these institutions must embraced the method and include it in their institutional plans.

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