

COLLABORATIVE LEARNING IN QUANTITATIVE CLASSES:
A TALE OF TWO ACCOUNTING PROFESSORS

Tracie Edmond, Ph.D., CPA
Theresa Tiggeman, MBA, CPA

This paper addresses specific classroom uses of active and collaborative learning in quantitative classes. Here we relate the story of two accounting professors who discovered the benefits and the pitfalls of collaborative learning. One of the professors is in her first year of teaching and the other is a “seasoned” teacher. Both, however, teach accounting courses that are intensive in theory and quantitative practice.

In the process of implementing or incorporating collaborative learning techniques in the accounting classes, the professors encountered both obstacles (pitfalls) and benefits (enhancements) that are discussed within the context of this paper. These pitfalls and benefits are supported by the literature.

This paper also emphasizes various successful collaborative learning techniques that include such methodologies as Think-Pair-Share, Simple Jigsaw, Pre and Post Tests (Group Quizzes), Attention Span Breaks, and other activities that work well in accounting quantitative settings.

The paper concludes with a discussion on how active collaborative learning techniques help instructors meet the core competencies developed by the American Institute for Certified Public Accountants (AICPA) which, in turn, better prepare the students for successful careers in the accounting profession.

COLLABORATIVE LEARNING IN QUANTITATIVE CLASSES: A TALE OF TWO PROFESSORS

This is the story of two accounting teachers who discovered both some benefits and pitfalls of collaborative learning. One of us is in her first year of teaching and the other is a “seasoned” teacher. Both, however, teach courses that are intensive in theory and quantitative practice.

The New Professor

As a new professor, I wanted to find the most effective way to teach my students. I came across some collaborative learning literature and techniques and the collaborative learning processes intrigued me and aroused my of curiosity about whether or not these processes would work in an accounting class. The literature made me think back, way back to the days when I was a college student and how I hated having to go to class and listen to a professor lecture for an hour and a half while I took notes. I did not retain much of what the professor discussed, not to mention the fact that it was plain boring. As I was reading through the literature, the same complaints and criticisms that I had with my college classes were either eliminated or reduced as a result of implementing collaborative learning techniques.

The “Seasoned” Professor

My courses consist mainly of the first Principles of Accounting classes and the tax classes. Therefore, my instructional focus is the student at the beginning of his or her undergraduate college experience. Many of our students are the first in their family to pursue a college education and may not have the support systems that promote success.

When I began teaching, I realized that I had excellent “A” students and failing students in the same classroom. Seeking advice, I asked my colleagues how to deal with this situation. The responses ranged from “Our mission is to teach the disadvantaged students—the bright students will do well anyhow” to “I teach to the upper 10 %; the poor or failing students don’t belong in college.” These answers were unsatisfactory because each student sitting in my classroom had made it through many hurdles that defeat others. All my students required my best efforts. Poor students need to learn the material and excellent students also need to be engaged and challenged. These issues led me to research teaching methods.

What I found was that the well drafted lectures that I had put hours into constructing did the least to promote retention of material. In contrast, practice right after learning effected the greatest change in retention of the material and, most particularly, on long term memory. To me, directed practice in a supportive environment makes sense in an accounting course because of the blend of both theory and practice. I determined that immediate practice should occur right after lecture, not later as homework. So I reduced my lecture time and developed learning experiences for the students. I designed exercises that began with easy concepts and theory, moved to more difficult practice, and planned challenging work to promote critical thinking. These practical learning materials are given in the classroom immediately after the lecture. As the students are doing the work, I am moving about the room observing, correcting and guiding. The more intelligent students work quickly, understand correction and finish fairly fast. So, for them, I am ready with the next, more difficult exercise. With the brighter students fully engaged with the material rather than clock watching or checking email, I am free to instruct the students that need the most teaching assistance. These techniques worked fairly well, and then I discovered collaborative

learning. Now the students work together in groups and act as both instructors and learners.

Pitfalls and Strategies

In the process of implementing or incorporating collaborative learning techniques in our accounting classes we encountered both obstacles (pitfalls) and benefits (enhancements) that are discussed within the context of this paper. The following are some pitfalls and/or obstacles that we have encountered. While we both encountered many of the same pitfalls. Here are some of the ones that we found most troublesome. These pitfalls are supported by the literature (Fiechtner & Davis, 1992); The University of Texas, (n.d.).

1. Sometimes, the students would not work collaboratively but would divvy up an assignment and have each group member do his or her own individual part of the assignment.
Strategy: Structure tasks in ways that require certain kinds of interactions. This could include giving students specific group management role and responsibilities, such as manager, encourager, cheerleader, coach, question commander, checker, or taskmaster.
2. When a large group projects was due at the end of the semester, there was little opportunity to provide continual feedback; this resulted in the students waiting until the last minute to do the assignment.
Strategy: I had to implement check points, and have the project due prior to the end of the semester.
3. I let the students form their own groups because I lacked the confidence to insist that I be the one to form the groups. But best friends don't always make productive groups.
Strategy: Collaborative learning works better for both the student and instructor if the instructor has input into how the groups are forms. Heterogeneous groups can minimize the impact of status differences and encourage active participation by female and minority students. Low-ability students often benefit most when paired with medium-ability students rather than those of highest ability.
4. Initially, I made the group sizes too large.
Strategy: I discovered that smaller groups of no more than 4 to 6 work better than extremely large groups. At times a pair of students is an ideal group.
5. I dissolved the groups too quickly.
Strategy: I needed to allow time for the groups to become cohesive, rather than continually dissolve groups and form new groups.
6. On occasion, quiet students sometimes feel left out or not comfortable participating with the group.
Strategy: To counter act this pitfall, I have students go home and write down their own individual ideas on paper and turned them into me. Then each member is required to share his or her ideas with the group.

7. When there is one overly dominant group member, others don't learn how and why things are done, but only copy the information.
Strategy: To counteract this problem, I now train students in interpersonal communication skills ahead of time so that they know what behavior is expected of them. Also, I require discussion of group functioning, focusing on how students should talk and listen to each other.
8. Some students may sit back and let the other team members do the work.
Strategy: Giving each member of the team different, interdependent research and problem-solving roles can ensure that students work together rather than in parallel.
9. By giving the group the same grade, I determined that I was not accurately assessing and rewarding individual performance.
Strategy: It is essential to consider assessment strategies carefully, looking for ways to reward the group while also emphasizing individual accountability. Unlike assigning a single shared grade to a group project, multiple group and individual assessments encourage students to work together and minimize "shirking."
10. Initially, I designed assignments that were too difficult or large for students to complete in a class group setting. Students found them to be discouraging.
Strategy: It is better to give material that is manageable by the students, rather than what the professor could accomplish.

Techniques Utilized in the Accounting Classes:

The professors have incorporated the following collaborative learning techniques in their classes and have found many to be successful. Others as well have recognized these techniques and many are supported in learning theory literature. According to the Global Development Research Center, (n.d.), the following techniques are beneficial in a collaborative learning classroom situation.

Think-Pair-Share: (1) The instructor poses a question, preferable one demanding analysis, evaluation, or synthesis, and gives students about a minute to think through an appropriate response. This "think-time" can be spent writing, also. (2) Students then turn to a partner and share their responses. (3) During the third step, student responses can be shared within a four-person learning team, within a larger group, or with an entire class during a follow-up discussion. The caliber of discussion is enhanced by this technique, and all students have an opportunity to learn by reflection and by verbalization.

Simple Jigsaw: This technique involves students working in two different groups. The faculty member divides an assignment or topic into four parts with all students from each LEARNING TEAM volunteering to become "experts" on one of the parts. EXPERT TEAMS then work together to master their fourth of the material and also to discover the best way to help others learn it. All experts then reassemble in their home LEARNING TEAMS where they teach the other group members. I also pass out topic cards, have the groups look up the topics, restate in their own words and give mini presentations on their topics (Aronson, E., Blaney, N., Stephin, C., Sikes, J., & Snapp, M. (1978).

Pre and Post-Tests (Group Quizzes): Before the session begins, learners are given a 3-5 question quiz; the students must come up with one best quiz and agree on the answers. If there are any discrepancies the students must look up the material to prove their answer.

Attention Span Breaks: After every ten to twenty minutes of lecture, I will pose a question that summarizes the topic, and then use the think share pair technique to get student responses. I may have students write down their responses, I will collect them, and discuss a few that are either excellent or erroneous examples.

Checking Learner Understanding: After 15-25 minutes of lecturing (or after a page or two of an online, textual session) learners are asked to respond to one or two questions. The questions vary, sometimes asking questions that check comprehension or summarize main points, other times asking learners to apply, analyze, or evaluate conceptual material.

Making Material Relevant: After lecturing on an idea or concept, I stop and ask learners to give examples from their own experiences or readings at other times students might view a news clip or a movie segment and then explain how it relates to the session's material. The variety of learner perceptions can be amazing and provide the instructor with feedback about how learners think.

One Best Return: In my tax class, each student prepares a tax return as homework, they then meet in class, discuss their differences, and the group must come up with one best return. I grade both the individual return and the group return.

Preparer/ Client: This group project is typically done at the end of the tax course when students believe that they are proficient in tax theory and forms. The purpose of the class assignment is to move the students beyond the text cases to a more real world experience. One student is the tax preparer, the other is the client. Using mock-ups of client tax forms such as W-2 forms and bank interest forms, the students use the tax forms and the script to enact a tax interview with one student playing the role of preparer and the other acting as client. After an introduction, the interview begins. The client answers the questions of the tax preparer based on the given script. The tax preparer student must elicit enough information to select the proper tax form and prepare the return, assemble the tax return correctly, sign the form as the tax preparer and explain the calculations to the "client" in words that a real client would understand. Finally the preparer shows the client where to sign the tax form. Then the students switch roles and begin again with a different script and tax forms that require a more complex tax return. The assignment is graded as a daily quiz. The grade, therefore, is predicated on the student's individual performance and attendance.

The VITA Program: The Volunteers in Income Tax Program (VITA) offers a unique opportunity for collaborative learning. My students face a large and relatively unfamiliar body of tax law; however, their main challenge is their lack of confidence. Typically, my students start the course very uncomfortable with the client interview, an essential part of tax preparation. As first generation college students, many are quite shy and inexperienced in professional roles. In the beginning, I work with each student individually and then move into mock situations where students play the roles of preparer and client. When students begin to interview actual clients, they

are paired with community volunteers. These volunteers include agents from the Internal Revenue Service, tax attorneys, local Certified Public Accountants, Enrolled Agents, former students and alumni. Together the professional volunteers and the students prepare the income tax returns. Initially, the volunteers guide the students through the interview process with the clients, and the students prepare the income tax returns under their tutelage. By the middle of the course, even the most timid students can conduct the interview and prepare the income tax return. Often the students are much more conversant with computers and software than the professional volunteers. The students instruct the professional volunteers on the tax software and often act as technological problem-solvers. This collaboration benefits the student in learning interview techniques and tax law while the professional volunteers gain experience in computerized tax preparation.

Game Show: One template for a classroom game is the television show *Who Wants to Be a Millionaire?* The class has its groups; each member of the group takes a turn in the hot seat. I give a problem. Simultaneously, the person in the hot seat and each group works to solve the problem. If the person in the hot seat is having trouble, he or she may confer with the group and use a life line. If the group is having trouble, it may ask another group for help and use another life line. The group may also poll the class or the group can ask the instructor for a 50/50 or additional tips. The students have fun and really learn a lot from the exercise.

Unexpected Benefits

As an accounting department, we strive to incorporate the elements of the American Institute of Certified Public Accountants (AICPA) personal competencies. The AICPA's personal competencies relate to the attitudes and behaviors of individuals preparing to enter the accounting profession. The personal competencies enhance the way professional relationships are handled and facilitate individual learning and personal improvement. The AICPA has seven elements in its personal competencies that should be obtained by anyone entering the accounting profession as a CPA. The seven elements and their descriptions are as follows:

AICPA Personal Competencies	Definition
Professional Demeanor	Individuals entering the accounting profession should behave in a manner that is consistent with the character and standards of the discipline of accounting, demonstrating objectivity, integrity, and ethical behavior.
Problem Solving and Decision Making	Accounting professionals are often asked to discern the true nature of a situation and then determine the principles and techniques needed to solve problems or make judgments. Thus, individuals entering the accounting profession should display effective problem solving and decision-making skills, good insight and judgment, as well as innovative and creative thinking.

Interaction	Work with others to accomplish objectives. Demonstrate ability to work productively with individuals in a diversity of roles and with varying interests in the outcome.
Leadership	Effectively lead in appropriate circumstances. This involves acquiring the skills needed to influence, inspire, and motivate individuals and groups to achieve results.
Communication	Communicate financial and non-financial information so that is understood by individuals with diverse capabilities and interests. Give and exchange information within a meaningful context and with appropriate delivery. Have the ability to listen, deliver powerful presentations and produce examples of effective business writing.
Project Management	Manage a diversity of projects throughout a career. Demonstrate the ability to effectively control the course of a multi-dimensional, multi-step undertaking. This includes managing project assets, including human, financial, property, and technical resources.
Leverage Technology	Technological adaptability is a requirement for today's accounting professional. As technology advances, accounting professionals must acquire new skills and determine how new technologies should be best incorporated into their practices. This commitment to continual technological learning will enhance the development and application of other personal competencies.

As professors utilizing collaborate learning techniques, we realized an unexpected benefit to our accounting students with regard to how collaborative learning techniques help to reinforce the AICPA's personal competencies. Below is a list from the University of Texas (n.d.) that reviews the benefits, many of which we achieved in our accounting classes through the use of collaborative learning techniques. We then summarize in tabular format how the listed benefits

of collaborative learning help the students' accomplish some aspect of the AICPA personal competencies. The AICPA personal competencies are on the left side of the table and the number of the listed corresponding benefit is located on the right side of the table.

Benefits of Utilizing Collaborative Learning Techniques

1. Develops higher level thinking skills
2. Promotes student-faculty interaction and familiarity
3. Increases student retention
4. Builds self esteem in students
5. Enhances student satisfaction with the learning experience
6. Promotes a positive attitude toward the subject matter
7. Develops oral communication skills
8. Develops social interaction skills
9. Creates an environment of active, involved, exploratory learning
10. Uses a team approach to problem solving while maintaining individual accountability
11. Encourages diversity understanding
12. Encourages student responsibility for learning
13. Involves students in developing curriculum and class procedures
14. Allows students to explore alternate problem solutions in a safe environment
15. Stimulates critical thinking and helps students clarify ideas through discussion and debate
16. Enhances self management skills
17. Develops responsibility for each other
18. Builds more positive heterogeneous relationships
19. Encourages alternate student assessment techniques
20. Fosters and develops interpersonal relationships
21. Models problem solving techniques by students' peers
22. Teaches students how to criticize ideas, not people
23. Sets high expectations for students and teachers
24. Promotes higher achievement and class attendance.
25. Encourages students to stay on task more and be less disruptive
26. Develops a greater ability of students to view situations from others' perspectives
(development of empathy)
27. Creates a stronger social support system
28. Creates a more positive attitude
29. Addresses learning style differences among students
30. Promotes innovation in teaching and classroom techniques
31. Reduces classroom anxiety
32. Reduces test anxiety
33. Classroom resembles real life social and employment situations
34. Reinforces modeling societal and work related roles

AICPA Personal Competencies	Collaborative Learning Benefits
Professional Demeanor	6, 12, 20, 23, 24, 26, 28, 33, 34
Problem Solving and Decision Making	1, 5, 9, 10, 14, 15, 19, 21, 30, 32,33, 34
Interaction	2, 3, 5, 8, 11, 13, 17, 18, 20, 22, 26, 27, 29, 31, 33, 34
Leadership	4, 17, 20, 33, 34
Communication	7, 15, 22, 29, 33, 34
Project Management	16, 25, 33, 34
Leverage	30,33, 34

In conclusion, utilizing collaborative learning techniques in accounting classes has been very beneficial for us as professors as well as to our students. In addition to helping students to obtain the skills to meet the AICPA's personal competencies, collaborative learning techniques have also helped us give variety to our classes, build student self-esteem, enhance our students' satisfaction with their learning experience and promote within our students a positive attitude toward the subject matter. We have noticed that prior to using collaborative learning our students would stare at the clock waiting for class to be over. After we implemented the collaborative learning techniques the students were often so engaged with their collaborative assignments that we had to tell them that class is over. This in itself is a testimony to the effectiveness of the collaborative learning techniques in our accounting classes.

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