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Effectiveness of Peer-Facilitated Workshops on Student Performance in Introductory

Financial Accounting

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ABSTRACT

There has been a need for reform in accounting education at universities so that students can better understand the accounting material and also perform better in the workplace. Prior research has been conducted on the effectiveness on student performance for methods that move away from the traditional classroom format. While these methods include laboratories, cooperative learning, and online learning modules, no research has been done to assess the effectiveness of peer-facilitated workshops on accounting students' performance. This thesis assesses the effectiveness of peer-facilitated workshops that focus on the accounting equation on student performance in a Principles of Financial Accounting course. Students had the option of attending up to seven peer-facilitated workshops that were held outside of normal class. The workshops took place between the first and second exams. Results indicated that students who attended at least four out of the seven workshops performed significantly better than students who did not attend the workshops for Exam two. These students, however, did not exhibit the same performance for the remainder of the course exams.

Keywords: accounting education, peer-facilitated workshops, accounting pedagogy

CHAPTER 1: INTRODUCTION

Accounting professors often teach students that accounting is the language of business, but they do not teach that accounting may seem like a foreign language. The first day of accounting class can be nothing short of a whirlwind of unfamiliar terms and confusing concepts for students. For many students, this whirlwind only worsens and ends only when the semester does. Instead of learning and understanding the new language, they remain lost in a sea of accounting concepts.

Many business students tend to struggle in accounting, resulting in poor academic performance for accounting courses (Al-Twajry, 2010). Introductory accounting courses are a required part of business programs for most secondary institutions (Hahn, Fairchild, & Dowis, in press), though only approximately 23% of students in these courses are accounting majors (Gloeckler, 2013). Non-accounting majors tend to view accounting as difficult or irrelevant to their future careers, as, “accounting seems to be viewed as a boring, pencil-pushing subject that causes anxiety for both educators and students” (Buckhaults & Fisher, 2011, p. 31). A common question among educators and students is, “where is the disconnect?”

Not only are students unsuccessful in the courses, but educators also have received pressure to change their teaching style drastically so that students have a more real-world applicable understanding of the subject (Christensen, Judd, & Nichols, 2011).

Many educators have identified the need to transform the accounting classroom in order to help students better understand the material (Boyd, Boyd, & Boyd, 2000; Buckhaults & Fisher, 2011; Heiser & Phillips, 2011). This is necessary not only so that students can earn

higher grades, but also so that accounting majors can perform well in the workplace (Hansen, 2006).

The traditional method of teaching accounting is a traditional lecture and problem-solving format. For example, the professor will lecture about the topic of the day, and the class will work on applicable problems in class. However, these methods have not mitigated the decline of enrolled accounting majors, nor has it contributed to higher success in the classroom (Abeysekera, 2011). Moreover, students have identified through surveys that the instructor's method of teaching has the greatest effect on their comprehension of the material (Gerekan, 2011). Thus, the instructor's teaching style (i.e. pedagogical technique) is a possible causal factor in student success and failure. That being said, other research shows that student success is primarily dependent on the student's own study habits and personal engagement in the material (Darwin, 2011; Hosal-Akman & Simga-Mugan, 2010). Student failures have also been attributed to a lack of confidence, low aptitude, and inadequate motivation (Borthick, Lederberg, & Sargent, 2011).

Several new methods moving away from traditional lectures have been introduced, tested, and implemented in recent years in order to increase success and student involvement. In general, these methods include changing how accounting is presented, emphasizing broad concepts (i.e. the accounting equation), catering to different methods of learning, and providing different avenues of practicing the material (Buckhaults & Fisher, 2011). Another method is the use of computer programs to increase student comprehension of the material (Abeysekera & Jebeile, 2010; Baxter & Thibodeau, 2011). Testing such programs, professors at Southeastern University found that the learning

modules did not significantly improve student grades and/or comprehension (Hahn, Fairchild, & Dowis, in press).

There has been a recent trend in pedagogy research for algebra and science courses such as biology, chemistry, and physics. The common factor in such research is that facilitator-led small group and workshop settings have a significantly positive impact on student success when compared with traditional lecture-style classrooms (Lyle & Robinson, 2003; Lyon & Lagowski, 2008; Steele, Medder, & Turner, 2000). Despite the relative success of such learning methods for science and math courses, no research exists that tests these methods for improving student performance in accounting education.

The purpose of this thesis is to examine the effects of peer-facilitated workshops that emphasize the accounting equation on student performance in introductory accounting courses at Southeastern University.

CHAPTER 2: REVIEW OF LITERATURE

The Problem with Accounting Education

Accounting is defined as “an information system that provides reports to stakeholders about the economic activities and condition of a business” (Buckhaults & Fisher, 2011, p. 32). While a deep understanding of accounting is not necessary for everyone in business, a basic understanding is important so non-accountants can understand budgeting, financial analysis, projections, planning, etc. This explains why universities require all business majors to take introductory financial and managerial accounting courses.

Tightening legislation over financial reporting and a push for transparency in companies have contributed to a growing demand for accounting professionals in public and private accounting fields (Buckhaults & Fisher, 2011). Despite this demand, enrollment in accounting courses has hit record lows and accounting education has undergone scrutiny (Buckhaults & Fisher, 2011; Marcheggiani, Davis, & Sander, 2009). These downward trends in accounting education are not isolated to the United States, as they are also being observed worldwide (Al-Twaijry, 2010). Al-Twaijry (2010) proposes that a primary factor for this trend is, in a technology-based business world to which change comes at an increasing rate, accounting education has remained stagnant.

University education has been criticized by governing bodies, such as the American Institute of Certified Public Accountants (AICPA) and American Accounting Association (AAA) (Mercheggiani, Davis, & Sanders, 1999), for not putting enough emphasis on practical applications of accounting and teaching students what matters most in day to day

business. The Accounting Education Change Commission (AECC) has also addressed concerns about the United States university accounting education and has proposed that educators develop newer methods of teaching (Abeysekera, 2008). Wally-Dima (2011) set out to identify areas of accounting education in which accounting professionals and accounting educators are disparate. He found that accounting practitioners believe that universities need improvement in teaching students the following topics: International Financial Reporting Standards (IFRS); accounting for small, medium, and micro-enterprises, public finance; and money and banking. Accounting professionals also suggest the following additional requirements to the classes: internships in local companies, case study approaches, seminar presentations by students and guest lecturers, and more stringent prerequisites to the program. Wally-Dima proposes that higher education should focus on aligning the accounting programs to professional requirements, as employers seek students who have the capabilities to begin work on the first day (Wally-Dima, 2011).

In a study of 174 schools, professors analyzed to what extent undergraduate accounting programs are implementing AOL (assurance of learning) plans that align with the Association to Advance Collegiate Schools of Business (AACSB) requirements (Christensen, Judd, & Nichols, 2011). Ideally, the schools' learning objectives should also align with the suggested learning outcomes of the AICPA and AAA. The study's respondents were members of the Accounting Programs Leadership Group and American Tax Association. Christensen, Judd, & Nichols (2011) found that most accounting programs are behind in implementing the AACSB requirements, along with the AICPA's core competency initiatives.

Factors of Student Success and Failures

There are a variety of proposed factors for the lack of student success, ranging from student capabilities, to teaching styles, to classroom environment (Abeysekera, 2011; Sargent, Borthick, & Lindberg, 2011). One factor of student failure is anxiety, which can be exhibited by both the instructor and student (Buckhaults & Fisher, 2011). University-level accounting educator anxiety is said to be a result of non-accountant business professors being asked to instruct accounting classes that they are not comfortable with. Buckhaults & Fisher (2011) propose that up to 78% of accounting educators experience this anxiety.

On the other hand, accounting students experience anxiety as a result of the unfamiliar concepts introduced in a class for which they have little interest. Many students enrolled in accounting courses are required to do so as a graduation requirement, but have little real interest in the subject. Thus, “students came into class with a sense of being unhappy or disinterested in the curriculum” (Buckhaults & Fisher 2011, p. 32). The combination of having disinterest in such an unfamiliar concept and that concept being relatively difficult to grasp results in the dissatisfaction and anxiety by instructors and students. Learning accounting tends to be equated with learning math. Those who do not understand math or accounting tend to dislike everything about those subjects.

Sargent, Borthick, and Lederberg (2011) identified the following three reasons for poor student performance: lack of confidence, low aptitude, and inadequate motivation. The lack of confidence refers to the students being intimidated by the accounting subject matter that requires understanding of other skills for which they do not possess. For example, college algebra is a pre-requisite for most accounting courses because some of the

concepts require understanding and solving equations and calculating ratios. Thus, a student who lacks math and logical reasoning skills will most likely struggle in accounting.

Low aptitude refers to students with limited memory and low ability to link systematic ideas together. This would affect a student's success in any course. Sargent, Borthick, and Lederberg (2011) suggest that low motivation to understand the material, which typically is a result of not being an accounting major, significantly prohibits student performance when a lack of confidence or aptitude is also present. Again, lack of motivation is not necessarily linked to accounting exclusively, as all college students are required to take courses that do not directly relate to their interest. Lack of motivation in accounting could harm student performance because the material tends to be challenging and take more input time (e.g. studying) to grasp when compared with other business courses.

Instructional Methods

There are key instructional and classroom methods that students identify as crucial to understanding the material. Abeysekera (2011) sought to discover if students preferred one instructional method to learning over another, and what gives rise to any preference. He found that students prefer an interactive instructional method to a traditional (lecture) instructional method. Additionally, Abeysekera found that participant characteristics (age, gender, year of study, GPA) did not significantly influence the preference (Abeysekera, 2011). Students report that active learning techniques (e.g. relating and applying concepts) are more effective than passive techniques (e.g. memorizing for tests). This study only

evaluated student preference; it did not evaluate significant data on student performance among the different instructional methods.

Gerekan (2011) used SET (Student Evaluations of Teaching) to identify what students believe to be most important to their accounting education. Gerekan surveyed 335 students who had taken at least 3 accounting courses. The findings were that students identify the instructor's method of teaching (i.e. presage) to be the most influential factor in their mastery of the course material. Additionally, the instructor's personal characteristics are important to learning (Gerekan, 2011).

For instructor-improvement, Buckhaults and Fisher (2011) suggested to revise first semester accounting curriculum to include more emphasis on financial reporting and financial statement analysis. Educators should also emphasize understanding the accounting vocabulary. A way of achieving this is by beginning each class with a review of the vocabulary in the current chapter. Once students understand the language, educators should enhance their interest by using practical applications such as going on field trips and searching for accounting language in the media. Buckhaults and Fisher suggested that another way to improve the curriculum is to broaden the students' understanding of what kind of jobs accountants can acquire. While most people only know of Certified Public Accountants and tax accountants, accounting professionals also work for the government, sports teams, and internally for companies.

Contrary to the prior studies, Mercheeggiani, Davis, & Sanders (2009) found that differences in instructive methods did not change student performance. The researchers compared an interactive lecture style with a Socratic teaching method. Mercheeggiani, Davis, and Sanders examined both the students' attitudes toward the accounting profession

and their exam performance (Marcheggiani, J., Davis, K.A., & Sander, J.F., 2009). After analyzing average scores from four different exams throughout the semesters, no significant difference in grades was found between the different lecture styles. Furthermore, there was little difference between the two methods in student attitudes towards the accounting course.

Concept Focus

A key instructional method explained by Heiser and Phillips (2011) involves emphasizing key concepts. Financial accounting involves a high level of transaction analysis and understanding of the accounting equation. Instructors can help students succeed by first teaching students to consider the accounting equation (Assets = Liabilities + Equity) effects that transactions have in each journal entry. They can then teach students how to journalize entries by identifying which transactions affect the balance sheet and which affect the income statement, or both. Though this would take more time, it would help students better understand the concepts in the long run (Heiser & Phillips, 2011). Students tend to shy away from identifying how transactions affect the financial statements. Even advanced accounting students do not fully grasp how the financial statements are inter-related until their final courses. Although students might effectively memorize how to create a journal entry, this does little for their deep understanding of the material. A heavy emphasis on the accounting equation and financial statements throughout the entire course may help accounting and non-accounting majors alike.

Boyd, Boyd, & Boyd (2000) explored the importance of continual focus on broad concepts and accounting principles. Students fail to grasp the accounting functions and

process, including the accounting cycle and how the accounting cycle, financial statements, and their accounts are related. The researchers also suggested that further learning of accounting concepts and the development of reasoning skills could be achieved better through team learning, active pedagogy, and meaningful instruction. Furthermore, researchers claimed that principle accounting textbooks and courses are so overloaded with material that students do not effectively grasp essential broad concepts. Boyd, Boyd, and Boyd emphasized creating meaningful and useful visuals representations that would be helpful for student understanding.

Student Learning

Darwin (2011) found the responsibility to be on students for success, thereby detracting from the importance of instructor-methods. In identifying what differentiated high-performers from low-performers, Darwin found academic aptitude, math skills, and English skills to influence the students' performance. Furthermore, he found the students' level of effort to greatly influence their performance. Effort involved reading the chapters before class, completing assigned homework, studying for exams, and participating in class. It is significant to note that student effort includes time spent on the course. Darwin contributed to the body of knowledge proposing that no form of instructional method can be any more effective than another if students are not putting in time with the material.

Interestingly, Darwin (2011) also concluded that the students' perception of their professors' effectiveness significantly impacted their performance. As most Certified Public Accountants in the Philippines prefer to practice instead of teach, full-time teaching faculty for accounting courses were not in abundance. Thus, accounting professors at this

university were not identifiably skilled at teaching, since the university did not have an opportunity to be selective with applicants for teaching positions. Because of the professors' lack of teaching prowess, students exhibited negative opinions on their effectiveness. Darwin concluded that it was the students' negative perception of the professors, not the professors' teaching styles in and of themselves that affected the students' performance

Nazli Hosal-Akman and Can Simga-Mugan (2010) explored two teaching methods in introductory financial and managerial accounting courses in a Turkish university. The researchers hypothesized that an active-learning approach (i.e. cooperative problem solving) to teaching accounting would provide for a more effective learning environment when compared with a passive learning environment. They also hypothesized that student gender and major (i.e. accounting vs. non-accounting) would contribute to student success. Students in experimental groups were assigned problems and exercises to complete together in class. Contrary to their expected findings, gender, major, nor teaching method significantly affected students' learning outcomes. Despite the fact that their grades did not improve significantly, the students indicated that they preferred cooperative learning to sitting in classroom lectures. In these small groups, students exhibited higher participation than in the classroom as a whole.

Nazli Hosal-Akman and Can Simga-Mugan (2010) concluded that a possible explanation for these findings is that students are not familiar with how to learn in a cooperative learning environment because a passive environment has been so prominent in their past schooling. They also concluded that cooperative learning might only work for students that are "mature enough to take responsibility for their own learning" (p. 259). In

order to take full advantage of effective learning methods, students need to want to; professors cannot force them.

Elias (2005) also highlighted the importance of effective student learning approaches. He examined how students approached studying in introductory accounting courses. In general, students take either a deep or surface approach to studying. The deep approach enhances learning greater than the “surface” approach. His survey asked questions about the use of textbooks, time studying, note taking, etc. Elias found that, in studying the correlation between demographics and study-approach, certain demographics of students utilized the deep study-approach more. Females, non-traditional students, accounting majors, and Freshmen or Seniors had higher likelihoods of using the deep-approach. When compared with students of other disciplines such as English and the arts, non-major accounting students tend to use a more shallow study approach. Elias emphasized the importance of encouraging students to develop analytical and conceptual skills and the ability to learn on their own. Again, this deep-studying approach can be encouraged, but it is up to the students to employ them.

Managerial accounting, which is typically taught subsequently to Financial accounting, requires students to utilize critical thinking skills and have a substantial basis of financial accounting terms and mathematical skills (Al-Twajjry, 2010). Al-Twajjry’s (2010) study was conducted so that he could identify factors that contributed to improving a student’s performance in a managerial accounting course. He found that students who performed better in high school tend to perform better in accounting. Along with that, he found that mathematical ability has a positive correlation with success in managerial accounting. Students also perform better when the class meets more than one time a week.

He found no significant correlation of pre-university accounting education to performance in a university. The number of weekly registered hours does not negatively impact performance. Lastly, he found that accounting majors tend to perform better than non-accounting majors. He suggested that those who majored in accounting had a natural ability towards the subject than those who did not.

Moving away from Traditional Lectures

Online and Computer-Based Learning

Chen, Jones, & Moreland (2010) tested a new method of online instruction designed to improve from traditional lecture-style accounting classes. The researchers compared the effectiveness of online classes for a cost accounting class to the traditional classroom. They found that the online students received similar quality of instruction, learning, and interaction with the instructors as traditional students. That being said, the students exhibited an overall lower perception of confidence of the core concepts. Students indicated that this was not because they were uncomfortable with the technology, but because they did not gain similar understanding through hands-on instructor assistance and classroom participation. Thus, Chen, Jones, and Moreland found that the online environment was not as effective as the classroom environment.

Though computer-based learning aids have been utilized in accounting education since the 1990's, recent and more developed programs have allowed for more interaction and better comprehension of the students (Baxter & Thibodeau, 2011). Assessment and Learning in Knowledge Spaces (ALEKs) was created and tested using the Knowledge Space Theory (KST). The program utilizes artificial intelligence to create various learning paths

based on a student's knowledge state (competency). Baxter & Thibodeau's study (2011) compared students in a financial accounting course who utilize ALEKS for additional learning and students that did not use it. Overall, students who used it performed better on exams that tested knowledge covered by the software. The main implications researchers drew from this research were that this particular intelligent online learning and assessment software contain the ability to enhance students' knowledge by keeping track of their performance and recommending what to learn next.

Another computer-based learning system utilizes short online tutorials that are focused on motivating student effort and improving the performance in financial accounting courses (Sargent, Borthick, & Lederberg, 2011). This form of supplemental instruction tutors students by helping them master the material by breaking down complex ideas into smaller increments, pointing out misconceptions, and providing short and accessible learning activities. These were as short as three-minute segments. Sargent, Borthick, and Lederberg found that this learning system contributed to higher final exam scores and overall course grades for students that used it when compared with students that did not use it.

Another form of accounting education has been created in what is called Information and Communication Technology (ICT) (Abeysekera & Jebeile, 2010; Ronco & Sanchez, 2010). Ronco and Sanchez (2010) studied this computer program in a Spanish university. The classes at this particular university were divided into three parts: lectures on theory, practical classes in which students work on exercises, and problem-based learning in which the ICT systems were used. They found direct positive correlation between students' success and the use of ICT, and that ICT technology is best used when

coupled with practical learning methods. Another ICT program that has been implemented is called WEBLEARN, which Abeysekera and Jebeile (2010) studied in introductory accounting courses in Australia. WEBLEARN was introduced to students as an innovative instructional tool, causing the students to take more interest in the program. Researchers found that students utilized ICT programs such as WEBLEARN because of their relative advantage, compatibility, ease of use, result demonstrability, and visibility.

Hahn, Fairchilds, and Dowis (in press) also assessed the effectiveness of an online homework manager (OHM) and an intelligent tutoring system (ITS) in a principles of financial accounting course for one semester. The course is organized into a pre-test, four exams, and a post-test. The regular classroom format includes assigned textbook reading and exercises, lectures, and exercises to be worked in class. Professors compared all exam results of students that utilized the OHM and ITS (as an additional study aid) with those who were exposed to only regular classroom format. Contrary to what other researchers found about computer and online learning modules (Abeysekera & Jebeile, 2010; Ronco & Sanchez, 2010), Hahn, Fairchild, and Dowis found that neither the OHM nor the ITS had a significant impact on student exam grades.

Labs and Intensive Problems

Another method found to increase learning is labs (Buckhaults & Fisher, 2011). In the laboratory method, instead of meeting in a regular classroom environment, students work on accounting tasks for university personnel. This allows them to learn the accounting cycle along with applicable skills such as preparing bank reconciliations and creating financial statements. An example of this method would be running a business.

The business could be real or simulated for educational purposes. Buckhaults and Fisher (2011) found that this method would be more effective for accounting majors than non-accounting majors.

Chu and Libby (2010) designed an assignment that would enhance accounting students' understanding and retention of knowledge. The assignment required students to construct six mini-cases over the course of a twelve-week term. In the case's most basic form, students must clearly describe an accounting-related problem or objective and a scenario in which it would apply. After completing the assignment, the students responded that they not only found it useful for learning material, but also engaging. Chu and Libby argued that creating a real-life scenario would make accounting more interesting to those who would otherwise be uninterested.

Cooperative Learning

Cooperative learning is another new method of instruction that researchers show to be effective (Lightner, Bober, & Willi, 2010). The Accounting Education Change Commission (AECC) has begun to advocate for changes in accounting education that would help students to learn as teams rather than individuals, as many business organizations are moving more towards the team aspect of working. Migletti (2002) found the AECC states that,

Students must be active participants in the learning process, not passive recipients of information. They should identify and solve unstructured problems that require the use of multiple information sources. Learning by doing should be emphasized. Working in groups should be encouraged. (p. 3)

In applying this encouragement by the AECC, Migletti (2002) assessed the effectiveness of cooperative learning at Bowling Green State University. In forming groups, Migletti emphasized the importance of instructor-created groups rather than student-created groups. She found that the most ideal group size consisted of four members. Throughout the semester, Migletti's students performed better on group tasks than individual tasks. Overall, students in the class with cooperative learning performed better on exams than those from past years' classes without cooperative learning.

Additionally, Zain, Subramaniam, Rashid, & Ghani, (2009) explained that the cooperative learning approach is

...an instructional strategy focusing on small groups to allow the members within a group to work together in maximizing their goals and learning capabilities. This approach ensures that students would actively participate in the learning process rather than passively listening to their lecturers. (p. 93)

Zain, Subramaniam, Rashid, and Ghani compared (2009) compared this cooperative-learning approach with a traditional lecture format in an undergraduate Economics course. Though they expected to find that cooperative learning would have a positive effect on student grades, they found that the change in classroom style alone did not significantly impact student grades. They contributed these findings to a lack of student maturity and readiness to work together. They did find that cooperative-learning approach have a positive influence on student attitudes towards economics, though. Students did not necessarily have to perform well to experience better attitudes towards economics. Collaborative learning attributes such as discussing concepts in groups allowed for the students to be more engaged and interested in the material.

Certain biology, chemistry, and algebra courses have tested the effectiveness of peer-led workshops (Preszler, 2009). This peer-led team learning (PLTL) has been gradually integrated into science courses at an increasing rate into over 30 post-secondary institutions, along with several high schools (Lyle & Robinson, 2003).

In a study at Portland State University, Organic Chemistry students were given the option to take a one-credit workshop (Wamser, 2006). These workshops met for two hours a week and consisted of eight to ten students. The workshops followed a Peer-Led Team Learning (PLTL) style, in which students assist other students in, "learning problem solving by working in small teams" (p. 1464). The study compared student performance in workshops versus non-workshops over the course of four years. They were assessed on the following criteria: success, meaning a course grade of C- or greater; persistence, meaning those who complete all three terms of the course; and performance, meaning the total possible percentage points. Wamser concluded that workshop students had significantly higher scores in success, persistence, and performance. Wamser raised concern about the results in that the students self-selected themselves into the workshops, and there was no control over the level of work put forth by non-workshop students. Though workshop students tended to have an overall higher GPA than non-workshop students, he found that this difference was not significant.

The peer-led approach was also tested with second-year medical school students (Steele, Medder, & Turner, 2000). Participants of this study were put into problem-based learning groups, half of which were student-led and half of which were faculty-led. The student placement was conducted randomly. Overall, student performance on objective exams did not differ significantly between student-led and faculty-led groups; however,

students tended to prefer student-led groups. The researchers concluded that this indicated that peer-led groups were not as helpful as they anticipated.

A peer-led small group learning style was also implemented and assessed for effectiveness by Lyon & Lagowski (2008). They employed self-selected small group learning workshops in a general chemistry class. In these workshops, peer teaching-assistants (pTAs) were used as facilitators. These pTAs went through weekly training sessions to ensure that they understood the class material and were able to formulate and facilitate the learning groups. The students' four course exam scores and average course grades were evaluated between learning group participants and non-participants. The study found that students of the learning groups performed significantly higher than non-participants on every test. Similarly, the participants' course grade means were significantly higher.

Lyle & Robinson (2003) tested peer-led team learning (PLTL) in an Organic Chemistry course. They analyzed the effects of PLTL over the course of three years. Students were randomly selected to either be part of a traditional classroom setting or be added to the peer-led workshop. These workshops were capped at eight students, led by a facilitator that had recently taken the course, and they focused on problem solving and reasoning to get answers. Overall, PLTL groups performed better than non-PLTL groups on exams. The most significant part of these findings was the lack of self-selection.

In efforts to improve performance of minority students in higher-education science courses, Drane, Smith, Light, Pinto, & Swarat, (2005) implemented a similar peer-led workshop for biology, chemistry, and physics. They took on the peer-led workshop initiative because extra tutoring, remedial classes, and special introductory programs did

not produce as positive of results in the students' success as they would have liked. The apparent success of the workshop method in other institutions led the researchers to create voluntary-based workshops. Though all students were encouraged and allowed to attend, professors sent a special letter of invitation to minority students. Outside of class, groups of four to seven students met two hours a week with a peer facilitator to solve conceptually based problems. Faculty designed the material covered in the workshops. Drane, Smith, Light, Pinto, & Swarat found that student scores were better in both majority and minority students, with an emphasis of even a better increase in the minority students.

Additionally, Hockings, DeAngelis, & Frey (2008) developed a detailed training program for their peer-facilitators. Peer leaders took two mentoring courses, agree to facilitate two hours a week, and committed to studying the material on a regular basis. Most had previously received an A in the course. Facilitators learned about workshop conduct techniques, group dynamics, participation, learning styles, diversity, listening skills, and scenarios. Hockings, DeAngelis, & Frey found that the mentoring courses were significantly improving the effectiveness of peer-facilitators, measured by the students' exam scores

Tessier (2007) employed a small-group peer teaching (SPGT) technique in his classroom. The SPGT-based learning was targeted toward non-biology majors that were in pursuit of an education degree. This would provide an opportunity for the students to be more engaged with the material, along with providing them with opportunities to practice teaching. Instead of adding extra collaborative days, Tessier alternated lecture days with group days. On group days, he provided each group with a list of questions related to the

previous lecture. Tessier found that students performed significantly better on material that they taught each other than material taught exclusively by the professor.

Summary

Accounting education in universities has undergone scrutiny; the traditional lecture-style accounting classroom does not substantially provide students with core accounting comprehension (Buckhaults & Fisher, 2011). Substantial research has been done in order to improve accounting education to better equip students to succeed in both the classroom and workplace. Methods including laboratories, online learning modules, collaborative learning, and different instructor methods have been examined (Baxter & Thibodeau, 2011; Buckhaults & Fisher, 2011; Sargent, Borthick, & Lederberg, 2011).

Researchers Drane, Smith, Light, Pinto, and Swarat, (2005), along with Lyle and Robinson (2003) and Preszler (2009), have found peer-led learning in workshops to be effective in student performance for science courses. This method has not been tested in accounting courses.

This study will apply peer led learning to accounting. It will assess the effectiveness of peer-led, problem-based workshops that emphasize the accounting equation.

Accordingly, the hypotheses for this study are as follows:

H1: Students participating in peer-facilitated workshops will demonstrate significantly higher comprehension of the accounting core concepts than those that did not.

H2: Workshop students will demonstrate significantly higher retention of accounting core concepts, as demonstrated in Exams three, four, and Post-Test.

CHAPTER 3: METHODOLOGY

A facilitator-led workshop was designed that mirrored some elements of workshops discussed in the Literature Review (Hockings, DeAngelis, & Frey, 2008; Lyle & Robinson, 2003). The workshop was designed to run in conjunction with the regular Principles of Financial Accounting course. The same professor taught all sections of the course. Thus, all students in the course were subjected to the same lecture style, homework assignments, and exams.

Principles of Financial Accounting

The Principles of Financial Accounting course is required of all business majors. The class meets three hours a week. The professor follows a format of reviewing textbook material, reviewing assigned exercises and problems, and going through new problems and exercises as a class (C. Fairchild, personal communication, September 8, 2012). Though students are assigned to read the textbook and work problems, completion of out of class assignments does not directly factor into grades. Students are evaluated with six exams (including a pre-test that is not part of the final grade calculation and a post-test that mirrors the pre-test). There were three sections of the course, each section with 20-35 students.

The students are offered several opportunities to seek help to improve their performance. For example, they have the option to meet with the professor outside of class

for special assistance with coursework. Additionally, the school offers a free tutoring center, Academic Center for Excellence (ACE), through which students can access class assistance from peer tutors. ACE employs facilitators that specialize in business tutoring, including accounting.

Workshop Design

The workshops were placed between the first and second exams so that the material covered would be for concepts that would be on Exam two. Exam one usually covers basic accounting terminology including what qualifies as assets, liabilities, and equity. Exam two covers material that is crucial to comprehending accounting as a whole. The primary concepts revolve around the accounting equation: debits and credits, T-accounts, journal entries, and financial statements. Hypothesis two was grounded in that comprehension of these concepts would improve the students' performance for not only exam two, but also the remaining course exams. Heiser and Phillips (2011) explained the importance of focusing on the accounting equation. Aspects of accounting that are tested on Exam two provide the foundation of any further accounting knowledge. In order to progress further with high performance, it is best for students to know the accounting equation concepts. This study examines how students were able to retain the core accounting concepts, as demonstrated by their performance on all exams following exam two.

The professor announced to all three sections of the course that the workshops were open to all of his students that would want to attend; they were not required. In order to provide students with extrinsic incentive to attend the workshops, they were given the opportunity to earn extra credit at the end of the semester for attending at least

four of the workshops. Those whose schedules would not allow them to attend the workshops but still wanted to work the exercises and receive extra credit were assigned the same problems that were worked in the workshops for them to submit to the facilitator. The workshops met for seven days in a two-week time span, each session lasting approximately one hour. The facilitator did not have any knowledge of what would be on the exams. This was methodologically important so that improvements in the students' grades could not be attributed to the facilitator unfairly teaching the exam.

Key elements of this study include the following: timing, concept emphasis, active learning, problem-focus, peer-facilitator attributes, and continuity of class sections.

Timing

While most of the workshops researched in the literature review spanned for the entirety of at least one semester, this workshop was designed to only last for the two weeks after students take the first exam and before they take the second exam. This was done for several reasons. It is important to test how the students perform in comparison to each other on the pre-test and Exam one, without any workshop guidance. This would assess whether or not the students' aptitude was relatively similar to each other across the board. Furthermore, it is key that if this study were to be replicated, the workshops take place before the exam that covers in-depth concepts of the accounting equation including debits and credits, journal entries, T-accounts, and financial statements.

Concept Emphasis, Active Learning, and Problem-Focus

For this workshop, an emphasis was placed on selecting exercises that would reiterate core concepts, key learning outcomes, and the accounting equation. The facilitator prepared two to five exercises to go with the workshop attendees for each session. The exercises were chosen in collaboration with the professor so that they specifically addressed concepts that were covered in class and that were part of the course's learning outcomes. The textbook contained two sets of exercises and problem—an A and B version. Items covered in class came from the A version, and items covered in the workshop came from the B version. The B version problems differed from the A version only in specific numbers. Students did not have access to answer keys for either version. They were not told in advance what problems and exercises would be covered in the workshops.

The problems were worked in a collaborative group format. The workshops were small enough so that all attendees counted as one group. Attendance ranged from twelve to eighteen students. They answered and completed different parts of the exercises on a volunteer basis. The facilitator alternated between having students write their answers on the board and the facilitator writing her answers on the board at random. She preferred the student involvement method, though, because it forced the students to be even more engaged with the material.

The facilitator concentrated on keeping the accounting equation in mind when working the problems with the students. For example, for exercises that required journal entries, the facilitator had the students identify whether each account affected by the transaction would be classified as an asset, liability, or equity. While the first week of workshops focused more on learning journal entries, debits and credits, and T-accounts,

the second week of workshops focused on having the students perform comprehensive problems. This involved tracing journal entries all the way through creating financial statements.

Peer-Facilitator Attributes

One of the most significant attributes of the workshop was the emphasis on peer-leadership. While several of the studies discussed in the literature review tested peer-tutors that were currently taking the class, the attributes of this workshop's facilitators aligns more closely with Hockings, DeAngelis, & Frey (2008). This workshop's peer-facilitator was in her senior year of college and had demonstrated ability throughout her accounting education. Additionally, she had over a year of experience in tutoring accounting courses with the tutoring center (ACE), throughout which she received periodic training in "best practices" for tutoring. It is advised that a peer-facilitator with similar qualities be chosen if this study were to be replicated.

Continuity of Class Sections

The final key element of this study was that all students were under the same professor. This is important in analyzing the effectiveness of the workshops because it ensures that all students are received very similar instructions and lectures.

Participants

For purposes of this study, students are separated into three categories (types):

Type 1: Students that participated in four or more workshops

Type 2: Students who attended between one to three workshops or completed the exercises on their own

Type 3: Students that did not participate in either workshops or exercises

Table 1 breaks down the participants by Type:

Table 1: Participant Type

	Total
Type 1	22
Type 2	23
Type 3	37
Total	82

Statistical Methods

A Univariate Analysis of Variance (ANOVA) test was conducted for each exam. This particular test was chosen primarily because Hahn, Fairchild, and Dowis (in press) used it in their study. The test was run on Type 1 student exam results vs. Type 2 student results, and then again against Type 3 results. ANOVA was tested at $p < .05$ (per standards, used by Hahn, Fairchild, and Dowis).

CHAPTER 4: RESULTS

Test Results

The following tables display the average exam scores of the three types of students for all exams. The % difference between Type 2 and Type 3 exam scores and Type 1 exam scores is also displayed.

Table 2: Pre-Test

Pre-Test Student	Fall 2012 Average	% Variance From Type 1	P-Value
Type 1	32.62		
Type 2	35.22	7.87%	.276
Type 3	37.22	14.1%	.126
Total Average	35.46		

Table 3: Exam 1

Exam 1 Student	Fall 2012 Average	% Variance From Type 1	P-Value
Type 1	77		
Type 2	75.21	-2.32%	.649
Type 3	72.43	-5.93%	.241
Total Average	74.40		

Table 4: Exam 2

Exam 2	Fall 2012	% Variance	P-Value
Student	Average	From Type 1	
Type 1	83.1		
Type 2	79.90	-3.8%	.401
Type 3	73.63	-11.40%	.034*
Total Average	77.86		

Table 5: Exam 3

Exam 3	Fall 2012	% Variance	P-Value
Student	Average	From Type 1	
Type 1	77.95		
Type 2	71.81	-7.87%	.128
Type 3	66.24	-15.0	.003*
Total Average	70.82		

Table 6: Exam 4

Exam 4	Fall 2012	% Variance	P-Value
Student	Average	From Type 1	
Type 1	81.6		
Type 2	72.36	-11.32	.009*
Type 3	66.86	-18.06	.069
Total Average	72.26		

Table 7: Exam 5

Post-Test	Fall 2012	% Variance	P-Value
Student	Average	From Type 1	
Type 1	78.14		
Type 2	71.29	-10.03	.026*
Type 3	72.82	-6.80	.107
Total Average	73.87		

*indicates significance (p<.05)

Analysis of Test Results

For all exams subsequent to the workshop, Type 1 students' average exam scores were higher than Type 2 and Type 3 (varying with significance). This contrasts with pre-workshop results, by which Type 1 students did not perform statistically higher than on either the Pre-Test scores or Exam one scores. The results of the ANOVA tests for each exam are reported below.

Pre-Test: No significant difference between Type 1 and Type 2/Type 3 students, as shown in Table 2.

Exam one: No significant difference between Type 1 and Type 2/Type 3 students as shown in Table 3.

Exam two: Significant difference between Type 1 and Type 3 students, as shown in Table 4.

Exam three: Significant difference between Type 1 and Type 3 students, as shown in Table 5.

Exam four: Significant difference between Type 1 and both Type 2 and Type 3 students, as shown in Table 6.

Post Test: significant difference between Type 1 and Type 2 students, as shown in Table 7.

CHAPTER 5: DISCUSSION AND CONCLUSION

This study assessed the effectiveness of peer-facilitated workshops in a Principles of Financial Accounting course. Results of the study demonstrated that students that attended at least four of seven workshops (Type 1) focusing on core accounting concepts including the accounting equation exhibited a statistically higher performance than those that did not on Exam two. The same students did not maintain significantly higher exam scores for the remainder of the course.

Interpretation of Exam Results

The Pre-Test given for this course contains core concepts learned throughout the semester. It is used to measure students' knowledge of accounting before the coursework and compare it with how much they learned by the end of the course, as measured by the post-test. The lack of significant difference among the student types suggests that no group of students had a beginning knowledge of accounting any greater than the other.

Exam 1 was given before the workshops began. While the pre-test measures any pre-learned knowledge, Exam one measures the student performance after lectures, homework, etc. That Type 1 students did not exhibit better average test scores suggests that students who decided to take the workshop might not have performed better than other students if they did not participate in the peer-assisted learning.

Average test scores for Type 1 students on Exam two, which followed immediately after the workshops, were 11.40% higher than Type 2 students. Given that the p-value for this result is significant, this suggested that the peer-facilitated workshops had a positive effect on student performance. That Type 3 students were not much higher than the Type 2 students could be because Type 2 students did take part in some form of separately assigned assignments, and therefore most likely had more preparation for the exam than if they otherwise only did class assignments.

An important factor in this study is that the workshops would help student test grades after Exam two, given that they would have gained a better understanding of the core accounting material. Exam three creates an interesting discussion because averages for all students declined considerably. Type 1 students' exam averages declined 6.18%, Type 2 declined 10.12%, while Type 3 declined 10.03%. With this decline, Type 1 scores were 15.0% better than Type 3. This could suggest that the workshops might have helped the students perform better than they would have if they had not participated at all. The reason for the decline in grades for Type 1 and Type 2 students could be that they did not spend as much time in preparation for this exam when compared with Exam 2

Scores on Exam four improved from Exam three scores. The study cannot provide reasoning for this improvement. Type 1 grades were 18.06% higher than Type 3.

The Post-Test, identical to the Pre-Test, measures student knowledge increases from the beginning of the course to the end of the course. Expectations were that the Type 1 students would have statistically higher Post-Test results than the other student types. Results, however, indicated a significantly greater exam average over Type 2 students. That Type 1 students did not perform significantly higher than Type 3 students on this

exam suggests that the workshops did not have a significant effect on student performance for the remainder of the course.

Weaknesses and Recommendations

There were several weaknesses of the study. Primarily, the participants were not randomly chosen. The fact that students were allowed to self-select raises concern over whether or not they would have performed better than others on the exams without the workshops. This concern was partially mitigated by the fact that they did not perform significantly better on either the pre-test or the first exam. Furthermore, it is difficult to claim that the peer-facilitated workshops factor was what specifically contributed to the student success. Though the study does show that the workshops may have improved average grades, it is not definitively causal. It could simply be that the students spent more time with the material, as Elias (2005) explained in his paper about the importance of students exhibiting a deeper level of thinking and studying.

If this study were to be replicated, it is suggested that the workshops be given for more than two weeks. This could help students develop a deeper understanding of the accounting equation, and possibly help them improve exam grades. This comprehension of the accounting equation would also benefit accounting majors in their further studies. It would also be recommended to gather a random sample of students to attend workshops in order to best test the effectiveness of peer-facilitated workshops. Additionally, a chi-squared goodness of fit could be run to identify any correlating factors between student demographics and their performance. These demographics could include gender, and overall GPA.

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APPENDICES

Appendix A: ANOVA Results

Below are the results of the ANOVA tests by exam:

Pre-Test							
<i>Type 1 and Type 2</i>							
SS	df	MS	F	p			
Between:	76.012		1	76.012	1.218		0.276
Within:	2,682.95		43	62.394			
Total:	2,758.96		44				
<i>Type 1 and Type 3</i>							
SS	df	MS	F	p			
Between:	291.936		1	291.936	2.413		0.126
Within:	6,895.64		57	120.976			
Total:	7,187.58		58				

Exam 1							
<i>Type 1 and Type 2</i>							
SS	df	MS	F	p			
Between:	36.432		1	36.432	0.21		0.649
Within:	7,474.37		43	173.823			
Total:	7,510.81		44				
<i>Type 1 and Type 3</i>							
SS	df	MS	F	p			
Between:	291.936		1	291.936	1.403		0.241
Within:	11,861.60		57	208.098			
Total:	12,153.53		58				

Exam 2							
<i>Type 1 and Type 2</i>							
	SS	df	MS	F	p		
Between:	115.143	1	115.143	0.718			0.401
Within:	6,894.28	43	160.332				
Total:	7,009.42	44					
<i>Type 1 and Type 3</i>							
	SS	df	MS	F	p		
Between:	1,245.14	1	1,245.14	4.743			0.034*
Within:	14,964.66	57	262.538				
Total:	16,209.80	58					

Exam 3							
<i>Type 1 and Type 2</i>							
	SS	df	MS	F	p		
Between:	423.911	1	423.911	2.408			0.128
Within:	7,569.35	43	176.031				
Total:	7,993.26	44					
<i>Type 1 and Type 3</i>							
	SS	df	MS	F	p		
Between:	1,891.85	1	1,891.85	9.456			0.003*
Within:	11,403.54	57	200.062				
Total:	13,295.38	58					

Exam 4							
<i>Type 1 and Type 2</i>							
SS	df	MS	F	p			
Between:	960.024		1	960.024	7.599	0.009*	
Within:	5,432.51		43	126.337			
Total:	6,392.53		44				
<i>Type 1 and Type 3</i>							
SS	df	MS	F	p			
Between:	3,001.63		1	3,001.63	7.366	0.009*	
Within:	23,227.21		57	407.495			
Total:	26,228.83		58				

Post Test							
<i>Type 1 and Type 2</i>							
SS	df	MS	F	p			
Between:	529.159		1	529.159	5.315	0.026*	
Within:	4,280.95		43	99.557			
Total:	4,810.11		44				
<i>Type 1 and Type 3</i>							
SS	df	MS	F	p			
Between:	390.477		1	390.477	2.687	0.107	
Within:	8,284.59		57	145.344			
Total:	8,675.07		58				

* $p < .05$, which indicates significant results

Appendix B: Demographics

Demographics were gathered to analyze any apparent differences between the three types of students. This was done as a test because the study did not use random samples of participants.

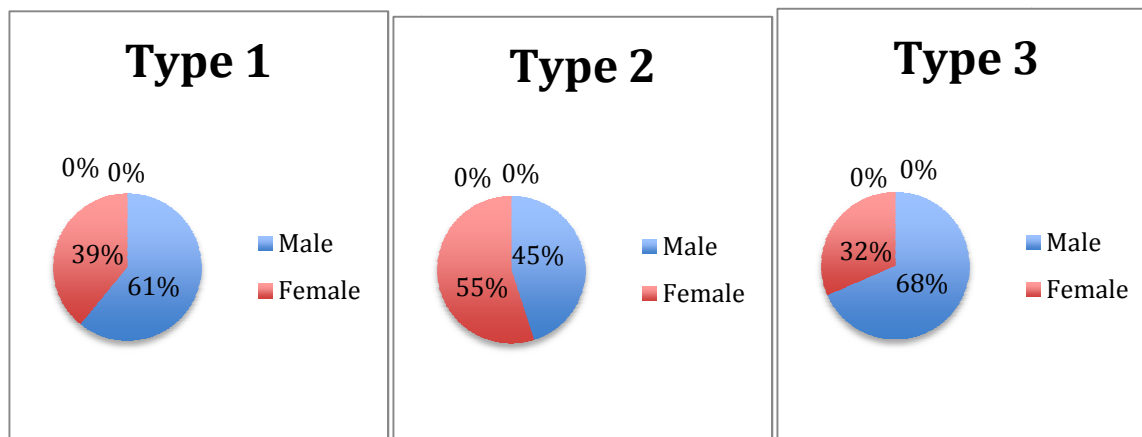
Participants were asked to identify themselves based on the following criteria:

- Gender
- Age
- Major/Minor
- Year in school
- How many times they have taken Principles of Financial Accounting

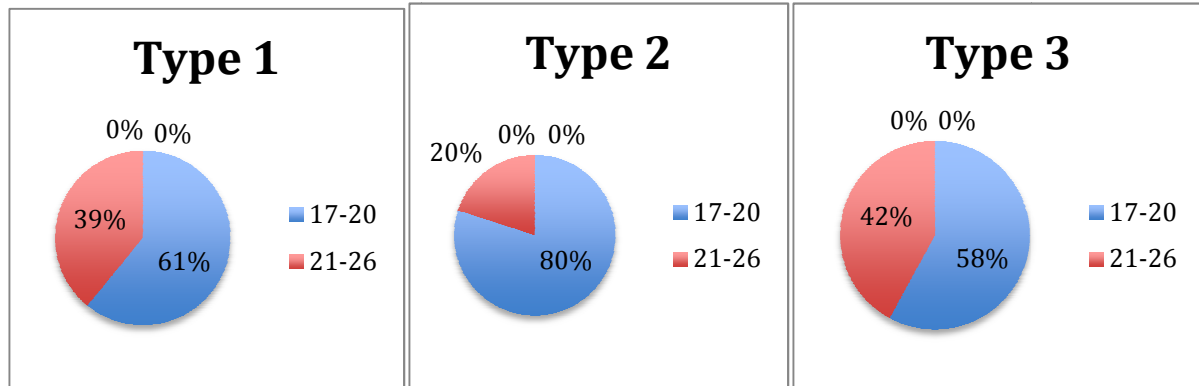
The demographic composition of each student type is relatively similar. If exam results need to be assessed further, Chi-Square goodness of Fit tests can be run to determine if the demographic break down of each student type confounded the study's results.

Break-out of the demographic questions are shown below, by Student Type:

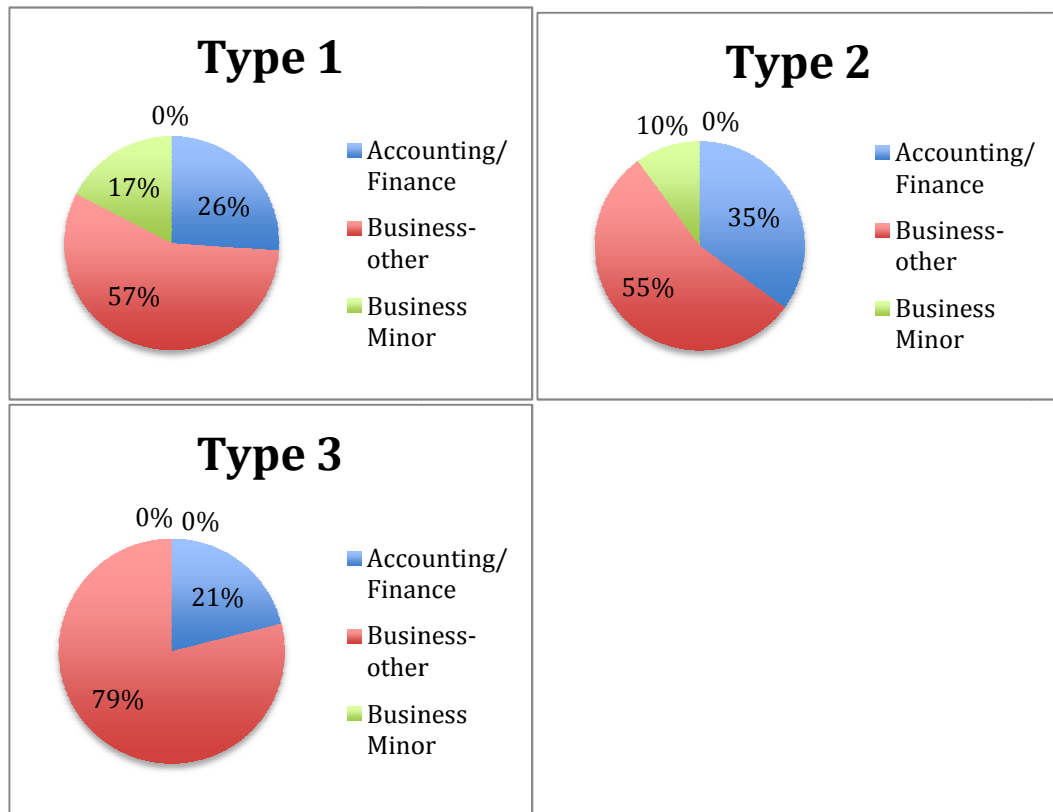
Gender



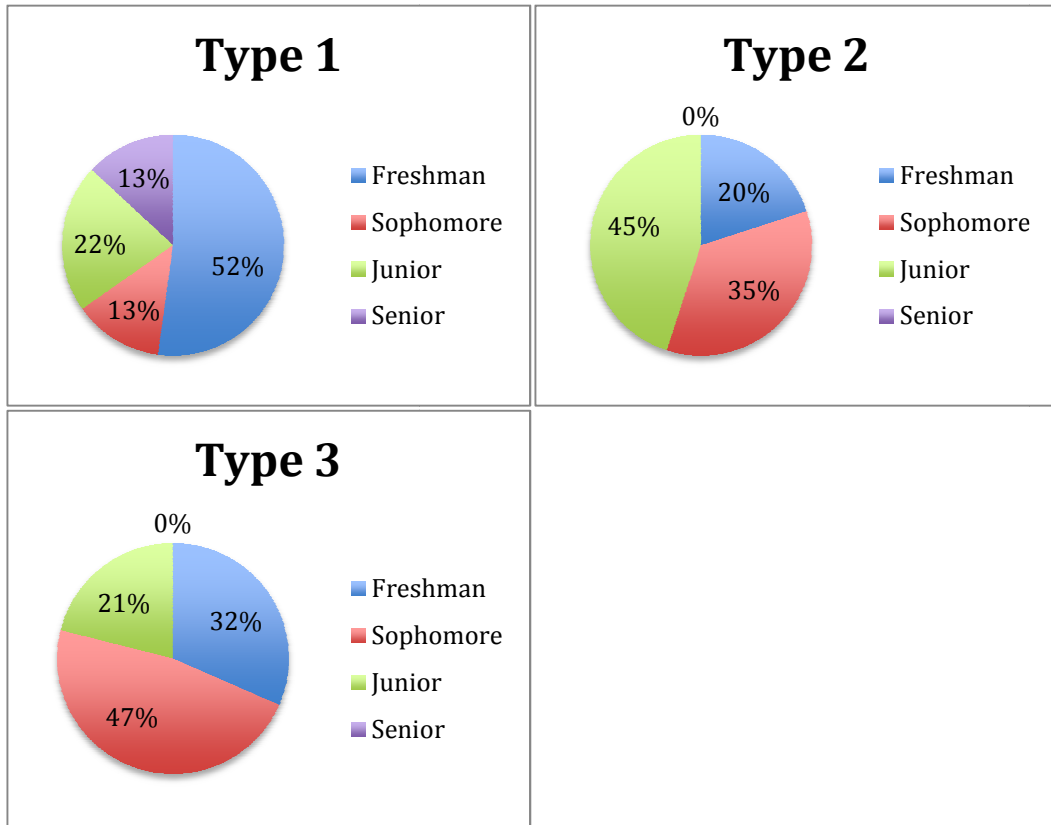
Age



Major/Minor



Year



Course (first time taking the course vs. if it is being taken a second time)

