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# An assessment of the effects of teaching methods on academic performance of students in accounting courses

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This study explores the effect of teaching methods on the academic performance of students in accounting courses. The study was carried out over two semesters at a well-known university in Turkey in principles of financial accounting and managerial accounting courses. Students enrolled in the courses were assigned to treatment and control groups. Treatment group students solved assigned problems or cases in groups in class, while in the control group the instructor lectured on and solved the problems and cases. The results of the study show that there was no significant difference in the academic performance of the treatment and control group students in either course.

**Keywords:** active learning; cooperative learning; accounting education



## Introduction[1]

There has been a long debate on how accounting education should be provided. A study carried out by the American Accounting Association in 2000 provided alarming results; Albrecht and Sacks (2000) discussed the future of accounting education and whether it will be needed in the long run. They urged prompt action to save this educational field and recommended developing and changing teaching methods.

The questions of interest are usually 'What should be taught?; How should it be taught?'; and 'When should it be taught?' The aim of this study was to answer: 'How should it be taught?' by exploring the effect of teaching methods on the academic performance of students in accounting courses. This question has been studied in the international context, but not a Turkish university, although similar issues have been discussed at annual Turkish accounting education symposia. It would be interesting to determine the global similarities and differences. This study was carried out in two independent phases at a major private university in Turkey during spring 2004 and fall 2005.

The following section of the paper provides brief information on teaching methods, especially on cooperative learning, and summarises the results of relevant research. The third section describes the methodology of the study, followed by the analysis and results in the fourth section. In the final section a brief conclusion and future recommendations are provided.

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## Teaching methods

Accounting courses have long been taught through traditional teaching methods: Instructor-centred and involving lectures and problem-solving by the instructor. Content, materials to be used and performance assessment tools are determined by the instructor and transmitted to the students mainly by lectures. Teaching is simply the transfer of knowledge from instructors' materials to students' notebooks (Cottel & Millis, 1993). However, recent developments in accounting such as the change in the role of accountants in organisations, the increased use of technology and complex accounting practices have prompted a change in teaching (Williams, 1993).

Although active learning methods do not have an exact definition, the following can be listed as their major attributes (Bonwell & Eison, 1991, p. 3):

- Students not only listen to the lectures, but they are also interested in the topic
- The development of student skills is more important than the delivery of course content
- The students use higher-order thinking levels such as analysis, synthesis, and evaluation
- The students are active during the lectures either by writing, reading or discussing
- More importance is put on the students' research, on self-assessment and values

According to the aforementioned attributes, active learning involves the students and helps them learn the subject while practising. In other words, an inductive way of teaching produces better learning than deductive methods (Adler, 1999). It has also been argued that inductive methods increase the students' assessment capabilities and as a result increase their success in their business careers as opposed to those who learned accounting standards thoroughly (Kelley, Darcy, & Haigh, 1999).

Bonwell and Eison (1991, p. 33) suggested certain strategies that support active learning, some of which are as follows:

- The use of visual materials during lectures (video, multi-media, slides)
- The use of strategies that encourage writing by students during the lectures such as note-taking, abstract preparation, writing memos on the problems
- Computerised teaching in the classroom
- Encouraging students to solve problems through the use of case studies
- Using simulations, games and animations
- Cooperative learning

In this study, cooperative learning is used as a means of active learning in undergraduate financial and managerial accounting courses.

Cooper et al., (1990, p. 1) defined cooperative learning as 'an instructional technique that requires students to work together in small fixed groups on a structured task'. Cooperative learning can also be defined as a method of teaching in which the instructor determines the structure and content of the course, but the interaction between students is an important part of such a structure (Ravenscroft, Buckless, & Hassal, 1999). Working in groups of four to six students is said to increase the students' learning while developing such social skills as decision-making, team work and team management (Bonwell & Eison, 1991). Peek, Winking, and Peek (1995)

state that cooperative learning can extend the learning environment of accounting students and such an environment improves the learning of basic accounting concepts through increased interaction and also develops skills for professional success. Lindquist (1995), points out that cooperative learning enhances greater achievement and better conceptual understanding. An important characteristic of cooperative learning is the collaboration between the team members, while the students take personal responsibility for their academic performance (Cottel & Millis, 1993); the student can achieve maximum benefit from cooperative learning if he/she actively participates in the group work (Lancaster & Strand, 2001). The Accounting Education Change Commission (AECC) has recommended the use of group learning to increase students' cognitive, communication and interpersonal skills (Kunkel & Shafer, 1997).

Instructors like the flexibility of cooperative learning and the availability of various implementation tools (Johnson, Johnson, & Stanne, 2000).

Although cooperative learning has been studied in many other fields, research in the accounting area started only towards the end of the twentieth century. Ravenscroft and Buckless (1995) explored the effects of different grading schemes together with cooperative learning on the academic performance of the students. The students in their control group were graded only on their own efforts, while the students in their experimental group were graded on both their own and the group performance. Results indicated that students in the experimental group were more successful (Ravenscroft & Buckless, 1995).

Based on the results of their initial study, Ravenscroft and Buckless extended their study in 1997 to cover five different courses. This study compared the exam results of students with different team-work schemes and different group incentives and indicated that these variables had no significant effect on exam results (Ravenscroft & Buckless, 1997).

Lindquist (1995) conducted a case study in which students formed groups and studied various auditing reporting issues. By the end of the study, students showed a strong preference for the cooperative learning style and they perceived greater achievement. Caldwell, Weishar, and Glezen (1996) researched the perceptions of students towards accounting courses. They showed that students in cooperative learning groups tended to maintain positive attitudes towards accounting courses, unlike the students in the traditional teaching group.

Ciccotello and D'Amico (1997) studied the effect of cooperative learning on student performance in a managerial accounting course. Their results indicated that there were significant differences in the exam scores of the students in the cooperative learning versus traditional learning environment in favour of the cooperative learning. Kunkel and Shafer (1997) investigated the effect of team learning on exam scores in an auditing course and surprisingly found that students in the traditional learning environment significantly outperformed the students in the cooperative learning environment.

Marcheggiani, Davis, and Sander (1999) studied the effect of the group-Socratic teaching method and interactive lecture style on students' exam performance and attitudes in an introductory accounting course. Their results showed no significant difference in either exam scores or attitudes of the students who were in group-Socratic teaching as compared with those in the traditional teaching environment. In another study, Lancaster and Strand (2001) compared the academic performance of students in a managerial accounting course using cooperative versus traditional learning. They found that academic performance and student attitudes did not differ significantly.

Last but not least, Hwang, Lui, and Tong (2005), studied whether cooperative learning can improve the learning outcome of students in a passive learning environment in a major Hong Kong university. Their findings revealed that students who were taught using cooperative teaching methods significantly outperformed the students who were taught using traditional teaching methods. Clearly there is no consensus on the effects of cooperative learning in accounting education. Lancaster and Strand (2001) suggest that students and instructors are new to the subject of cooperative learning, thus the main effects might not have been captured by both parties.

## Methodology

The present study was conducted at the business school of a major private university in Turkey. The study ran over two semesters in both managerial and financial accounting courses.



### *Managerial accounting course*

Initially we experimented with cooperative learning in the managerial accounting course for third-year management students in the 2003–2004 spring semester. Managerial accounting is a must course for management students; to produce a homogeneous sample, students from other departments were excluded from the study. The course was offered in three sections by the same instructor; students were assigned to a section by the Registration Office, beyond the control of the researchers. The first section of the course was designated the treatment group ($n$ = 45), while the remaining two were the control group ($n$ = 89). The gender profile of the students and average cumulative grade point averages (CGPA) are presented in Table 1.

As can be observed from Table 1, the average CGPAs of both groups were similar, but female students were academically more successful than males in both groups.

The same textbook and course presentations were used in both groups. Each week, the first two hours of the course were lectures by the instructor, and the last hour was the problem-solving session. The instructor used PowerPoint slides that were available to the students before the lecture at the course website. The method employed for problem-solving was different for the treatment and control groups. In the control group, the instructor solved the assigned problems; in the treatment group, case studies were assigned to groups of students. Assigned problems in the control group and the case studies in the treatment group were similar.

At the beginning of the semester, students enrolled in the treatment group were randomly assigned to 11 groups, consisting of 4–5 team members. At the beginning

Table 1. Gender profile and cumulative grade point averages (CGPA) – managerial accounting.

| | No. students | Average CGPA | Female students (%) | CGPA – female students | Male students (%) | CGPA – male students |
|---|---|---|---|---|---|---|
| Treatment group | 45 | 2.80 | 33.3 | 3.01 | 66.7 | 2.69 |
| Control group | 89 | 2.82 | 50.6 | 2.91 | 49.4 | 2.74 |

of the semester, the instructor and the students together determined the case solution presentation dates for each group by drawing lots. However, the instructor distributed the case studies to students at the beginning of each week and all students were required to solve the case problems and prepare their reports before the problem-solving session started. All the reports were graded for every group each week. About mid-semester, it was observed that usually one student was doing all the work. This went against Johnson and Johnson (1994), who state that a cooperative group should have a sense of individual accountability and the groups should be structured and managed by the instructor. Therefore, the teams that were constructed at the beginning of the semester were abandoned; at the beginning of each case-solving session, the instructor randomly grouped the students and distributed the case studies and personally supervised each group while they worked on the cases. The case study grades constituted 15% of the overall course grade.

For the students in the control group, certain problems from the textbook were assigned and the students were asked to come to class with the problems solved. At the problem-solving session, the instructor solved some of those problems in class. A quiz was administrated each week; the quiz grades constituted 15% of the overall course grade.



### *Financial accounting course*

Based on the experience obtained from the study in the managerial accounting course, cooperative learning was conducted with the second-year students in the 'principles of financial accounting' course during the fall 2004–2005 semester. Within the framework of the study the students were divided into treatment group ($n = 55$) and control group ($n = 113$). Financial accounting is a must course for management and economics students; therefore, unlike the first study, these groups included economics students as well. Students from other departments may also take this course as an elective, but for the purposes of this study, these students were excluded. The departmental and gender profile of the students together with their average CGPAs are provided in Table 2. As shown in Table 2a, male students comprised the majority of both groups. Furthermore, Table 2b shows that 53% and 47% of experiment group

Table 2. (a) Gender and (b) department profiles and cumulative grade point averages (CGPA) – financial accounting.

(a) Gender profile

| | No. students | Average CGPA | Female students (%) | CGPA – female students | Male students (%) | CGPA – male students |
|---|---|---|---|---|---|---|
| Treatment group | 55 | 2.73 | 47.3 | 2.94 | 52.7 | 2.53 |
| Control group | 113 | 2.64 | 42.5 | 2.75 | 57.5 | 2.56 |

(b) Department profile

| | Management students (%) | CGPA – management students | Economics students (%) | CGPA – economics students |
|---|---|---|---|---|
| Treatment group | 47.3 | 3.01 | 52.7 | 2.50 |
| Control group | 54.0 | 2.67 | 46.0 | 2.61 |

students were economics and management students, respectively, while 46% and 54% of control group students were economics and management students, respectively. The average CGPA of treatment and control groups were not significantly different. However, as was the case for managerial accounting, female students' average CGPA was significantly higher.

During the 2004–2005 fall semester, the course was offered in six sections with three instructors. However, this study was limited to the three sections taught by the same instructor, who was also one of the researchers. The student enrollment was again done by the Registration Office, beyond the control of the researchers. The same textbook and course syllabus were used in all three sections. During the study, the topics of financial accounting were taught to the students using the same course presentations and teaching materials in all sections. However, the methodology used in problem-solving after each chapter, was different for the sections. For the control group, the end-of-chapter problems were solved and explained by the instructor. For the treatment group, the students were asked to form groups of four and these groups solved the same problems.

For both the managerial and financial accounting courses, academic performance was assessed by two mid-term exams and a final exam. The same exam questions were given to both treatment and control groups. Exams consisted of multiple-choice and essay questions as well as problems so as to assess both the conceptual comprehension level of the students and their ability to practise what they had learned.

As there is no consensus in previous research on cooperative learning, the first null hypothesis of the study is as follows: $H^0_1$ – the use of traditional or cooperative learning has no effect on academic performance of the students.

Although the results of some studies indicated that cooperative learning increases the academic performance of the students, the results could not be generalised. However, usually it is believed that different teaching methods can lead to different academic performance. The following null hypotheses were also tested to see whether cooperative learning has different effects on female and male students, and on management and economics students: $H^0_2$ – the effect of traditional or cooperative learning is not different with respect to gender; $H^0_3$ – the effect of the use of traditional or cooperative learning is not different with respect to departments.

## Analysis and results

The academic performance of students in accounting courses is dependent on various factors such as gender, previous academic performance, and exposure to accounting in high school (Doran, Bouillon, & Smith, 1991). Therefore, in order to assess whether teaching methods have a significant effect on academic performance we conducted an analysis of covariance (ANCOVA) in which gender, teaching method and department (for the financial accounting course only) were the main effects, CGPA was the covariate and the dependent variable was the overall grade of the students at the end of the semester. Previous exposure to accounting was not a variable in our study, since it is uncommon in Turkish high schools. The results of the analysis, applied at the 0.05 significance level, are presented in Table 3.

The results of ANCOVA show that both in managerial and financial accounting courses, teaching methods did not have a significant effect on the academic

Table 3. ANCOVA on grades – (a) managerial accounting; (b) financial accounting.

| (a) Managerial accounting | | | |
|---|---|---|---|
| Source of variance | Mean square | *F*-value | *p*-value |
| Main effects | | | |
| Teaching method | 0.016 | 0.029 | 0.866 |
| Gender | 1.301 | 2.392 | 0.124 |
| Covariate | | | |
| CGPA | 60.514 | 111.206 | 0.000 |
| Residual | 0.544 | | |
| Adjusted $R^2 = 0.455$ | | | |
| **(b) Financial accounting** | | | |
| Source of variance | Mean square | *F*-value | *p*-value |
| Main effects | | | |
| Teaching method | 0.445 | 0.550 | 0.460 |
| Gender | 0.532 | 0.658 | 0.419 |
| Department | 0.149 | 0.184 | 0.668 |
| Covariate | | | |
| CGPA | 117.901 | 145.641 | 0.000 |
| Residual | 0.810 | | |
| Adjusted $R^2 = 0.502$ | | | |

Note: CGPA, cumulative grand point average.



performance of the students. Furthermore, neither gender nor major had a significant effect on the grades.

Thus, based on ANCOVA results, the null hypotheses cannot be rejected. In other words, we can say that traditional methods and cooperative learning methods did not differ significantly in their effect on the academic performance of students, regardless of their gender or major field of study. However, student participation was higher in the treatment group; informal interviews with students revealed that they preferred cooperative learning, indicating that they liked being a part of the lecture instead of just sitting and listening to the instructor.

The academic performance of students was assessed by mid-term and final exams. Multiple-choice/essay questions were designed to measure the conceptual understanding of the topics, whereas the problems were aimed at measuring the practical aspects of accounting. Therefore, we also explored whether there was a relationship between the average scores for conceptual and problem-type questions between the treatment and control groups. The *t*-test results are presented in Table 4.

As can be observed from Table 4, for both courses there was no significant difference in the exam results for both conceptual and problem-type questions between the two groups.

There were some interesting, but statistically insignificant, results. Students who were exposed to cooperative learning in the financial accounting course outperformed the students who were taught via traditional teaching methods. However, students taught with cooperative learning in the managerial accounting course were less

Table 4. *t*-test on exam scores – (a) managerial accounting; (b) financial accounting.

(a) Managerial accounting

| Exam | Treatment group (mean ± *SD*) | Control group (mean ± *SD*) | *t*-value | *p*-value |
|---|---|---|---|---|
| Mid-term 1 conceptual | 28.76 ± 6.64 | 30.56 ± 6.47 | 1.491 | 0.138 |
| Mid-term 1 problem | 40.27 ± 10.13 | 40.77 ± 10.18 | 0.265 | 0.792 |
| Mid-term 1 total | 69.03 ± 15.35 | 71.33 ± 14.48 | 0.841 | 0.402 |
| Mid-term 2 conceptual | 21.42 ± 6.88 | 20.48 ± 6.23 | –0.781 | 0.436 |
| Mid-term 2 problem | 41.62 ± 11.93 | 43.81 ± 9.40 | 1.139 | 0.257 |
| Mid-term 2 total | 63.03 ± 16.52 | 64.28 ± 14.08 | 0.448 | 0.655 |
| Final conceptual | 22.72 ± 6.66 | 22.98 ± 6.94 | 0.201 | 0.841 |
| Final problem | 34.76 ± 13.85 | 33.37 ± 15.24 | –0.503 | 0.616 |
| Final total | 57.48 ± 18.88 | 56.35 ± 20.46 | –0.304 | 0.761 |

(b) Financial accounting

| Exam | Treatment group (mean ± *SD*) | Control group (mean ± *SD*) | *t*-value | *p*-value |
|---|---|---|---|---|
| Mid-term 1 conceptual | 17.46 ± 5.34 | 16.62 ± 5.67 | 0.899 | 0.370 |
| Mid-term 1 problem | 40.38 ± 20.98 | 37.59 ± 19.39 | 0.832 | 0.406 |
| Mid-term 1 total | 57.85 ± 24.32 | 54.21 ± 22.79 | 0.927 | 0.355 |
| Mid-term 2 conceptual | 16.46 ± 4.43 | 16.41 ± 4.83 | 0.057 | 0.955 |
| Mid-term 2 problem | 49.72 ± 15.62 | 45.55 ± 16.61 | 1.570 | 0.118 |
| Mid-term 2 total | 66.18 ± 18.77 | 62.41 ± 17.23 | 1.215 | 0.226 |
| Final conceptual | 10.35 ± 3.59 | 10.28 ± 3.39 | 0.108 | 0.914 |
| Final problem | 29.45 ± 18.53 | 29.45 ± 18.51 | –0.001 | 0.999 |
| Final total | 39.79 ± 21.15 | 39.73 ± 21.19 | 0.017 | 0.987 |

Note: *SD*, standard deviation.



successful than the control group students. This result can be attributed to many external factors such as general aptitude of the students, learning style of the students and different language levels. No conclusive statements can be made without further studies.

## Conclusion

The present paper describes a study measuring the effects of two teaching methods on the academic performance of students in accounting courses. According to the results of two mid-terms and a final exam during two semesters on different accounting courses, it was observed that teaching methods had no significant effect on academic performance. However, although statistically not significant, mean exam scores of students who were exposed to cooperative learning were higher than the students who were taught by traditional teaching methods in the financial accounting course. The research ran over only two semesters; thus it is not possible to generalise the results at this stage. In the future, a similar study could be repeated and extended within the same university and at other universities in Turkey.

The academic performance of students who actively participated in the course through cooperative learning was expected to be higher. A possible reason for not

finding this is that students might not be ready for such an environment as traditional teaching methods have dominated their schooling. Another reason could be that students were attending class unprepared. Perhaps cooperative learning is best for students who are mature enough to take responsibility for their own learning.

Some of the actual effects of cooperative learning may not have been detected by this study. As was mentioned previously, cooperative teaching improves interpersonal and communication skills. Such skills are not assessed by written exams.

With the limitations of the present study, regrettably we cannot conclusively state any implications for practice other than that the students do enjoy, and say that they learn better in, a group setting. Thus an extension of the study could involve cross-matching of the learning styles and exam types to overcome the limitations of a traditional learning environment. Furthermore, a future study could test the relationship among learning styles, learning environment and exam styles.



## Note

1. A previous version of this paper received the 'Encouragement' award of Professor Muhan Soysal – Innovations in BA Education – (in Turkey)

## Notes on contributors

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