



RESEARCH ARTICLE

COMPARING EXAM GRADES IN PRINCIPLES OF ACCOUNTING 1, PRINCIPLES OF ACCOUNTING 2 AND COST ACCOUNTING WITH AND WITHOUT HOMEWORK

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INTRODUCTION

I have been teaching accounting for over 30 years and over that time I taught both introductory and advanced level accounting courses. I would take great pains to prepare what I thought were effective lectures. Unfortunately, they were not effective in producing a positive student learning outcome for a majority of the students. During my lecture I would notice that the majority of the students' attention spans would last maybe the first half hour of the lecture and then they would zone out. When I would go over the assignments in class the few students that did the assignments would not have many questions and those that didn't would not have questions because they were too busy copying the answers. In either case there would be minimum interaction between me and the students. By the end of the semester the failure rate was about 30-40%. Out of frustration I started to look around for an alternative to the lecture format that would lead to a better outcome for the students.

About 10 years ago I started to use a course management system in my courses. I started with the principles course. With technology I was able to assign exercises that were algorithmic and auto graded by the system. I was also able to monitor not only if they did the assignment but how much time they took to complete it. To make sure that the students did the assignments I made assignments part of their overall grade. The exams are proctored, timed and they only had one attempt to submit the exam within the designated time constraints.

The course management system provides in addition to assignments and an Ebook, lecture videos and demonstration problems which helps the student to better understand the material.

In accounting, practice is important to understand and learn the concepts taught. It is my belief that with sufficient practice a student can overcome any deficiencies he or she might have when first entering the course. So, I wanted to see if doing homework would enable the student to successfully complete

the course. The course management system provided me the tools to assign and grade problems. I made sure that the deadline was reasonable in order to minimize complaints and make it easier for the students to do and submit the assignments. I also made it clear from the start of the semester that I would not go over assignments in class but if they had any problem with the assignment they can either email me or ask me after class. Before answering their question, I would ask to see their work because I will not just provide them the answer or solution.

The student needs to register and purchase an access code for the course management system. After the student purchases the access code he/she needs to enroll in a course with a user name and password. The student uses their user name and password to log on to the course management system to do the assignments. The assignments were algorithmic and not timed. The student had the opportunity to submit the assignments several times in order to achieve a score of 100%. Due dates of the assignments were listed in the course management system home page and the syllabus. Students could check their grades anytime throughout the course by accessing their gradebook that is included in the course management system.

I am the only faculty member that has used and continues to use a course management system in any accounting course. There was a tremendous amount of resistance from the students when I first introduced the course management system and made assignments part of the grade. Accounting 101, Principles of Accounting 1, classes tend to have large enrollments so correcting and returning assignments in a timely manner was difficult. Using a course management system that automatically grade homework assignments overcomes that problem. Now it is possible to assign and monitor homework even in large classes.

Since the addition of a course management system, I make class time a more active learning experience by having the students do in class assignments and not just listen to me lecture. I would like to write about my findings in comparing exam

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grades with and without homework in principles of accounting I, principles of accounting 2 and cost accounting.

Data

The data used for Acc. 101 exam grades without homework, were from classes from classes that I taught from Fall, 2001 to Spring, 2004. The data used for Acc. 101 exam grades with homework, were from classes that I taught from Spring, 2006 to Summer, 2011.

RESULTS

The results for the Grades in Acc. 101 are shown in the following tables:

Table 1 Exam Grades in Acc. 101 with Homework

Grade Ranges	Number of Grades	Percent
90-100%	19	12%
80-89%	22	14%
70-79%	34	21%
60-69%	23	14%
below 60%	64	40%
Total	162	100%

Table 2 Exam Grades in Acc. 101 without Homework

Grade Ranges	Number of Grades	Percent
90-100%	19	12%
80-89%	19	12%
70-79%	22	14%
60-69%	26	16%
below 60%	76	46%
Total	162	100%

Table 3 Data Analysis

In column 5 shows that there was an 11.5% decrease in grades 60-69% and a 15.8% decrease in grades below 60%. Grades below 60% represent a failing grade and grades 60-69% represent a D grade.

Table 3 clearly shows that adding homework in my Acc. 101 classes increased the number of exam grades in the 70-100% range while decreasing the number of exam grades in the below 60 to 69% range. The addition of homework increased the number of students that successfully completed the course. This represents a positive step since Acc. 101 is the introductory course in Accounting that is required for both the Accounting majors and non- majors.

Table 3 An Analysis of the results of Grades in Acc. 101 with Homework with Grades in Acc. 101 without Homework

(1) Grade Ranges	(2) Total Number of Grades in Acc. 101 with Homework	(3) Total Number of Grades in Acc. 101 without Homework	(4) (2)-(3) Increase/ (Decrease)	(5) (4)/(3) x 100 Percent Increase/ (Decrease)
90-100%	19	19	0	0%
80-89%	22	19	3	15.8%
70-79%	34	22	12	54.5%
60-69%	23	26	(3)	(11.5)%
Below 60%	64	76	(12)	(15.8)%

Table 4 lists the average or mean of 59% compared to 58% in Table 5 or a 1% increase. A comparison of the median grade of 67% shown listed in Table 4 to 61% in Table 5 shows an increase. The mode listed in Table 4 is 85% compared to 69% listed in Table 5 also shows an increase.

Table 4 Exam Grades in Acc. 101 with Homework

Mean	59%
Median	67%
Mode	85%
Range of Grades	98
Minimum Grade	1%
Maximum Grade	99%
Count/ Sample Size	161

Table 5 Exam Grades Acc. 101 without Homework

Mean	58%
Median	61%
Mode	69%
Range of Grades	96
Minimum Grade	3%
Maximum Grade	99%
Count/Sample Size	161



Chart 1

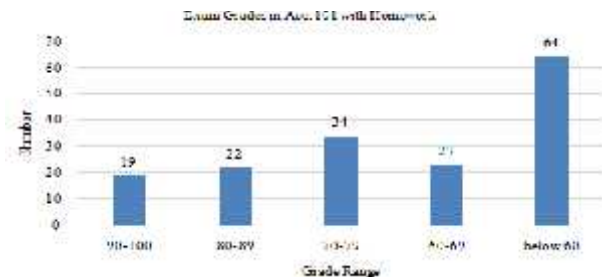


Chart 2

Comparison of Table 6 and Table 7 The mean or average grade increased from 60% in Table 7 to 71% in Table 6. The median grade increased from 62% in Table 7 to 76% in Table 6. The statistics does show an improvement in exam grades in Acc.102 when homework is part of the course.

Table 6 Exam Grades in Acc. 102 with Homework

Mean	71%
Median	76%
Mode	90%
Range of Grades	99
Minimum Grade	0%
Maximum Grade	99%
Count/Sample Size	117

Table 7 Exam Grades in Acc. 102 without Homework

Mean	60%
Median	62%
Mode	89%
Range of Grades	98
Minimum Grade	0%
Maximum Grade	98%
Count/Sample Size	123

Table 8 Exam Grades in Acc. 102with Homework

Range	Number of Grades	percent
90-100%	23	20%
80-89%	21	18%
70-79%	34	29%
60-69%	16	14%
below 60%	23	20%
Total	117	100%

Table 9 Exam Grades in Acc. 102 without Homework

Grade Range	Number of Grades	Percentage
90-100%	10	8%
80-89%	14	11%
70-79%	24	19%
60-69%	23	19%
below 60%	53	43%
Total	124	100%

An analysis of table 10 shows that grades in the 90-100 range had a 130% increase. In addition, grades in the 80-89 range had a 50% increase and grades in the 70-79% range had a 41.7% increase. Importantly the grades in the 60- 69 range decreased by 30.4 % and grades below 60 decreased by 56.6%. Again the data does indicate that exam grades improve when homework is assigned and is made a requirement in the course.

Table 10 An Analysis of the results of Exam Grades in Acc. 102 with Homework with Exam Grades in Acc. 102 without Homework show the following results

(1) Grade Ranges	(2) Total Number of Grades in Acc. 102 with Homework	(3) Total Number of Grades in Acc. 102 without Homework	(4) (2)-(3) Increase/ (Decrease)	(5) (4)/(3) x 100 Percent Increase/ (Decrease)
90-100%	23	10	13	130%
80-89%	21	14	7	50%
70-79%	34	24	10	41.7%
60-69%	16	23	(7)	(30.4)%
Below 60%	23	53	(30)	(56.6)%

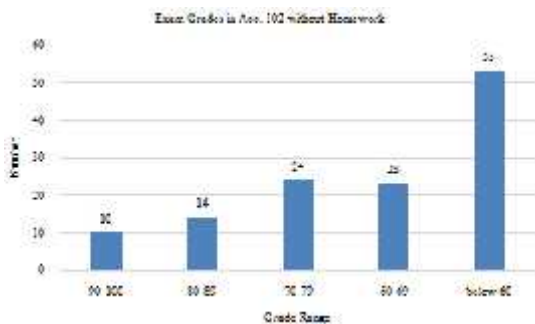


Chart 3

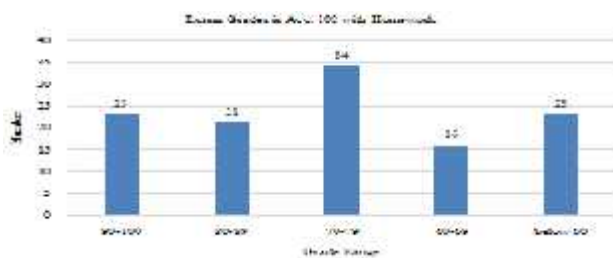


Chart 4

Table 11 Exam Grades in Acc. 345 with Homework

Grade Ranges	Number of Grades	Percent
90-100%	7	11
80-89%	9	15
70-79%	11	18
60-69%	14	23
below 60%	20	33
Total	61	100

Table 12 Exam Grades in Acc. 345 without Homework

Grade Ranges	Number of Grades	Percent
90-100%	3	5
80-89%	7	11
70-79%	9	15
60-69%	13	21
below 60%	29	48
Total	61	100

An analysis of Table 13 shows that grades in the range of 90-100% had a 133% increase. Grades in the range of 80-89 % had a 28.6% increase, grades in the 70-79% range had a 22.2% increase. A significant finding was a decrease of 31% in the below 60% range and a decrease of 7.7% in the 60-69% range. Overall there was a combined decrease of 38.7% in the below 60 -69% ranges.

Table 13 An Analysis of the results of Grades in Acc. 345 with Homework with Grades in Acc. 345 without Homework show the following results

(1) Grade Ranges	(2) Total Number of Grades in Acc. 345 with Homework	(3) Total Number of Grades in Acc. 345 without Homework	(4) (2)-(3) Increase/ (Decrease)	(5) (4)/(3) x 100 Percent Increase/ (Decrease)
90-100%	7	3	4	133%
80-89%	9	7	2	28.6%
70-79%	11	9	2	22.2%
60-69%	14	13	(1)	(7.7)%
Below 60%	20	29	(9)	(31)%

Comparison of Table 14 and Table 15 The mean or average grade increased from 58% in Table 15 to 66% in Table 14; the median grade increased from 60% to 67% and the mode increased from 60% to 73%. Overall the data suggest that exam grades improve when homework is part of the course.

Table 14 Exam Grades in Acc. 345 With Homework

Mean	66%
Median	67%
Mode	73%
Range of Grades	87
Minimum Grade	12%
Maximum Grade	99%
Count/ Sample Size	61

Table 15 Exam Grades in Acc. 345 without Homework

Mean	58%
Median	60%
Mode	60%
Range of Grades	87
Minimum Grade	10%
Maximum Grade	97%
Count/Sample Size	61

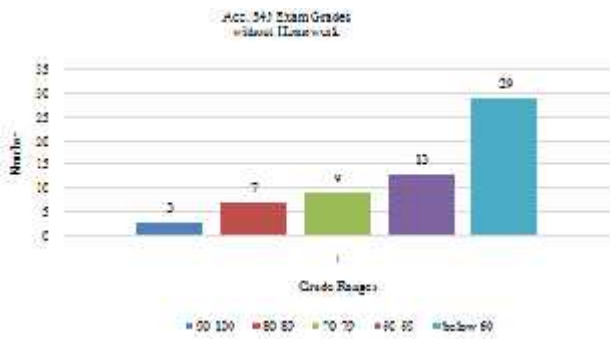


Chart 5

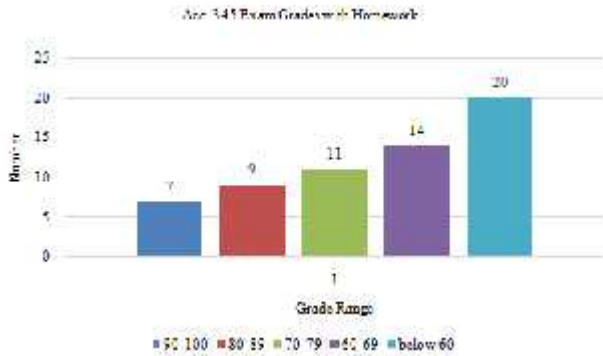


Chart 6

CONCLUSION

Comparing exam grades with homework to exam grades without homework in three courses: Accounting 101, Principles of Accounting 1; Accounting 102, Principles of Accounting 2; and Accounting 345, Cost Accounting 1 the data does show improvement in all three courses. The most significant improvement was shown in Accounting 102, Principles of Accounting 2 and Accounting 345, Cost Accounting 1. There are several possible explanations for the improvements in the courses. One possible explanation is that Accounting 101, Principles of Accounting 1, is the first course in the accounting discipline so that once the student completes it they have a better understanding of the amount of work necessary to successfully complete an accounting course. Another explanation is that since I have been making homework a part of my course since 2005 the students take that into consideration when they register for my courses. Let me finish with the fact that today's student have been exposed to technology over the years, have used it in other courses and are not intimidated by it.
