

# **A revised pilot study examining the effects of the timing and size of classes on student performance in introductory accounting classes**

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## **ABSTRACT**

The purpose of this pilot study is to examine the effects of the timing of classes and class size on student performance in introductory accounting courses. Factors affecting student success are important to all stakeholders in the academic community. Previous studies have shown mixed results regarding the effects of class size on student success (Laughlin, 1976; Baldwin, 1993; Hill, 1998). Additionally, most of these studies are dated and generally compared very large classes (larger than 100) to smaller classes. In this study, the authors will examine initial results comparing a range of class sizes with an enrollment as large as 60 to as small as 10. These results will be more relevant to smaller schools than previous studies. Very limited research has been reported on the effects of the timing of classes on student performance (Vruwink and Otto, 1987). These results indicated that the timing of classes had no significant effect on students' exam scores. The results of this present study indicate that neither class size nor the timing of classes has a statistically significant effect on students' final grades.

Keywords: Student performance, accounting classes, timing and size of classes

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## **INTRODUCTION AND LITERATURE REVIEW**

There have been numerous studies examining various factors that might impact student performance in introductory accounting classes. This is a very important topic to accounting educators who teach these classes. Any insight as to factors affecting student success might have a significant impact on how these courses are taught. Prior research has examined such factors as gender (Lipe, 1989), class size (Baldwin, 1993; Hill, 1998), race (Carpenter et al., 1993), student expectation (Silvestri, 1990) and timing of the classes (Vruwink and Otto, 1987).

In this study the authors are first going to examine any effects that the timing of classes might have on student success in introductory accounting classes. To date, only limited research (Vruwink and Otto, 1987) has considered what affect, if any, the timing of classes has on student performance. The results of the 1987 study indicated that the timing of classes had no effect on student performance. However, the authors feel that these results might be questioned, in part, because different exams were given to the morning and afternoon classes. Also, due to the age of this research, the authors believe it might be beneficial to revisit this topic.

The authors will also examine the effects of class size on student success. Previous studies have had mixed results regarding the effect that class size has on student success (Laughlin, 1976; Baldwin, 1993; Hill, 1998). The authors of the present study revisit this topic using smaller classes sizes for both 'larger' classes and 'smaller' classes.

The dependent variable used in this study is students' final grades in the second introductory accounting course. At many schools this course is often called Principles of Managerial Accounting or Principles of Accounting 2.

## **HYPOTHESIS DEVELOPMENT**

The purpose of this study is to examine what effects, if any, class size and the timing of scheduled classes have on student success in the second introductory accounting classes. Student success is defined as students' final grades in the course.

Discussions with other professors teaching this course and the authors' own experiences lead to the expectation that students taking earlier classes will have significantly higher success in the course than students taking the class later in the day.

Thus, the first hypothesis is as follows:

H1: Students taking the second introductory accounting course earlier in the day will have a significantly higher success rate, as measured by students' final grades, than students taking the class later in the day.

As stated, the second part of this study is to examine the effects of class size on student performance. The authors believe, again based on personal experience and discussions with other professors, that class size will have an effect on student success. In this study, we are examining what would be considered medium-sized classes to small classes at larger schools.

The second hypothesis is as follows:

H2: Students taking the second introductory accounting courses with smaller student enrollment will have a significantly higher success rate, as measured by students' final grades, than students in classes with larger student enrollments.

## RESEARCH DESIGN AND RESULTS

The authors used data from a single professor's managerial accounting sections collected over a period of eleven years (2003-2013). The population consisted of 105 sections of Principles of Managerial Accounting classes taught by one professor at one school. The sample was made up of 34 sections of that course. Each of the observations is a section of managerial accounting. The dependent variable is GPA, which is the section's grade point average on a 4.0 scale. The explanatory variable of interest is class time (TIME). For this particular professor the class times varied from 8:00 AM to 12:00 PM. Variables were used to control for class size (SIZE), for spring/fall semester (SEMESTER), and a secular trend variable (YEAR) was used. The authors coded the spring semester as 0 and the fall semester as 1. The data is summarized in Table 1.

Though some of the measures do not have meaningful interpretations, such as the standard deviation of YEAR, they were reported for uniformity.

The authors used OLS regression to estimate the relationship between GPA and TIME, including the control variables. It was expected that the coefficient of TIME would be negative, based on the authors' prior experience. It may be the case that later in the day students are less focused. In addition, it may be the case that those who take early classes are more dedicated students. The authors expect the coefficient of SIZE to be negative--that is, smaller classes have higher GPAs. This prior is weak based on previous research (Laughlin, 1976; Baldwin, 1993; Hill, 1998). The authors do not expect a significant SEMESTER effect or YEAR trend, but include those variables to remove any confounding effects of which we are not aware. The results of our OLS regression are contained in Table 2.

The results indicate that there is no statistically significant relationship between the TIME a section is offered and how well the students in the section perform. The point estimate is positive, but is substantively tiny, further indicating that time of day does not affect student performance. There was also no significant relationship between student performance and any of the control variables.

The R Squared indicates that the model explained only 12.4% of the variation in a section's GPA. Individual student characteristics likely explain most of the variation in GPA. The low F statistic indicates that, jointly, we found no statistically significant relationship between the explanatory variables and GPA.

## LIMITATIONS AND FUTURE RESEARCH

There are four limitations of this pilot study that should be addressed. First, as stated earlier, the sample only took into account 34 sections of Principles of Managerial Accounting classes while the population consisted of 105 sections. The class average of each section was used for analysis in this study. A larger sample size would increase the validity of the study. Additionally, future research might benefit by looking at the performance of individual students and not class average data. Second, this study only looked at classes that ranged in starting times of 8:00 AM to 12:00 PM. Future research could also look at afternoon and evening classes. Third, this study only collected data from one professor teaching at one school. Future studies in this area might want to collect data from several instructors teaching at different schools. This might allow for more generalizability of the results. Fourth, this study did not control for other factors such as race and gender. Previous research has shown that these factors, as well as others,

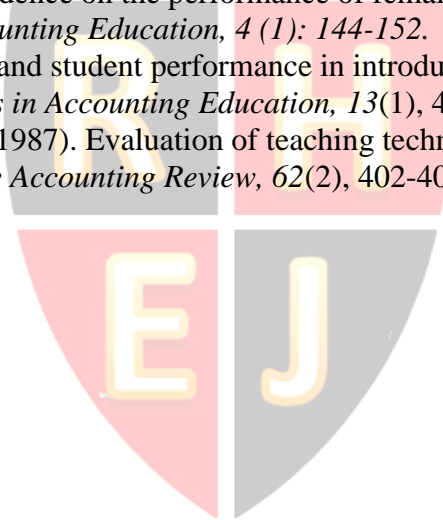
can have a significant effect on student success in accounting classes. Further analysis might be well served by taking into account these other factors.

## CONCLUSION

The purpose of this pilot study is to examine the effects of the timing of classes and class size on student performance in introductory accounting courses. The results supported neither of the hypotheses proposed in the study. The results indicated that neither class size nor the timing of classes had a statistically significant effect on student's final grades.

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**APPENDIX**

Table 1

Variable	Mean	Std Dev	Min	Max
GPA	2.47	.279	2.02	3.13
TIME	9.23	1.23	8	12
SIZE	31.97	11.6	11	61
SEMESTER	.44	.50	0	1
YEAR	2008.2	2.83	2003	2013

Table 2

Variable	Coefficient	P Value
Constant	-50.894	0.209
TIME	0.0099	0.811
SIZE	-0.006	0.274
SEMESTER	-0.123	0.323
YEAR	0.027	0.186
R Squared	0.124	
F statistic	0.352	0.410

