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Is Learning Impacted By How Often a Class Meets? Some Empirical Evidence

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I. INTRODUCTION

As educators we share a common desire to understand how various attributes either hinder or enhance our students abilities to learn. The literature is rich with studies that have reported on different instructional approaches and teaching methods. However, few studies have examined the empirical question of whether student learning is affected by the frequency of class meetings. This study explores this issue. Specifically, will students perform better in a class that meets three-days-a-week versus a class that meets for the same amount of time but just two-days-a-week? What kind of setting provides the better learning environment? Does the frequency of how often a class meets really matter?

Class scheduling is a highly relevant issue for the curriculum and to the teaching of accounting. On a personal level, I was motivated to conduct this study because of a message I received from our provost office suggesting that faculty needed to be offering more three-day-a-week classes. The author of the message, an associate provost, responded to an ongoing faculty discussion on teaching schedules. He offered his opinion that he thought students in principles classes learned better with three-day-a-week schedules. He further asserted that, “if we really cared about students” we should adjust our teaching schedules to offer fewer two-days-a-week classes.

The frequency of class meetings and whether it affects students’ learning is a topic that should have broad appeal to accounting educators. I have been unable to find studies in the accounting literature have examined the issue of whether the frequency of class scheduling results in learning performance differences. Only a few studies outside of the accounting literature have addressed this topic.

I have found work that exists on class scheduling in the disciplines of economics and finance. In economics, Van Scyoc and Gleason (1993) found that students taking a 3-week summer course in economics scored better on a standardized exam than those taking the regular 14-week course. However, this study did not control for important explanatory variables that could contribute to performance discrepancies and, of course, it did not address the issue of whether the frequency of class meetings made a difference during the regular semester.

In finance, Henebry (1997) did examine performances during the regular semester and she collected a decade’s worth of data on course grades and non-passing grades in a junior-level finance course. Students in her study period had three scheduling options available to them: a once-a-week class (2 hours and 40 minutes), two-day-a-week classes (75 minutes), and three-day-a-week classes (50 minutes). She found no evidence that scheduling made any difference that students in the once-a-week class performed at a lower level. However, Henebry’s (1997) did not control for instructor-effects. She acknowledges that adjunct faculty and non-tenured instructors taught a higher proportion of the once-a-week classes and three-day-a-week classes than tenure-track faculty. Consequently, her findings could be influenced by the quality of the faculty teaching those courses. Furthermore, there was no control for student differences. Again, the observed results could have been driven by differences in prior academic aptitude, gender, or even the differences inherent in being a nontraditional student. In summary, the limited research supports the position that class meeting frequency has little impact on students’ performances except in highly condensed setting (e.g., classes held once a week or accelerated summer class).

II. METHOD

If our students, the MTV-generation, the generation with a higher number of attention deficient disorders, have shorter attention spans then maybe a three-days-a-week schedule would facilitate learning by providing students with blocks of information in shorter segments. Students would have the opportunity to review unclear material, reread the book, or ask for additional help before new material is covered. In this study, I focused on turning only one “research dial,” that being class frequency, and controlled other factors. I taught two sections of a first course in accounting at a major southwest university. One class met for fifty minutes on a Monday/Wednesday/Friday schedule while the other class met only on a Monday/Wednesday schedule for seventy-five minutes. Both classes were offered in the same semester, covered the same material, used the same textbook, and of course, were taught by the same instructor. The only difference was that material was customized to fit the schedule taught: either three-days-a-week (treatment) or a two-days-a-week (control).

The hypotheses, stated in the alternative form, are as follows:

- H₁:** Students in three-day-a-week classes will outperform students in two-day-a-week classes in total points earned in the course.
- H₂:** Students in three-day-a-week classes will outperform students in two-day-a-week classes in points earned on a common objective section of the final examination.
- H₃:** Students in three-day-a-week classes will outperform students in two-day-a-week classes in points earned on a common essay section of the final examination.

A. Confounding Variables

A significant predictor of a student’s performance in a course is a student’s prior academic aptitude. The education literature shows that academic aptitude, as measured by cumulative college grade point averages, is a strong predictor of expected success in a course (Hill 1998, Danko et al. 1992, Park and Kerr 1990, Borg et al. 1989). Consequently, GPA was the first control variable that I added to the model.

A second factor added to the model was whether a student was a nontraditional student. A student’s grade history may not be a good predictor of performance for nontraditional students. Wooten (1998) criticized accounting researchers for often ignoring nontraditional students. Nontraditional students returning back to school often have completely different levels of motivation than what they had in their earlier college days. Too often students are treated as a single homogenous population yet universities today are seeing a large increase in their population of nontraditional students. In his research, Wooten (1998, 370) found that “differences between traditional and nontraditional students support the fact that students cannot be considered one homogeneous group.”

Traditional versus nontraditional student populations are often divided by an arbitrary age criteria. For example, Wooten (1998) considered students over the age of 25 to be nontraditional and then coded the groups with a 1/0 dichotomous variable. The method I used was to obtain students’ birth dates from official student records and then calculated students’ age. Students’ actual age, expressed as a function of months, was entered into the model.

Finally, gender has been often been debated by educators to be an important factor in explaining student performances even though the findings have been inconsistent (Buckless et al. 1998, Ravenscroft and Buckless 1992). Ravenscroft and Buckless (1992) explain the divergent research findings may be a function of the instructor’s grading policy. Specifically, they found that when there was a small percentage weight assigned to homework (i.e., 5%), no difference in course grades was found between female and male students. However, where a larger average percentage weight was assigned to homework (i.e., 11%) female students were found to have higher course grades than their male counterparts, even though their final exam scores were statistically equivalent. Since I assigned eight percent to homework I decided to err on the safe side and add gender as a controlling variable.

In summary, the model to test the hypotheses is specified as:

$$\text{PERFORM} = b_0 + b_1\text{CLASS} + b_2\text{GPA} + b_3\text{AGE} + b_4\text{GENDER} + e$$

Where:

- PERFORM = points earned (grade);
- CLASS = experimental indicator variable (1 = three-day-a-week classes 0 = two-day-a-week classes);
- GPA = Cumulative grade point average;
- AGE = age of student (expressed in months);
- GENDER = indicator variable (1 = female, 0 = male);

The model regresses students' performance (dependent variable) as a function of the frequency of class schedules (independent variable) along with three controlling attributes. Grade point average, age, and gender were entered into the model as controlling factors.

III. RESULTS

The subjects were 83 students, of which 34 students were enrolled in the two-day-a-week evening class and 49 students were enrolled in the three-day-a-week morning class. The average age was twenty-two, the mean GPA was 2.8, and fifty-five percent of the students were male.

Panel A of Table 1 shows students performance on a common final multiple-choice objective exam. The students' academic history and age were significant predictor variables of performance. However, the frequency of class meetings made no difference in student performance.

Ingram and Howard (1998) argue that higher-order learning skills are difficult to assess with objective testing methods. Consequently I provided an essay question on the final exam as a test of reasoning and critical-thinking skills. The essay question required judgment on the part of the students in deriving an answer that was not purely factual or procedural. Appendix A illustrates the question. Panel B of Table 1 shows the results of the essay question.

Table 1
Regression Analyses: Students' Scores as a Function of
Class, Age, GPA, and Gender

Panel A: Final exam score (objective questions)

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	8100	2024.97	5.64	0.01
Error	78	27991	358.86		
Corrected Total	82	36091			

Adjusted R² = .18

Variable	DF	Parameter Estimate	Standard Error	t value	Pr > t
Class	1	1.02	4.51	0.23	0.82
Age	1	0.11	0.05	2.08	0.04
GPA	1	13.95	3.16	4.42	0.01
Gender	1	3.85	4.29	0.90	0.37

Panel B: Final exam score (essay question)

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	30	7.53	2.00	0.10
Error	77	290	3.76		
Corrected Total	81	320			

Adjusted $R^2 = .05$

Variable	DF	Parameter Estimate	Standard Error	t value	Pr > t
Class	1	0.28	0.471	0.62	0.53
Age	1	0.01	0.01	1.03	0.31
GPA	1	0.69	0.32	2.15	0.04
Gender	1	0.82	.44	1.84	0.07

Panel C: Total points earned in the class

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	106994	26748	18.59	0.01
Error	78	112252	1439		
Corrected Total	82	219245			

Adjusted $R^2 = .46$

Variable	DF	Parameter Estimate	Standard Error	t value	Pr > t
Class	1	-2.57	9.03	-0.29	0.78
Age	1	0.31	0.11	2.99	0.01
GPA	1	52.37	6.32	8.28	0.01
Gender	1	6.50	8.59	0.76	0.45

One student response was deleted from the data set because she left the essay question blank. Panel B shows that only the students' academic history, as measured by their college's GPA, was a significant variable. Finally, Panel C of Table 1 shows total points earned in the class. The regression model was significant with a relatively high adjusted R-square ($R^2 = .46$). Age of the students and grade point averages were significant variables.

IV. CONCLUDING REMARKS AND SUGGESTIONS FOR FUTURE RESEARCH

In summary, the results show that class-meeting frequency has little impact on students' performances. Students did not perform better in a class that met three-days-a-week versus a class that met for the same amount of time but just two-days-a-week. Consequently, the argument that "if we really cared about students" we should adjust our teaching schedules to offer fewer two-days-a-week classes is not supported by this study.

This work examined data from only one instructor and only one type of class (Principles of Accounting – Financial). Future research needs to examine whether there would be an observable discrepancy in student learning with a different instructor or a different course (e.g. managerial, auditing, etc.). While there may be many pragmatic reasons for offering courses on a three-days-a-week schedule, such as efficient use of plant facilities and offering a greater menu of choices to students, no evidence indicates that learning is enhanced over a traditional two-day-a-week schedule.

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