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AUTHOR Paradiso, James
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ABSTRACT

A study was conducted at College of Lake County (Illinois) in spring 1993 to assess the impact of instructor role-modeling among students enrolled in an Introduction to Business course. The course included a three-part Stock Market Project (SMP) accounting for 32% of students' final grade. Among a course section of control group students, the teacher utilized the same instructional approach that had been used in the past for the SMP; i.e., distributing instructions, explaining the assignment, and answering questions. For the experimental course section, the instructor completed the same written assignments required of students and placed these reports on reserve in the Learning Resource Center. In addition, the instructor made oral presentations to the experimental group the week before SMP assignments were due. Both groups of students had the option of completing extra-credit oral reports. Study results included the following: (1) 22% of the experimental group completed the first extra credit assignment, compared to 8% of the control group; 24% of the experimental group and 9% of the control group did the second assignment; and 21% of the experimental group and 19% of the control group completed the third assignment; (2) between the two groups, statistically significant differences were found on 54% of the questions completed by students' on the instructor evaluation forms; (3) the experimental group suffered an attrition rate almost twice that of the control group; and (4) though the difference was not statistically significant, the control group performed better than the experimental group on final exam questions relevant to the SMP. A discussion of differences in student characteristics among the two groups that may account for the study outcomes. Contains 11 references. (PAA)

All's Ill That Ends Ill?

The Effectiveness of Role Modeling as an Instructional Strategy in Business Management Education

James Paradiso

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All's Ill That Ends Ill?: The Effectiveness of Role Modeling as an Instructional Strategy in Business Management Education

What do college courses in physics, photography, and conversational french; advanced ceramics, automotive technology, and architectural graphics; finite math, applied music, and basic metallurgy have in common?

Here's a clue to my working answer. What the above courses share is precisely what is critical to accounting, office technology, and data processing instruction but missing from management, supervision, and strategic planning among other courses in business management programs on college campuses across the U.S.

During the fall semester of 1992, I received release time to plan, coordinate, and assess a Great Teachers seminar series for full-time faculty at the College of Lake County. As I listened to the presenters, all recipients of Outstanding Faculty Awards, I detected a common instructional strategy which they shared across disciplines: role modeling, demonstration, and coaching. In particular, each presenter talked about the importance of telling students what was important and teaching them strategies for remembering it. In other words, they said that how we teach is as important as what we teach.

Curiosity-bitten, I set out for the Learning Resource Center (LCR).

My inexhaustive search of ERIC, PsycLIT and Reader's Guide CD-ROM programs found articles about the contribution of modeling to math self-sufficiency among male Japanese undergraduates (Matsui, Matsui, and Ohnishi, 1990), the importance of

experiential learning in a university psychology course (Swain, 1991), the influence of behavior modeling among adults in the acquisition of computer software skills (Gist, 1988), the use of demonstrations to bring agricultural training to black adults in rural areas (Wall and Noland, 1990), and the effectiveness of teacher involvement in music education (LeBlanc, 1992). I found only one article, however, illustrating an integrative approach to business education - my teaching discipline -by combining interpersonal and problem-solving skills with behavior modeling films and case studies, to insure higher levels of learning of both practical and theoretical issues related to real business situations (Cochran and Gibson, 1984).

So, during the spring semester of 1993, I modified a stock market project (SMP), which accompanied my trusty business text (Lockman, 1993), designing an experiment for students in two sections of my Introduction to Business course (BUS 121) as part of their Business Management curriculum. Students in both sections received the same 3-part SMP, accounting for 145 points or about 32% of their final grade in the course. I designated one section the experimental group and the other the control group. I treated the control group as I've treated thousands of business students for the last thirteen years: distributing instructions, explaining the assignment, and answering questions. I treated the experimental group differently, promising that I would do the written assignments with them, make oral presentations in class the week before their assignments were due, and put my written reports on reserve in the LCR.

SMP's first part, due in four weeks and accounting for 23 points, included a list of two stocks, two bonds, and two mutual funds as well as a letter to each company's president asking for the annual report. The second part of the SMP, due during the tenth week and accounting for 53 points, included a fifteen day trading record of sales volume, high, low, close, and net change for the stocks; sales volume, current yield, volume, close, and net change for the bonds; and net asset value, offer price,

and net asset value change for the mutual funds. A line graph for the stock's closing price, the bond's closing percentage, and mutual fund's closing net asset value over the 15-day trading period were also required. SMP's third part, due during the fourteenth week and accounting for 69 points, included refined trading records for the six companies plus statistical information, refined graphs, recent developments, prospects, and students' personal appraisal of three companies. Recent articles about the three companies were encouraged, and a bibliography was required. Also, I offered all students the opportunity to make oral presentations for extra credit, administered an evaluation after each of the three parts, and included 20 questions about stocks, bonds, and mutual funds on the final exam.

Exhibit 1 is the quantitative/qualitative evaluation, based on my Business Division's standard Student Evaluation of Instruction Form, which students completed after each part of the SMP. Tables 1, 2, and 3 show the results of the first, second, and third quantitative evaluations. (SA=4, A=3, D=2, and SD=1.)

I made several seemingly-common-sense assumptions about students' performance on SMP's three parts and the final exam such as:

1) A greater percentage of students in the experimental group would do the extra credit oral presentation. (After all, I modeled it!)

2) Most students in the experimental group would check out my written reports on reserve in the LRC. (Aceing the reports would be as easy as painting by the numbers. Right?)

3) The experimental group would receive a higher mean grade than the control group on each part of the SMP.

4) The experimental group would receive a higher mean grade than the control group on relevant final exam questions .

Similarly, I assumed that the experimental group would evaluate each part of the SMP more favorably than the control group, especially my role in the project.

My first assumption about the extra credit oral presentations was my best. While the gap between the two groups narrowed over time, 22% of the experimental group (v. 8%) did the extra credit for the first report , 24% (v. 9%) did the second, and 21% (v. 19%) accepted the Extra Credit Challenge the third time. My assumption about the experimental group's eagerness to study my report was wrong most of the time. Only 29% of students reviewed the first report, while the second and third reports were reviewed by 47% and 79% of the students, respectively. My third assumption about performance bombed. Both groups' mean grade on each of the three parts was 80% or better, but the difference in the mean grades on each part was not statistically significant. My final assumption about the experimental group's performance on the final exam was dead wrong. The control group's mean grade on relevant final exam questions was actually higher (82%) than the experimental group's mean score (74%), although the mean differential was not statistically significant.

My assumptions about students' quantitative evaluations were a little better. Over the three evaluations, the difference in the mean responses to 54% (7/13) of the questions was statistically significant. In fact, the response to the first question about the assignment's relevance to the course was statistically significant twice, and the response to third question about the value of the assignment for test purposes was statistically significant all three times. Ironically, the control group repeatedly devalued the assignments' currency for test purposes and, then, outperformed the experimental group on the final exam.

The results of the qualitative evaluations were surprising. For example, the control group's response to the third question, what it liked about my role in the stock

market project, was much more positive that I expected from students I felt I had treated inequitably:

"It was explained very well. If you didn't understand, he would explain again until you did."

"Very creative, precise, and if not certain would say so. Welcomed feedback and suggestions."

" He answered questions quickly and in detail."

"He gave us plenty of time. Answered all questions when needed. Was always there if you needed him."

"He let us know exactly what he wanted."

"Explained things in detail. Told us where to look for things."

While the control group's response to the fourth question, what it disliked about my role, was generally "nothing," one student's response perfectly echoed my feelings about my role: "Talked way too much about it. But got across only basic understanding about requirements."

What the experimental group liked about my role was less disarming:

"He took us through it step by step."

"I loved the fact that my instructor did the SMP with us and anticipated many of our questions."

"Did the reports along with us and knew what problems we could expect along the way."

"He is doing the project and explaining difficulties he had that we might encounter."

"He does each step with us and makes mistakes just like we do."

"He did all the work first, so he knew how much work we were going through and found out for us where all or most of the 'snags' were."

"He served as a guide through the whole thing."

"He makes learning fun."

> ""I like that you did the work too, and know how much time it took and that you let us know <u>your</u> problems and showed us how the finished product <u>should</u> look."

While the experimental group generally disliked "nothing" about my role, one student disliked my role because "He knew what was going on, and we had no excuses," and three students (10ish%) inferred diminishing returns that never occurred to this absent-minded professor:

> "His is always perfect, and mine is not."
> "That we should be equal to him. He thinks his is perfect, and ours should be just like his. We don't have the time he does to do it."
> "He set the perfect example, and its always hard to follow perfection. But, without anything to follow, it would have been harder to complete the SMP."

As usual, I grossly underestimated the amount of time I spent on the SMP (When a colleague heard that I stopped counting after 30 hours and wrote 50+ pages including a 30 entry bibliography, he said that non-tenured faculty might be more interested.), but I also enjoyed several unexpected byproducts. For example, since I planned the experiment 7 months ago, I've developed a craving for everything about improving instructional effectiveness and efficiency, especially about the relative effectiveness of role modeling, demonstration, and imitation or observational learning. I've begun to research cognitive science, discovering previously alien instructional strategies such as reciprocal teaching and Brahmans such as Palincsar and Brown (1984, 1986, and 1987). My interaction with colleagues within and outside of my department, division, and college - with anyone anywhere who directly or indirectly shares my research interest - has increased dramatically. For example, I found material in the LRC that wasn't cataloged, and worked with LRC staff to learn arcane parts of the S&P CD-ROM program. After a 20 year absence, I've rejoined the Association for Supervision and Curriculum Development (an organization I belonged to during the early 1970s

as an educational program planner for a Fortune 500 publisher), look forward to attending professional conferences focusing on pertinent research, and have re-read relevant works (Fiske, 1991).

In spite of SMP's past and future benefits to my students and to me, one aspect of the project still haunts me. Although the control and experimental groups did well on all the assignments, why didn't the experimental group do significantally better than the control group? Why did the control group do better, though not significantly better, than the experimental group on relevant final exam questions?

Although both groups were enrolled in BUS 121, they differed in at least 5 respects and differed significantly in at least two:

1. The control group had a higher percentage (66%) of women than the experimental group (47%).
2. Prior to taking BUS 121, the average number of college courses completed by the control group (12.0) was greater than the average number of college courses (7.4) which the experimental group finished.
3 Prior to taking BUS 121, the average number of college business courses completed by the control group (0.78)) was greater than the average number of college business courses (0.58) which the experimental group finished.
4. The control group's average age (32.8 years) was significantly higher than the experimental group's (20.7 years).
5. The control group's average years of full-time (35 hours/week) work experience (12.6) were significantly higher than the experimental group's (1.9).

Also, I met with both groups for 16 weeks, but saw the control group for three hours once a week (Saturday) and the experimental group for 50 minutes three times a week (Monday, Wednesday, and Friday). In other words, as one of my colleagues, who teaches statistics advised me, my data were contaminated.

It's my understanding that Henry Ford forgot to put a reverse gear in his first automobile and that Edison said, "I know thousands of things that don't work, I've learned a great deal." Well, I forgot to do more than a few things during my first role modeling experiment and I know many things about it that don't work, so I guess I've learned something, too.

A final byproduct of my role modeling experiment was receiving a grant from my college's Professional Growth Center to repeat the SMP during the fall of 1993 and to share its results with faculty and administrators during orientation week in the spring of 1994.

My first experiment didn't end as well as I expected (Did you induce from Tables 1-3 that the experimental group, which I treated or perhaps tricked, suffered an attrition rate almost twice the control group's?), but I plan to fine-tune the SMP following the suggestions of concerned students and colleagues (For example, students in both the control and experimental groups criticized the commercially prepared instructions.) and to select more homogeneous control and experimental groups when I repeat the SMP during the fall semester.

James Paradiso is a professor in the Business Management Department and former coordinator of the Professional Growth Center of the College of Lake County in Grayslake, Illinois.

Stock Market Project (SMP)
Evaluation # _____
Class Hour _____

Instructions: For each statement below, indicate the extent to which you agree with the statement by circling SA if you strongly agree, A if you agree, D if you disagree, and SD if you strongly disagree.

Remember: This questionnaire pertains only to the stock market project (SMP) and not to any other part of the course.

1. The SMP is related to this course.	SA	A	D	SD
2. The SMP helped me to understand the material in the textbook.	SA	A	D	SD
3. The SMP will help me to do well on the tests.	SA	A	D	SD
4. I had sufficient opportunity in class to ask questions about the SMP.	SA	A	D	SD
5. I had sufficient opportunity outside of class to ask questions about the SMP.	SA	A	D	SD
6. My instructor explained the instructions for the SMP.	SA	A	D	SD
7. My instructor returned the SMP within a reasonable amount of time.	SA	A	D	SD
8. My instructor used a variety of techniques and related examples to answer my questions about the SMP.	SA	A	D	SD
9. The SMP was well planned.	SA	A	D	SD
10. My instructor communicated how the SMP would be graded.	SA	A	D	SD
11. My instructor has a good working knowledge of stocks, bonds, and mutual funds.	SA	A	D	SD
12. My instructor communicated the importance of the SMP to my final grade.	SA	A	D	SD
13. The SMP should be a part of this course.	SA	A	D	SD

(OVER)

Instructions: Please respond to each of the questions.

1. What did you like about the stock market project (SMP)?

2. What did you dislike about the SMP?

3. What did you like about your instructor's role in the SMP?

4. What did you dislike about your instructor's role in the SMP?

5. What changes do you think would improve the SMP?

6. What changes do you think would improve your instructor's role in the SMP?

(OVER)

TABLE 1

	CONTROL GROUP (n = 37)		EXPERIMENTAL GROUP (n = 51)		
	M[1]	STD[2]	M	STD	T-Stat[3]
Q.1	3.3548	0.55066	3.4348	0.54374	- 0.629
Q.2	2.8065	0.65418	2.6957	0.75629	0.665
Q.3	2.4194	0.67202	2.9778	0.54309	-3.996***
Q.4	3.5161	0.56985	3.6957	0.46522	-1.516
Q.5	2.9677	0.65746	3.2889	0.69486	-2.024*
Q.6	3.4194	0.76482	3.4783	0.69087	-0.351
Q.7	3.6452	0.48637	3.7609	0.43127	-1.097
Q.8	3.2258	0.61696	3.3478	0.52567	-0.931
Q.9	3.1290	0.61870	3.2667	0.61791	-0.954
Q.10	3.0000	0.85635	3.1957	0.77802	-1.039
Q.11	3.3871	0.49514	3.5000	0.50553	-0.969
Q.12	3.4194	0.56416	3.6222	0.53466	-1.589
Q.13	3.1000	0.71197	3.3261	0.59831	-1.493
GRADE(%)	82.054	10.244	80.682	10.996	0.508

[1] Mean

[2] Standard Deviation

[3] Pooled estimate of sigma

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

TABLE 2

	CONTROL GROUP (n = 33)		EXPERIMENTAL GROUP (n = 45)		
	M[1]	STD[2]	M	STD	T-Stat[3]
Q.1	3.2000	0.55086	3.5476	0.55005	-2.642*
Q.2	2.4167	0.61705	2.8333	0.72974	-2.543*
Q.3	2.0667	0.52083	2.7317	0.70797	-4.352***
Q.4	3.7097	0.46141	3.8333	0.53723	-1.031
Q.5	3.3226	0.70176	3.4524	0.67000	-0.802
Q.6	3.4516	0.62390	3.6190	0.62283	-1.134
Q.7	3.7097	0.46141	3.8333	0.37720	-1.259
Q.8	3.3548	0.66073	3.3810	0.62283	-0.173
Q.9	2.9677	0.60464	3.0000	0.66259	-0.213
Q.10	3.1935	0.60107	3.5238	0.55163	-2.434*
Q.11	3.6129	0.49514	3.6905	0.46790	-0.683
Q.12	3.4516	0.56796	3.6667	0.52576	-1.670
Q.13	2.9355	0.81386	3.3095	0.71527	-2.083*
GRADE(%)	88.303	9.9765	85.200	13.175	1.135

[1] Mean
[2] Standard Deviation
[3] Pooled estimate of sigma
* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$

TABLE 3

	CONTROL GROUP (n = 31)		EXPERIMENTAL GROUP (n = 35)		
	M[1]	STD[2]	M	STD	T-Stat[3]
Q.1	3.1774	0.49242	3.4857	0.50709	-2.499*
Q.2	2.8226	0.78047	3.0571	0.68354	-1.302
Q.3	2.4677	0.71805	2.9857	0.71214	-2.938**
Q.4	3.3710	0.54723	3.6429	0.47853	-2.154*
Q.5	3.2258	0.71692	3.2571	0.61083	-0.192
Q.6	3.4032	0.58337	3.5714	0.50210	-1.259
Q.7	3.4839	0.50800	3.5429	0.50543	-0.472
Q.8	3.2581	0.57548	3.3429	0.59125	-0.589
Q.9	2.7581	0.66922	2.8571	0.77242	-0.553
Q.10	3.2581	0.63075	3.4286	0.50210	-1.221
Q.11	3.4839	0.50800	3.5143	0.50709	-0.243
Q.12	3.5161	0.56985	3.6571	0.53922	-1.032
Q.13	2.9355	0.81386	3.2286	0.77024	-1.502
GRADE(%)	81.065	11.969	82.553	11.820	-0.517

[1] Mean

[2] Standard Deviation

[3] Pooled estimate of sigma

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

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