Title: The Influence of a Pre-reading Strategy on College Exam Scores: An Action Study.

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Publication date: March 8, 2010

The Influence of a Pre-reading Strategy on College Exam Scores: An Action Study

Would a pre-reading strategy help students score better on examinations in educational research class? Would it help them adjust to a professor's test-writing style quickly so they could concentrate more on the content of the examination?

Introduction:

One of us was assigned to a graduate level Educational Research course that he had taught for a decade and a half, but had not taught recently for about five years. He still had all the handouts etc., but some of the informal ways of doing things had gotten a little rusty from lack of use.

Previously, this teacher had allowed employed a pre-reading strategy for the class session before the first exam of the course was given. Students are at a disadvantage on the first exam in any professor's course: They have not yet had an experience with the instructor's test-writing style. Furthermore, they are expected to adjust the instructor's writing style in the midst of a high-stakes assessment, namely the first exam! In an attempt to ameliorate this problem, Educational Research students were allowed to pre-read the first exam during the class period before they were to take it. The pre-reading was done with pencils down, no photographic equipment to be used, no recording devices, and no talking to one's neighbor.

In the last few semesters, the teacher had taught the course, students had seemed indifferent to this opportunity, so the pre-reading strategy had been quietly discontinued. So when asked to teach this introductory research course again, the teacher quietly decided not to re-instate the pre-reading routine. Students came in, took the Scantron cards, and received the exam booklets. Their eyes got big, and they began to work. The instructor did not know that his quiet omission would cost the students a letter grade and a half on their first exam.

The mean score on the first exam was a 69.53, which in a graduate setting is nothing to ignore. The exam reliability as calculated by KR20 also was lower than the teacher was used to seeing reported. It was .67, and he was accustomed to writing at least in the .80s. The mean of this class was 15 points below the usual mean of 84, making this class look as if they might be at the 8^{th} percentile by comparison to earlier classes. The teacher could not remember any class beginning the semester with under 80 as an average on the first score. Block and Anderson (1975) have suggested that satisfactory progress in learning would be exemplified by students answering questions correctly at a level of 80%. Sixty-nine was a long way from that mark.

Most teachers have some information about the situations they face in their classrooms as well. If the problems we face are very big problems, we typically add to that *a priori*

knowledge by reviewing what the professional literature has had to say about it. He also remembered that he did not let this class preview the first exam before they took it, which he thought could be an explanation. In previous semesters, the customary review was a five-minute, pencils-down-and-no-talking-to-your-neighbor-viewing of the exam, strictly enforced by the stopwatch. The teacher re-considered that possibly those five-minute viewings that he once did served as a motivational tool for those 30 + classes of the past. Maybe that seemingly simple procedure *had* made a bigger difference in the past than he had given it credit.

The exam data yielded a printout that revealed some other things as well. There were apparently no miss-keyed items, but five looked like untaught items during the item analysis. The group did not appear to have marked differences from previous groups. Although by the letter of the law this teacher could have taken those grades, he decided to do an intervention. The teacher felt like both he and the students were struggling against some unseen complication.

Methodology:

The first decision in the intervention was to suspend judgment on the exam scores. This was reinforced by the realization that the admissions standards for graduate school had not changed during the five years that he had been away from this course. The problem had to be something else. Suspended judgment and skepticism are among the scientific attitudes that experienced researchers cultivate. It is good common ground for researchers and practitioners alike.

The teacher went to the class the following Monday night and instructed the students on the five items that were untaught. He gave them an hour to review their notes and other materials. He then told them they would be taking an alternate form of the same exam. (After having taught a course for fifteen years, teachers tend to have several alternate exams on hand.) Then the students took the exam again with the same amount of time to finish. The alternate exam was from the same item pool as the first one.

Results:

Another datum on the second exam: There was an increase in KR21 reliability of 0.815, and the item analysis showed no return items of any kind on the second exam. These were indicators that the second exam was a valid measure for the course objectives. Results from the two exams are shown in Table 1.

Table 1

Results of Independent T Test for Fall 2009 Research Class

Item	Score 1 (pre-test)	Score2 (what became our post-test)
N	18	18
Mean	69.922	88.883
Std. deviation	10.245	7.146
Difference in means	18.961 points	
t-value	11.227	
Significance, One-tailed	0.0001	

The T test was an indication that after the dismal performance on the first exam, there was less than one chance out of ten thousand that this group would have been able to score almost an 89 on the second administration without the occurrence of an intervention. There are 9,999 chances out of 10,000 that the intervention made a difference. What seemed like a small intervention made a difference of two letter grades on these 18 students' first experience with research. It may make a bigger difference in their attitudes and values towards scientific research in their coming professional lives. Also, the reduction in standard deviation showed that fewer students varied below the mean.

After seeing improvement with this graduate level research class, the instructor used the pre-reading strategy for the spring semester to verify the success of the methodology. The mean for the spring semester, with the use of the pre-reading strategy, on the first exam was once again an 84. The comparison of the first exam of fall 2009 and the first exam (with pre-reading) of spring 2010 showed a difference of 15 points, a letter and a half grade. During this time, there were no changes in admissions requirements for graduate students. The first exam each class took was identical.

Table 2

Results of Independent T Test for Spring 2010 Research Class

Item	Score 1 (fall 2009)	Score2 (spring 2010)
N	18	14
Mean	69.922	84.142
Std. deviation	10.245	6.757
Difference in means	14.22	
t-value	-4.715	
Significance, One-tailed	0.00002	

The scores with the pre-reading strategy for the exam were higher with the group in the spring by 14 points. These differences are statistically significant and show that the odds of the fall group having averaged as high as the spring one (84.142) were only 2 out of a million if due to chance; the odds that the difference was due to the pre-reading strategy were 999,998.

Conclusions:

Students' likelihood for doing anything covert because of the opportunity of pre-reading the exam were limited because they had to have their desks cleaned before being given the test. They were handed the exam one student at a time, and every exam was collected from each student one at a time after the pre-reading was ended. There were multiple forms of the exam, so students might be given an alternate form of the exam they had previewed.

Therefore, we ask ourselves: What do students gain from five minutes of looking at an exam of fifty or more objective items, with pencils down, no talking, and no photography? Not memorization—they cannot memorize many items in five minutes. Rather, what after asking the students what they determined to be the benefit, they said they gained:

- An understanding of the instructor's test-writing style in a low-stakes environment
- Some idea of the length of the test
- A feel for the degree of specificity of the exam
- A feel for the amount of detail expected on the exam

Recommendations:

In a world where we have to check *Response To Intervention* in the spirit of the *No Child Left Behind Act*, various applications of this research methodology arise to help solve a teacher's basic desire and need for student success. Should this teacher return to his practice of letting graduate students see the first exam for five minutes the class period before they take the exam for real? Is that procedure of any benefit to the students? Findings suggest that perhaps a pre-reading strategy is of benefit to students and should be utilized for continued student success. Further, results from duplicate research in other subject areas and various academic levels utilizing this strategy are recommended.

References:

Block, J.H. & Anderson, L.W. (1975). *Mastery Learning in Classroom Instruction.* New York: Macmillan Publishing Co.

Abstract:

(Purpose) This study attempted to determine the effectiveness of an exam pre-reading strategy. (**Methodology)** It is an action research study that arose from a need in a particular class. A graduate class' scores on the first exam of the semester were unusually low. An instructor implemented a pre-reading strategy to determine if the scores would improve. The strategy in question involved using a review method that allows students to read their exam in a class session prior to taking it. The study involved comparing scores from student's exam scores who had not had this strategy and students who had utilized the pre-reading strategy. **(Results)** Results demonstrated an increase in mean scores on the exam. Next, the instructor implemented the same strategy for the same class during a following semester to determine if similar findings would occur. All exams were given under test-secure conditions. In both cases discussed in the study, mean scores on the exams increased for students utilizing the strategy. **(Conclusions)** In this setting, pre-reading strategies enabled candidates to perform better on exams, therefore the pre-reading strategy has been re-instituted. **(Recommendations)** 1. Continue with pre-reading strategy at this university and with these courses. 2. Encourage additional research with other university faculty to determine if this technique will also enable their students to perform better on examinations. **(Additional data)** Contains two tables.