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Daily practice tests over assigned reading followed immediately by class discussion can improve learning and grades.

Using Practice Tests on a Regular Basis to Improve Student Learning

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Our seven-thousand-student campus is located near a major metropolitan area. Most students are nontraditional: they are older, employed, married commuters. Often they are the first generation in their families to attend college. Classes are upper level, so students have had at least two years of college-level experience. Nevertheless, they are anxious about grades and interested in guidance to improve learning.

Five years ago, faculty members began visiting each other's classes at midterm and asking students how courses were going (Snooks, Neeley, and Williamson, 2004). Clearly, students worried most about examinations, specifically, about what was going to be tested from reading assignments. Their response to "What would improve your learning?" was for faculty members to explicitly say what was important in readings. Students commented, "There is so much material to read and study, it is difficult to know what is important." Such statements surfaced regardless of the course or major. The most alarmed students faced one comprehensive examination that determined their entire grade.

Research shows that anxiety interferes with learning and performance. Nontraditional college students report being stressed by classes, jobs, and families. Grade anxiety tops their list of school-related stressors. The damaging effects of stress on physical, social, and emotional health are well documented. Anxiety disorders, including fears and phobias, often lead to avoidance behaviors such as dropping out of school. Many faculty members report nearly palpable distress and hostility when examinations and papers are returned to students. Anxiety can negatively affect academic performance in other ways. A study of medical students' stress by Kiecolt-Glaser,

Malarkey, Cacioppo, and Glaser (1994) documented reduced immune system competence with more infectious diseases among students following exams. Illness and absences further compound academic problems.

Development and Rationale for Using Practice Tests

Using practice tests was an effort to improve student learning and grades. An additional hope was to reduce student anxiety. The use of practice tests followed several other classroom innovations, including providing students with questions about reading assignments. Professors often complain that their students do not read texts. Providing chapter questions seemed one way to inform students about important points made in textbooks, points that would not be covered in class. Learning and grades were still disappointing, so using practice tests on a regular basis was initiated.

The pathway to students' benefiting from practice tests partially relates to self-efficacy theory, or the belief that one can successfully perform behaviors to achieve desired outcomes. The behavior is learning course material; the desired outcome is better grades. If students frequently took practice tests, they would learn more, self-efficacy would increase, test anxiety would be reduced, immune systems might benefit, and grades would improve. This logic also relates to stress-inoculation theory, whereby persons exposed to small doses of a frightening experience eventually experience less fear and anxiety.

The idea of using practice tests to facilitate student learning is intuitively appealing because for decades students have studied old exams. It seems logical that familiarity with various kinds of test items will improve learning. Students believe that practice tests are a beneficial review strategy (Kulik, Kulik, and Bangert, 1984). Thorne (2000) found that using extra-credit pop quizzes encouraged preparation for class. A study of computerized practice tests found a positive relationship between the number of practice exams taken and course grades, even when previous SAT scores were controlled (Gretes and Green, 2000). More than 90 percent of students reported that practice tests helped them study for "real" examinations.

Practice Test Routine

The routine, based on the research, includes short practice tests over reading assignments taken at the beginning of each class. Students first take the test alone. They then compare answers and discuss questions with neighbors. Finally, as a whole class, all questions are discussed, including what is the "best" answer and why it is superior to other answers. This process promotes critical-thinking, question-analysis, and test-taking skills that carry over to other classes and to life in general because people must answer written questions for job interviews, medical visits, credit applications, and so forth.

Practice tests are nonthreatening; all students get credit. Paramount is stimulating students to think and talk about important issues in addition to reading about them. The class discussions of practice tests often reveal student misunderstandings of issues in assigned readings. Records of practice tests substitute for roll calling, so more students come to class on time. The entire process takes about ten minutes. Knowledge increases, and skills are developed through immediate instructor feedback on each question.

For practice tests to be effective, faculty members must be clear about course objectives, including what is important in reading assignments. Textbooks, reading assignments, chapter questions, and practice tests should explicitly reflect course objectives, as should exam questions. Practice test questions must be academically sound, authentic, and important. This is not to be confused with drilling or teaching tests. Questions are similar in format and style to those used on examinations.

Benefits of Regular Practice Tests

There are benefits to practice tests in addition to encouraging students to come to class on time. Most important are increases in learning and students making better grades. This occurs for several reasons. First, knowledge and skills increase simply because students practice demonstrating knowledge and skills. Practice tests reinforce instructors' expectations related to reading assignments because students start with guiding questions about each chapter. Students are relieved to be given this direction.

Students also become familiar with different question formats. Sometimes practice questions check knowledge; other times they test for concept application. Furthermore, students receive immediate feedback on their knowledge so that they can better focus their studying. Test anxiety is reduced. Self-efficacy is increased. On a daily basis, students wrestle with questions covering knowledge and skills. By the time a real examination rolls around, students are eager to show what they know.

The student-instructor relationship also improves. The palpable hostility perceived on returning graded work has disappeared. Now, in going over examinations, a student may ask why "c" is the correct answer. Fellow students promptly explain why "c" is best and why other responses are not as good. Grades and testing often make students feel adversarial toward instructors who they describe as "tricky." With daily practice tests, students see instructors as guides pointing them in the right direction for learning. The instructor is no longer an obstacle to better grades. The entire class becomes oriented to learning.

Students take practice tests alone and then compare ideas with neighbors, so practice tests become collaborative activities. Students give and receive information daily. They talk about ideas in support of their thinking. Finally, discussing practice test answers, as a whole class, encourages more discussion. Rather than being embarrassed about their "ignorance,"

students feel safe saying, “We thought X was a better answer because ____.” Learning reflects cultural, social, and individual experiences. Coming together as a whole class allows the consideration of issues from many different perspectives.

Evidence of Effectiveness

Enhanced student learning demonstrated through grade improvement is one measure of effectiveness of teaching innovations. Class records over three years show that practice tests improve students’ grades. The more practice tests taken, the more likely students are to earn higher course grades. The reverse is also true: the fewer practice tests taken, the more likely a lower final grade. One might argue that practice tests merely measure attendance rather than increases in students’ learning, but if an innovation encourages attendance, it is beneficial.

Student observations can also be used to evaluate teaching innovations. On course evaluations, students rank practice tests as “very helpful.” By themselves, reading assignments are least likely to be ranked helpful. Anonymous end-of-semester responses to “What aspects of this course worked best for you?” always include “practice tests.” Dropout rates and student end-of-course evaluations are additional effectiveness measures. Dropout rates are less than 1 percent. This year, the median student evaluation score was 4.9 out of 5.0.

Conclusion

When faced with poor academic performance, many instructors may believe that student demographics are the cause. This opinion is hardly helpful because faculty members can rarely influence characteristics of enrolled students. What can be controlled is the learning environment. Regular practice tests, as described here, focus attention on vital course content, promote reassurance about recent learning, and increase satisfaction with educational experiences. Any instructor disappointed with students’ progress might consider using regular practice tests, followed immediately by whole-class discussions with instructor feedback.

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