

THE CAT VIEWPOINT

(Center for Academic Transformation)

Offering perspectives on issues and developments at the nexus of higher education and information technology

Freshmen Don't Do Optional

In their 1987 *Seven Principles for Good Practice in Undergraduate Education*, Arthur W. Chickering and Zelda F. Gamson note, "Time plus energy equals learning. There is no substitute for time on task. Learning to use one's time well is critical for students and professionals alike. Students need help in learning effective time management. Allocating realistic amounts of time means effective learning for students and effective teaching for faculty."

Wouldn't it be great if all students wanted to study and were able to spend sufficient time on task in all of their courses to master the course content? Despite the assumption of most academics that students need to spend two hours studying outside of class for every hour spent in class, national surveys have repeatedly shown that the number of students who actually do so is somewhere between 5 and 7%. Approximately 57% spend half of that amount, and 35% spend about one-third of that amount.

Even though we know that time on task is essential to effective learning, it is difficult for faculty members in traditional formats unaided by technology to ascertain how much time on task each student is actually spending and to take corrective action. In contrast, most software packages have excellent tracking features, allowing faculty to monitor students' time on task and intervene when they are falling behind.

It is not surprising that all of NCAT's course redesign projects have seen a strong, direct correlation between student success and time on task. While most of the projects have added greater flexibility in the times and places of student engagement with the course, this does not mean that the redesigned courses are "self-paced." Each has discovered that students need structure (especially first-year students and especially in disciplines that may be required rather than chosen) and that most students simply will not make it in a totally self-paced environment.

What are some of the lessons that we have learned about getting students to spend enough time on task?

Lesson 1. If you know that engaging in a particular learning activity will result in increased learning, you must *require* students to participate in it.

Almost every one of NCAT's math redesigns uses some form of the emporium model originally developed at Virginia Tech. Students work in a lab setting using instructional software and receive assistance on demand. Labs are open for extended hours, and students can go to the lab when it fits their schedules. What most institutions have discovered, however, is that mandatory attendance in the lab—albeit on the student's own schedule—is necessary to ensure that students spent sufficient time on task.

The Universities of Alabama and Idaho require students to spend a minimum of 3.5 hours and 2.5 hours respectively per week in the lab. In addition, both universities require students to attend weekly group meetings. Alabama students are required to attend a thirty-minute session, which focuses on students' problems and allows instructors to follow up in areas where testing has identified weaknesses. Idaho students are assigned to focus groups of 40 to 50 students each, grouped according to their majors so that particular applications can be emphasized. Groups meet once a week to coordinate activities and discuss experiences and expectations. Both universities believe that the group activities help build community among students and between students and instructors.

What happens when you do not require attendance? Several projects learned a lesson the hard way. At first, Riverside Community College faculty expected students to come to math labs voluntarily without the need for a requirement. This was not successful, and students are now required to participate in math lab activities for two hours per week. After some initial experiences, Iowa State also added mandatory attendance at computer lab sessions, which counts for a small part of the course grade. The original redesign plan from Northern Arizona University (NAU) envisaged a program where students would be "self-taught" using the software. During the proposal review process, NCAT staff talked with the NAU team about the need to "beware of self-pacing" and stressed the importance of providing sufficient structure for students within a well-articulated set of requirements. Despite these admonitions, NAU students were only required to go to the computer lab for the first three weeks of the semester. After that, attendance was not required, and students were on their own. The result was increased drops and withdrawals. The team eventually decided to require student attendance throughout the semester for any student not making a grade of A.

Lesson 2. It's not enough to require participation--you must give course points for doing so.

Many redesign projects have found that supplementing classroom experience with mastery quizzes leads to increased learning *if* they require student participation, *if* they give points for doing so, and *if* they count only the highest grade. At the University of New Mexico (UNM), general psychology students receive credit for completing three online mastery quizzes, which test both factual and conceptual knowledge, each week. Students are encouraged to take the

quizzes as many times as need until they attain a perfect score. For all quizzes, only the highest scores count. The more time students spend taking quizzes and the higher their scores, the better they perform on in-class exams.

To determine whether quizzes that were mandatory (i.e., required for course credit) or voluntary (no course credit) would differentially affect exam and grade performance, UNM faculty conducted an experiment. Students in one section received course points for completing weekly online mastery quizzes; students in the other section were encouraged to take the mastery quizzes, but received no course points for doing so. On in-class exams, students who were required to complete quizzes for credit always outperformed students in the section where taking quizzes was voluntary. Students took more quizzes, scored higher, and spent longer on quizzes when course credit was at stake than students in the section where quizzes were not linked to credit. Moreover, relatively few students successfully completed quizzes when credit was not a consequence, and some students chose not to take quizzes at all.

At Florida Gulf Coast University (FGCU), the redesign of its introductory fine arts course has produced improved student performance on standardized exams. The FGCU team attributes this improved student performance directly to students taking required practice tests. In the course redesign pilot, practice tests only counted as part of students' participation grade. Because of this, students needed to take the practice tests no more than once--regardless of how they scored--to get full credit. After hearing UNM describe its point system, FGCU changed its strategy. In the full implementation of the redesign, each course activity that the students must complete is assigned a point value. Each practice test includes 10 questions worth two points each, and the practice tests receive their own grade. The grade that is recorded is the highest score. Students now take the assignments more seriously, banking their points as they progress through the semester. Students take the practice tests repeatedly, with some students taking them as many as 25 times. Those students who take the practice tests three or more times regularly score A's on the module exams.

Lesson 3: It's not enough to require participation and to give points for doing so—you must also monitor whether students are engaged and be prepared to intervene if they are not.

Despite requiring participation, despite giving points for doing so, some students are slow to become engaged in course activities, getting too far behind to catch up. Worse yet, some students never begin. Our redesign projects have found that developing early alert intervention strategies to get these students involved will lead to increased student success. Some have established a kind of "class management by exception" process, whereby baseline performance standards are set and those who fall too far behind are contacted. At UNM, students who score 75% or less on the first exam at the end of the third week are required to attend a weekly 50-minute studio for the remainder of the semester. Those

students who were advised to attend a studio but failed to do so typically failed the course. In contrast, the more studios a student attends, the better their course performance.

Rio Salado College's initial redesign of its introductory algebra sequence added a course assistant to monitor students' progress. If the course assistant identified a student who appeared to be falling behind schedule, he/she immediately contacted the instructor. The assistant also telephoned or emailed students who had not been online for more than seven days or had not had correspondence within the last 14 days. The original intent of this innovation was to reduce the workload for course instructors and allow them to focus on providing academic help when needed. What began as a single course assistant assigned to four math courses has now become an institutional office supporting all online courses. Assistants call students during the first two weeks to be sure that they have successfully accessed the course, have received their texts and are moving forward. If a student has poor grades or has not submitted work, the assistants contact him/her to help make a connection to the various kinds of help that is available.

In analyzing data from its spring 2005 redesign pilot, Eastern Washington University (EWU) discovered that students who failed the course did not participate in scheduled learning activities (e.g., they did not take online mastery quizzes.) Approximately 90% of students passed the course *if* they participated in taking online quizzes in each of the first three weeks. An analysis of what EWU calls "non-participating students" (roughly 30% of the course enrollment) revealed that 50% of students who did not log on for a mastery quiz during the first week failed the course. In response to these findings, EWU has developed a scaffolding procedure to provide non-participating students with support, solutions and motivation to succeed. Students who do not log on in the first week are required to attend a workshop to determine the nature of their problem and to be sure that they understand how to use the technology. Students who do not log on during the second week are referred to their academic advisors for counseling. Students who do not log on by the third week are told that they will receive a failing grade if they miss another week without taking a quiz. They are asked to sign a contract agreeing to complete all remaining mastery quizzes. Breaking the contract by missing a fourth week results in their failing the course. The escalating scaffolding procedures have reduced the number of non-participating students from 30% to approximately 3%.

Another innovative strategy is to recognize that some students simply need more time to succeed. After carefully monitoring student progress, Seton Hall University discovered that some students in their developmental math sequence were working but working more slowly than others. Seton Hall decided to implement three progress tracks for students: fast, regular and gentle. If students are failing the course after the second chapter test, they are encouraged to sign a learning contract, which states that they will work through the course material in

two semesters instead of one (the gentle track.) As a result of this innovation, 12 students are currently attending a class which covers the second half of the material in the subsequent term. A few students working on the fast track have finished the course before the end of the semester. They enjoyed having extra time to focus on their other courses at the end of the term when the workload is the heaviest.

A New Philosophy for Higher Education

These strategies represent a 180-degree turn from traditional sink-or-swim philosophies of student learning that get expressed in phrases like “either you get it or you don’t” and “look to the right and to the left--one of you will be missing by the end of the semester.” NCAT’s premise is that our society cannot afford these outdated, out-to-lunch views of higher education. The innovative institutions involved in NCAT’s course redesign programs are showing us ways to ensure that our students succeed because they are spending enough time on task. Why aren’t all institutions following their lead?

--Carol A. Twigg