

Test early, test often, and always cumulative.

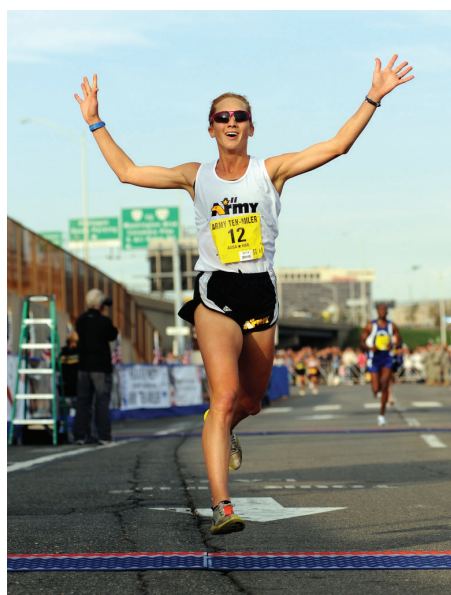
There are powerful alternatives to final exams including final projects and final presentations, but if you're set on giving a final exam, consider making it comprehensive. Further, consider frequent cumulative benchmark quizzes as part of your students' practice regimen.

When it comes to marathon running, it has often been said that the race is really about the last few miles. "I ran great for the first 18 miles, but my time really fell off toward the finish." No. The race IS the last few miles. The marathon is a long challenge requiring deep and substantial practice in order to attain mastery. So it can be with our designed learning experiences.

One of the most common questions heard on campus regarding "the final" is whether or not it will be comprehensive. When we reveal that the final is not comprehensive, there is frequently an audible sigh of relief. Well, it turns out that sigh of student relief is also likely the deflation of our hoped-for student learning outcomes.

A cumulative final exam forces students to review all of the content you have covered in the course, and that process alone enhances learning (Kihlstrom, 2014). Additionally, this provides a great opportunity for students to make connections and synthesize material across the entire scope of the course from beginning to the end.

As your students are practicing and preparing for that large final summative assessment, you may find daily



smaller workouts an effective way to engage and challenge them. In a recent study by Jamie Pennebaker and some colleagues from the University of Texas (Pennebaker et al., 2013), two sections of an introduction to psychology course were subjected to different testing

regimes. In one, each day began with a short "benchmark" quiz consisting of a few items related to the assigned daily reading, and one item addressing material from previous assignments, as well as a traditional midterm and final exam. The other section had no daily benchmarks and instead were given only a traditional midterm and final exam. Students in the benchmark section outperformed the other section significantly, performed better in their other classes and demonstrated lasting improvements over the subsequent semester! Academic achievement improvements were particularly strong for lower socio-economic-situation students.

There are, of course, some complicating aspects of this study related to the effect; undoubtedly the daily quizzes positively affected attendance and enforced strong study habits. If we were trying to determine the positive effects of the "testing effect" alone we would need a few more research design controls to see how much of the boost in performance was merely due to increased attendance and stronger study habits (Kihlstrom, 2014). For our purposes on the front lines however, these distinctions are less than critical. Our interests can be limited to strong learning outcomes and the details of the mechanisms of attainment can follow.

Does daily benchmark testing sound onerous? Perhaps some of those daily quizzes can be simplified or facilitated using modern classroom tools. If you are interested but stumped, contact your friendly UAF eLearning instructional designer for ideas. It is also fine if daily benchmark testing isn't your thing. Meanwhile, take another look at your intended student outcomes. Consider making your final exam comprehensive and asking your students to go the distance.

REFERENCES

Kihlstrom, J. F. (2014). How students learn and how we can help them. University of California Berkeley, Retrieved March 2, 2016, from http://socrates.berkeley.edu/~kihlstrm/GSI_2011.htm

Pennebaker, J.W., Gosling, S.D., & Ferrell, J.D. (2013). Daily online testing in large classes: Boosting college performance while reducing achievement gaps. *PLoS One*, 8(11): e79774.