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We have witnessed many shifts in education over the past 20 years; some have resulted in positive, measurable outcomes for students while others have fizzled like the bubbles in a soda can. With the advent of the national Common Core curriculum coming to fruition for many states, we are faced with reinvention once again. This time the shift comes in the form of an assessment-driven system set to determine student achievement and teacher effectiveness. Although this flies in the face of what many educators feel the learning process embodies, when the dust settles, we are left with the reality of an educational system rooted in testing. Teachers are left to examine their daily instruction through a data-driven lens, even if the data gleaned fails to tell the whole story about student learning and growth. While this presents myriad challenges and evokes a great deal of emotion from stakeholders, there is no question that assisting students with performing well on tests must be addressed. There are many approaches and opinions about how to help them perform well on tests. While some key points cannot be overlooked in developing an effective test-preparation system, sometimes we find the best method right under our noses.

During the fall of the 2010–11 school year, high school juniors and seniors were busy preparing for their weekly medical terminology test in their Health Technology/Medical Science course at the Bay-Arenac ISD Career Center in Bay City, Michigan. Veteran teacher Amy Dore reminded them to study their carefully crafted flashcards, to eat a good breakfast laden with protein and to take a deep breath to relieve anxiety in preparation for that week’s assessment. While the advice was solid, students still performed poorly on these assessments. This article relates how Dore turned the tide in her class.

**Examining Student Performance**

Students in the Health Technology/Medical Science class have the opportunity to earn college credit if they receive a minimum of an 80 percent average on all medical terminology tests during the school year. The course content is information that is essential in understanding the language of the health field. Most students in this class are planning to go on to college to pursue a career in the health field, so the articulated college credit for the medical terminology course creates a relevant connection between school and college, as well as school and work.

The class incorporated direct instruction in test-taking strategies that had been reinforced and recommended by top educational institutions for years. Careful incorporation of these tactics still did not...
To start, it was important to “deconstruct” the assessment, looking at all components from content to format to method of administration. Medical terminology tests are basically vocabulary and morphology tests dealing with meanings of word parts without context. That alone added an additional layer of difficulty.

The Health Technology/Medical Science course is designed to replicate the college experience as much as possible. With that, Dore set up her tests in an online format using Moodle, an open-source course management system, as the method of delivery. Students were able to test and receive their grades immediately, receiving instant feedback. Students found that the immediacy of results received via Moodle was a huge plus in helping them to increase their confidence in understanding the content, as well as with feeling adequately prepared for the actual test.

Healthy Technology/Medical Science students need both technical and academic skills in order to be college- and career-ready.

Knowledge Into Practice

The instant feedback Moodle provided, coupled with a delivery system that meshed with the use of technology, resulted in a more relevant testing experience for students. Adding the online practice tests as a test-preparation tool resulted in a pedagogical shift for Dore, but it was one she was willing to make for the benefit of her students. Over the course of the next several months, Dore agreed to construct online practice tests of the content students were to be assessed on each week, utilizing Moodle as the delivery system since that was how students were already being assessed. Students could retake the practice test for each unit as many times as they wished, receiving feedback in the form of a grade and items identified as being incorrect. Students then knew exactly what they needed to review. As part of this project, Dore did not require students to take the practice tests, which ultimately yield the results Dore had expected, as the percentage of students earning the college credit decreased. During the 2010–11 school year, only 28 percent of Dore’s class met the requirements to receive college credit. The following year, that percentage increased to 46 percent after incorporating prescriptive test-taking strategies into daily lessons.

Understanding the knowledge base and skill level that her students must possess just to be eligible to be in this highly academic class, Dore believed that the percentage of students attaining that 80 percent target should be higher. When students started off with poor test scores at the start of the 2012–13 school year, she felt she needed to take another look at her approach. She worked with the school’s teacher consultant and curriculum supervisor to try to identify additional strategies to boost scores, and most importantly, understanding of the material.
provided her with a control group with which to compare data.

Dore was careful to ensure that the integrity of her actual assessment was not compromised through the practice tests. To remedy that potential issue, she compiled tests that covered the content, but not in the exact manner as they would receive it on test day. Vocabulary requires a great deal of repetition and practice to master, so this provided students with that opportunity, plus feedback regarding what they needed to continue to study.

The Results

Dore recorded every student’s practice test score (if they took one), as well as their actual test score for each unit. She set up a spreadsheet so that she could view the scores side by side to quickly identify trends. What she noticed was that many students who did not score 80 percent or higher on the actual medical terminology exams did not take the practice tests. As Dore looked at the data from each test, she became more and more convinced of the validity of this approach and incorporated these practice tests into the remainder of her medical terminology assessments for the school year, providing her with data from 10 out of her 18 exams. When the numbers were crunched, the data showed that 72 percent of the students who did not take the practice tests scored below 80 percent, and in many cases, well below. Eighty-nine percent of the students who took advantage of the practice test opportunities scored above the requisite 80 percent.

At the end of the 2012–13 school year, she was able to recommend 57 percent of her students for college credit, an increase of 11 percent from the previous school year and a whopping 29 percent from the year before. Another trend that was noted showed that as the school year went on, more students took advantage of the practice test opportunity.

The Significance

Students have been asked throughout their education to study material in preparation for tests. The question that all too often comes to mind is, “Has anyone ever taught students how to study?” As educators, it is often assumed, and even expected, that kids know how to study. As Dore was reminded, teachers should never assume anything!

A question often asked of students is, “What exactly do you do to study for tests?” A common response from many students is a variation on looking over notes and rereading textbooks. The problem with that method of studying is that it gives students a false sense of security regarding knowledge they actually have and that which they must spend a little more time acquiring.

A common method for studying vocabulary is to create flashcards that have the term, or in this case, word part, on one side and the meaning on the other. This self-checking method has been around for many years and can be quite effective for some students. However, it can also be very misleading. Students may believe they know the information on the flashcards, but when they test, they do poorly, as was the case for many students in Dore’s classroom. It becomes almost too repetitive, as the terms are so familiar that students feel they know them when in fact they do not. The other issue this presents is that some students memorize the terms as written and cannot translate that information when presented in a different format on the test.

With the online practice tests, students are tested on the material in a similar way to what they would encounter on the actual test. Dore was sure to vary her format to ensure that students were actually learning the word parts versus merely memorizing them. Students also received instant feedback once the quiz was complete. Moodle scored the tests for students and identified the incorrect items, giving students concrete content to go back and study. Students could take the practice tests an unlimited number of times, which reportedly made them feel more secure in their knowledge and more prepared for the actual test, as well as reduced the level...
of anxiety felt in relationship to testing. Over half the students in Dore’s class indicated at the start of the school year that they felt they had test-taking anxiety. Numerous practices to reduce that feeling were provided to students to help them overcome their belief that they would do poorly on any test they took. With the addition of the online practice tests, students reported reduced anxiety levels and increased testing confidence.

When Online Options Are Not Available
The components that made these findings significant were the replication of the testing method, the practice test opportunities and most important, the immediate feedback. These pieces could easily fit into another format and should mirror what is common practice in your own classroom to be effective. For example, if students were asked to answer multiple choice questions on paper/pencil tests, then teachers could ask them to record their answers on a recording sheet, such as a Scranton, and subsequently feed them through a scanner that will correct the tests to allow for instant feedback. If that is not possible, a system could be devised whereby students could check their own practice tests in order to receive instant feedback. There are many possibilities for translating these practices into any classroom structure.

The belief that practice testing actually improves retention of tested material is not a novel one. Henry L. Roediger III at Washington University in St. Louis, Missouri, believes, “Incorporating more frequent classroom testing into a course may improve students’ learning and promote retention of materials long after a course has ended.”

Dunlosky et al. concur with the conclusion that practice tests deliver the content and replicate the scenario that students will encounter in an actual testing situation, thus making them feel more ready for the actual assessment. When putting these theories into practice in a real classroom situation, the results speak for themselves: Practice tests with instant feedback provide students with a realistic assessment of how well they know the material they will be tested on.

Other Test-taking Strategies
There are volumes of articles and tip sheets designed to help students perform better on tests through the teaching of specific test-taking strategies. Many of these practices genuinely help students perform better, so do not throw the proverbial baby out with the bathwater. Adding a practice test option with instant feedback has proven to be a very effective strategy in addressing student achievement on Dore’s medical terminology tests, but other strategies may be needed in order to fully address the needs of all learners. For example, Dore continues to reinforce other test-taking strategies, such as effective ways to use flashcards, strategies for reducing anxiety and time management planning techniques in her classroom, as they have served students well.

Making It Work in an Era of High-stakes Testing
As part of federal legislation for career and technical education (CTE), eligible students in CTE classes, such as Dore’s, are required to take a high-stakes summative proficiency exam, leading to a credential or industry-recognized certification. Dore’s students must take the National Health Science Assessment, which is divided into several subcategories of essential information. Practice tests with a similar number of testing items delivered in an online format (Moodle) to replicate the online feeling of the exam were created for students, using vendor-recommended study materials. The utilization of this method as a test-preparation tool helped students’ overall exam scores surpass the set cut score and yield improvements in overall class averages. With the implementation of the online practice tests, average scores increased from 76.36 percent during the 2011–12 school year to 81.7 percent during the 2012–13 school year. This practice was also implemented in several other health programs at the Career Center, to include the school’s Law Enforcement/Criminal Justice program, yielding similar achievement scores on these required exams. This suggests that this strategy can be effectively generalized to any type of testing situation if key pieces—practice tests that replicate the testing situation and format, and most importantly, immediate feedback—are put into place.

As with everything in education, arming yourself with an arsenal of strategies that could potentially assist a wide variety of student needs is imperative to overall achievement. As teachers well know, finding what works best for each student and watching it actually work is extremely rewarding. When the incorporation of a strategy generates the type of results that were seen in this example, it is worth implementing.

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ENDNOTES

References