

# Hanlon's Razor

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Never attribute to malice that which can be adequately explained by stupidity

*What works is work!*

## Addressing High Failure Rates

What's your solution for having high failure rates? All too often, there is no solution cited by classroom teachers – only blame assigned to their students for not studying. Always remember – ignore the excuse and attack the problem!

There are things that can be done to decrease the failure rate and increase student achievement that are under a teacher's control. Let's work backwards and find solutions to help students be more successful on tests. For instance, research suggests administering tests on Mondays tends to lower grades. If teachers give tests on Mondays or after long weekends – stop it! Also, if you have test scheduled for Thursday and you know the students are not ready for it by Monday or Tuesday, re-schedule the test for a later date and use the original test date to start on the next unit. There's no sense giving students a test when you know they aren't ready. Test anxiety is a problem that many students face in varying degrees, that anxiety on tests can be decreased by teachers hand writing their tests. Research suggests that when this occurs, students believe the tests were made for them based on what the teacher taught rather than a publishers' test.

Since teacher-made tests are criterion referenced, students should know what items will be assessed on any given test. Do students receive a specification sheet or practice test to assist them in preparing for the unit or semester exam? I would recommend creating parallel constructed practice tests. That is, if question # 17 is on factoring on the practice test, then #17 is on factoring on the real test. If question #11 is on the top of the second page, then #11 on the real test is also located on the top of the second page. This transparency leads to credibility, which over time leads to trust.

Do tests regularly contain questions on vocabulary, notation, procedures, and concept development and linkage? The research is clear, if students can not verbalize their knowledge, they probably don't have it. If students know the procedure for adding fractions or solving quadratic equations using the Zero Product Property, then the probability of them adding fractions or solving quadratic equations correctly on the test will increase dramatically. Language acquisition is important to success in any subject, by having those types of questions on the tests, teachers will know students are learning, acquiring language, and the answers to those questions will also help students compute or solve equations on the remainder of the test.

As mathematicians, we preach to the students about checking their work, is there enough time allotted for the tests so students can complete the test and then go back and check

their work? If not, shorten the test so students have the time needed to be successful – finishing a test is not a race.

In preparation for the test, did you teach the students to differentiate between problems? Students learn five methods of factoring in a first year algebra class, the students learn how to factor using the Distributive Property, then they move on to the Difference of Two Squares. As they are being taught these individually, the students tend to get it. Factoring trinomials is next by Linear Combination and Trial & Error. Students tend to experience a little difficulty with Trial & Error, and have more difficulty with factoring by Grouping. The sad part of this is that students can factor polynomials if they were tested individually on each method, but they get confused when they appear all on one test. While they were taught and learned each method, many students were not taught to differentiate between them, which means they get them mixed up when tested on the five methods at one time. What is taught often effects student learning and achievement.

This example can be used for other topics. Working with integers is a good example. The students can add positives to positives, negative to negatives, positive and negatives, but when teachers throw in subtraction and multiplication and division all in one test without making sure their students can differentiate between the problems, then the students end up with the problem – failure.

Have you talked to your students about test taking strategies; reading the entire test first, checking the questions that the students are sure they know how to do and doing them first rather than doing the questions sequentially? Have you suggested they download information on the back of their test or on a scrap piece of paper at the very beginning of a testing period so they don't forget important formulas, theorems, or procedures because of the pressure they are experiencing during a test?

Were the students prepped for the test or was it just given after the last section in the chapter was covered? Did homework assignments align and support the material taught in class and questions asked on the test? Were the notes student took in class aligned with the instruction and homework assignments with the goal of assisting students in preparing for the unit test? Research suggests that “writing it down” is the number one memory aid. Research also suggests that students improved their average test scores by having well-constructed notes that were directed by their teachers. Was concept development used in instruction so student might be able to reconstruct knowledge? Was linkage used in instruction to review and reinforce concepts and skills identified as weaknesses?

Rather than complain about the high failure rate and on issues not under your control, school administrators and teachers should concentrate on that they do control. All the before mentioned are common sense solutions to decreasing the failure rate that are backed in research. They also cost nothing to implement. As a school administrator, it would appear to be your job to make these recommendations/suggestions to your teachers and follow-up to ensure your students have the highest probability of succeeding.

