

## GRADING PHILOSOPHY

JOSHUA P. SWANSON, PH.D.

I generally use **difficult assessments** with **heavy curves**. This is at odds with prevailing culture at US institutions of higher learning, so I often have to defend my practice. The following are my reasons for doing so, along with some discussion of counterarguments and why I do not find them persuasive.

Arguments in favor of difficult assessments with heavy curves:

- A. Hard assessments give you plenty of leeway to properly curve and ensure consistency in final grades over time and across instructors. If you actually look at the statistics, left to their own devices, different instructors in practice give wildly different grades in what should be equivalent courses. I typically give final median GPAs that are right in the middle of the usual distribution, because I curve so intentionally with this goal in mind. This is a vastly healthier practice long-term and at scale. Students in particular often lack the perspective to appreciate the importance of this point.
- B. Easy assessments tend to result in grade inflation. In practice, even classes with pre-set scales say they might make it easier to get better grades to give themselves some leeway to properly curve. But if their assessments were simply too easy to begin with, students end up with higher grades than they should have gotten, resulting in grade inflation over time.
- C. High medians cut off the score distribution at the top end—it's obvious from the histogram. Hard assessments allow the distribution to roam free and result in higher quality statistics. They allow the top of the class to distinguish themselves and A+'s can actually mean something, which can be important when writing letters of recommendation.
- D. Hard assessments make students put in more effort. Our job as instructors is in large part to overcome the innate human tendency towards laziness and apathy. If students think the class is easy, they're more likely to blow it off.
- E. Hard assessments and hard homework give students a chance to grapple with "failure" in what is honestly a very safe environment. This is a critical problem-solving skill which can really only be taught by experience. Students desperately need to learn how to get back up after getting knocked down, when to persevere alone and when to seek help, and how to overcome obstacles. These are very individual skills that simply require practice.
- F. Difficult assessments encourage original thought and actual understanding, which emphasizes realistic qualities that are essential for mathematicians and that are highly valuable skills in the workforce.
- G. Setting high bars encourages students to grow. It's painful to grow, and we may kick and scream at the time, but it's extremely rewarding in the long term. Setting a low bar lets students slouch under it and waters down the meaning of everyone's degree.
- H. Realistic assessments show students where they honestly rate ability-wise. Many students are used to being pretty high on the academic totem pole in high school. However, in absolute terms when compared to working professionals, they are generally unskilled, even though they don't have the experience and perspective to know it. I firmly believe it's better to go through life with the truth in hand rather than a pretty picture of what we'd like reality to be. Getting a 50% on a calculus exam is a bucket of cold water in the face for many students. It's unpleasant, but ultimately for the best.

---

*Date:* December 24, 2020.

Arguments against difficult assessments with heavy curves:

1. Students find it stressful and it produces more anxiety.
2. It may foster an environment of competitiveness rather than cooperation.
3. It takes more effort to write demanding assessments than to recycle homework problems.
4. It lowers course evaluation scores.

Stress and anxiety are serious, and I am quite sympathetic to (1). I have had significant issues with panic attacks in my own life. Nonetheless, employers will not coddle employees, so neither should we coddle students as instructors. Indeed, college is a relatively safe space to learn how to handle overwhelming emotion constructively, since you typically have many chances to make improvements, be it through studying harder for the next exam, dropping the lowest assignment, retaking a class, switching majors, taking time off to deal with life, etc.

As for (2), I strongly encourage my students to work together in various ways to foster cooperation. Heavy curves alone do not at all necessitate cutthroat competition—that is a symptom of a broader, toxic culture. This has not been an issue in my own classes.

For (3), I have never been one to shy away from additional work if I genuinely feel it is worthwhile. The large number of reasons above outweigh this issue.

Finally, for (4), I have very little faith in the value of numerical course evaluations. They have glaring statistical flaws including huge selection biases, inconsistent collection techniques, and unscientific wording. They have been extensively studied in the education research literature as well, and a popular recent meta-analysis found they are *completely uncorrelated* with learning outcomes, once publication bias is properly accounted for [UWG17]. More broadly, course evaluations have been the subject of extensive criticism from many angles for decades, the most recent wave of which has uncovered gender and related biases. The broader academic community is slowly recognizing these flaws and, for instance, course evaluations are being phased out of promotion decisions at some institutions. (On the other hand, I find written feedback on course evaluations to be quite valuable and read every comment—I would prefer structured interviews to course evaluations.)

#### REFERENCES

- [UWG17] Bob Uttl, Carmela A. White, and Daniela Wong Gonzalez. Meta-analysis of faculty’s teaching effectiveness: Student evaluation of teaching ratings and student learning are not related. *Studies in Educational Evaluation*, 54:22 – 42, 2017. Evaluation of teaching: Challenges and promises.