

DATE: October 3, 2022
 TO:
 FROM: Nathan Witkin, Outside Innovation Institute
 RE: Fighting Grade Inflation by Conveying Grade Point *Variance* as Well as GPA

Executive Summary

Grade inflation is a growing problem in higher education and high school. It reduces the amount of information conveyed by a student’s academic performance, motivates students to avoid challenging classes, and removes incentives for students to exert effort in their coursework. This problem is caused by the evaluation of students only based on their individual grade averages and not also on the variance of grades within the courses they take.

This memo describes “Variance Grading,” a policy in which school transcripts include both the individual GPA and also the average GPA across the courses each student has taken. This will allow students who take difficult courses to stand out while identifying students whose high GPAs are the product of taking courses with lenient grading policies.

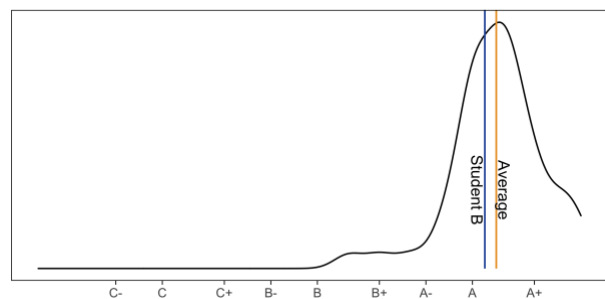
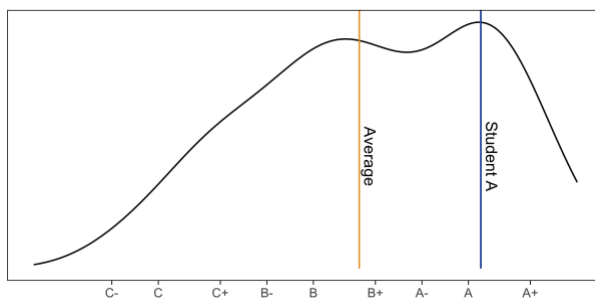
Variance Grading

Imagine two hypothetical students. Student A takes difficult courses and focuses their effort on classwork. Student B takes courses that tend to grade leniently and is therefore able to devote more time to building an impressive list of extracurricular activities. Below are their grades (bold and shaded) along with the ranked grades of their other nine classmates in each course.

	Student A (bold and shaded)									
Course 1	71	78	82	84	86	88	90	94	95	95
Course 2	76	81	83	84	86	87	88	91	92	99
Course 3	64	76	79	87	91	93	94	95	95	96
Course 4	63	72	81	82	83	84	87	94	95	98
Course 5	75	76	77	79	84	87	92	95	95	99

	Student B (bold and shaded)									
Course 6	89	93	93	93	94	95	95	96	97	98
Course 7	85	91	92	95	95	95	96	96	97	100
Course 8	93	93	93	94	94	95	96	98	99	99
Course 9	93	94	94	95	96	96	97	97	99	100
Course 10	87	91	92	92	93	93	94	95	95	95

The problem inherent in the above situation is **Student A and B have the same GPA (3.94)**, though Student A took more challenging courses and scored higher relative to other students.



As the above graphs illustrate, Student A and Student B would not be properly compared based on transcripts that only provide grades and a grade point average. Under a Variance Grading policy, their school would communicate the following information on each student:

Transcript: Student A		
GPA: 3.94	Course 1: A	CGP: 3.17
ACGP: 3.11	Course 2: A-	CGP: 3.17
GPSD: 0.86	Course 3: A	CGP: 3.23
	Course 4: A	CGP: 2.94
	Course 5: A	CGP: 3.06

Transcript: Student B		
GPA: 3.94	Course 6: A	CGP: 3.93
ACGP: 3.92	Course 7: A	CGP: 3.84
GPSD: 0.16	Course 8: A	CGP: 4.00
	Course 9: A	CGP: 4.00
	Course 10: A-	CGP: 3.84

In the above transcripts, academic performance is succinctly conveyed through individual grade point average (“GPA”), the average student grade point across each student’s courses (“ACGP”), and the average standard deviation measuring the variance across student grades in their courses (“GPSD”). Now, Student A can concisely convey the challenging nature of their coursework.

Combating Grade Inflation with Variance Grading

Research on grade inflation indicates that variance grading may be an effective solution to this problem. As academic performance becomes a larger component of life success, students face increasing pressure to demonstrate achievement in the classroom.¹ This growing pressure on students to achieve good grades then pushes them toward easier courses and away from majors known for harsh grading.² And because students are treated as the consumers of education services,³ their need for higher grades places pressure on professors through student evaluations,⁴ career advancement for lenient graders,⁵ and precarious teaching positions.⁶ Furthermore, as soon as one school gives higher overall grades, other schools must do the same so their alumni are not outcompeted on the job market and in selection to other academic programs.⁷ The result is a steady increase in top grades in colleges and high schools since the early 1980s.⁸

The problems with grade inflation are:

1. Higher expected grades have been linked to less time studying,⁹
2. Lack of variation in grades makes it difficult for employers, universities, and graduate schools to assess the relative value of students,¹⁰ and
3. Pressure for higher grades pushes more students away from hard sciences where the lack of subjectivity in grading slows down grade inflation.¹¹

As one educator noted about this crisis, “By rewarding mediocrity we discourage excellence.”¹²

Variance grading addresses these dynamics by providing incentives for students to take harder classes and rewarding professors for grading students based on their varying efforts and skills. Notably, this policy recognizes that grades are only one component of student achievement and should make students more comfortable with earning “B” grades by normalizing them.¹³

Thus, variance grading provides:

- Incentives for students to take challenging courses, even if they do not earn top grades,
- Cover for teachers to grade honestly with more flexibility than grading on a curve, and
- Better information on student aptitude for employers and school administrators.

Benefits of Variance Grading

- Easy to implement: Teachers already provide grades to all students in each class and would not need to change anything about their current practices. Variance grading only requires an administrator to do a simple spreadsheet calculation to add the mean and standard deviation within each class to each student's transcript.
- Easy to understand: Employers and admissions officers should be able to understand the relevance of comparing each student's grades to the average of their classmates' grades.
- Creates appropriate incentives: Variance grading rewards students and teachers for engaging in challenging coursework and for recognizing variation in student effort.
- Benefits schools that use it: Because variance grading allows employers and admissions officers to differentiate students who excel in the face of challenging coursework, schools that add this information to transcripts will have a competitive advantage in placing students at more prestigious positions. Furthermore, because variance grading schools encourage effort by both teachers and students, even students who do not attain above-average grades should still enjoy favorable treatment from employers and schools.
- Contagious to other institutions: As soon as one school provides the benefit of this additional information to employers and admissions officers, it will motivate competing institutions to provide this information as well. This effect should work to bring down the tendency toward grade inflation across the entire education system.

Conclusion

Variance grading rewards students and teachers for engaging in coursework that challenges all participants and identifies the students who truly excel and those who less committed to studying. However, this policy does not deny that grades are only one component of student achievement. While the intention behind lenient grading may be to reduce the prominence of grades in the assessment of student performance, it does not change the importance employers and school admissions officers place on grades. Rather than actually diminishing the importance of grades, lenient grading merely obfuscates the signals sent by grades and incentivizes students to chase perfection by taking courses that offer higher grades. By revealing the actual range of student performance, variance grading should help to improve these signals and incentives.

To learn more, visit www.outsideinnovation.org/variance-grading or email info@outsideinnovation.org.

¹ Halpern-Manners, A., Raymo, J. M., Warren, J. R., & Johnson, K. L. (2020). School performance and mortality: The mediating role of educational attainment and work and family trajectories across the life course. *Advances in Life Course Research, 46*, 100362.

² Sabot, R., & Wakeman-Linn, J. (1991). Grade inflation and course choice. *Journal of Economic Perspectives, 5*(1), 159-170.

³ Rojstaczer, S., & Healy, C. (2012). Where A is ordinary: The evolution of American college and university grading, 1940-2009. *Teachers College Record, 114*(7), 1-23.

⁴ Stroebe, W. (2016). Why good teaching evaluations may reward bad teaching: On grade inflation and other unintended consequences of student evaluations. *Perspectives on Psychological Science, 11*(6), 800-816; Zangenehzadeh, H. (1988). Grade inflation: A way out. *The Journal of Economic Education, 19*(3), 217-226.

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- ⁵ Johnson, V. E. (2006). *Grade inflation: A crisis in college education*. Springer Science & Business Media, at 13.
- ⁶ Sonner, B. S. (2000). A is for “adjunct”: Examining grade inflation in higher education. *Journal of Education for Business*, 76(1), 5-8.
- ⁷ Chan, W., Hao, L., & Suen, W. (2007). A signaling theory of grade inflation. *International Economic Review*, 48(3), 1065-1090.
- ⁸ Rojstaczer, S., & Healy, C. (2012). Where A is ordinary: The evolution of American college and university grading, 1940-2009. *Teachers College Record*, 114(7), 1-23; Sanchez, E. I., & Moore, R. (2022). Grade Inflation Continues to Grow in the Past Decade. Research Report. *ACT, Inc.*
- ⁹ Babcock, P. (2010). Real costs of nominal grade inflation? New evidence from student course evaluations. *Economic inquiry*, 48(4), 983-996.
- ¹⁰ Bar, T., Kadiyali, V., & Zussman, A. (2009). Grade information and grade inflation: The Cornell experiment. *Journal of Economic Perspectives*, 23(3), 93-108.
- ¹¹ Sabot, R., & Wakeman-Linn, J. (1991). Grade inflation and course choice. *Journal of Economic Perspectives*, 5(1), 159-170.
- ¹² Johnson, V. E. (2006). *Grade inflation: A crisis in college education*. Springer Science & Business Media.
- ¹³ This is a statistics pun.