

# The Impact of Behavioral Nudging in Economic Theory on High School Grading Policies and Student Achievement

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## ABSTRACT

This research paper examines the implications of neoclassical economic theory and behavioral economic nudges on high school teachers' grading policies and the motivation and academic achievement of students taking Advance Placement (AP) courses. I further develop the literature in education economics to investigate various grading policies chosen by teachers and the impact on student achievement. I highlight teacher preferences which include a traditional grading policy or a five-point system, using the letters A-E/F. On the other hand, students prefer grading systems that evaluate what they are learning, allow for effort-based achievement, and consider classroom participation, as opposed to homework and exam scores alone. I examine the benefits and detriments of different grading policies within my high school, Menlo-Atherton High School including traditional grading, standards-based grading (SBG) and pass-fail grading. First, I review the current literature and analyze the major differences between the approaches of neoclassical versus behavioral economics including nudges. Specifically, I examine factors that contribute to a student's academic achievement and review the literature on grading. Second, I focus on student behavior and motivation that help to incentivize greater academic achievement. Third, I interview several teachers as a case study to characterize their grading policy and overall student motivation. Last, I compare the student and teacher findings and the associated behavior and achievement. Overall, my findings and analysis appear to support directionally that a new educational policy focused on a standards-based grading (SBG) policy combined with various behavioral nudges impact student decisions, motivate high school students, and improve educational outcomes.

## **Introduction**

Grades in a high school context serve multiple purposes, including evaluating student performance, increasing student motivation, and identifying opportunities for improvement. As students strive for top academic accolades, teachers must decide a grading policy and how to construct their classes to distribute fair grades, while ensuring their students learn and prepare for what follows beyond high school. For students, partaking in school responsibilities include attending class, taking exams, authoring impromptu essays, juggling multiple activities, and socializing with friends. However, high grades are the single most important measure of academic success for high school students taking AP courses (Allen, 2005, pp. 218-223). Not only do these students go to school during the day, but they usually spend countless hours completing homework, re-calculating grades after scoring poorly on an assignment and feeling anxiety for upcoming exams. Homework completion, extra credit, attendance, project extensions and retaking exams are behavioral nudges that can vary under a particular grading policy and can significantly influence a student's motivation to learn and improve educational outcomes. Previous research has shown that communication nudges between teachers, students and their families can be an effective tool to improve educational outcomes (Kraft and Dougherty, 2013). The basis of neoclassical versus behavioral economic framework addresses the very relevance in student motivation and impact on educational outcomes.

This paper analyzes grading policies through the lens of two major traditions within economics: neoclassical or traditional economics and behavioral economics. Neoclassical economics assumes people are rational in making choices between identifiable and value-associated outcomes. An individual's purpose is to maximize utility as a company's purpose is to maximize profits, and people act independently on perfect information. With the fundamental assumptions above, numerous studies and approaches have been developed. For example, utility maximization can explain the demand for a product or service. The interaction of demand and supply explains pricing and thus the distribution of production factors (Simon, 1959). One of the biggest criticisms of neoclassical economics is its unrealistic assumptions. The assumption of rational behaviors ignores the vulnerability and irrationality in human nature. On the other hand, behavioral economics focuses on studying irrational behaviors in economic decision-making and how individuals can deviate from this principle based on their psychology and examines whether utility or profit maximization is the only goal of an individual or company (Sunstein, 2014). Even though neoclassical theory assumes individuals will always act rationally, behavioral economics challenges this notion.

Grading policy can vary from country to country and state to state. Grading even varies within a state depending on whether a school is public, private or charter. The most used grading system in the United States is the traditional grading policy that uses discrete evaluation in the form of letter grades A-E/F based on a five-point scale. Traditional grading practices have been used for over one hundred years and to date there have been no meaningful research reports to support it. Debates exist against the traditional grading system given the direct comparisons often made to other students and the inconsistent assignment of the grades to students (Townsend and Buckmiller, 2016). Most teachers have not received adequate and valid assessment methods in their teaching preparation and often default to the way that they remember their own teachers had graded. As a result, grading practices can vary widely from teacher to teacher (Reeves, 2004).

There are also many other grading policies in place including standards-based grading (SBG) and the pass-fail policy. In the SBG, a performance standard is set by a committee based on ranking anchor papers and grading rubrics, which demonstrate performance that is below, meeting or exceeding the standard. SBG has gained popularity because of its potential to increase equity in the classroom (Feldman, 2019, pp. 52-55). SBG is a grading system that focuses on the effectiveness of instruction and proficiency in skills or standards for a specific subject and is considered an innovative approach to education. SBG separates academic indicators from extraneous factors such as class participation, extra credit and homework completion and attends to support students who are actively engaged and motivated to learn (Miller, 2013, pp. 111-118). Homework is still considered important; however, is seen as practice (Coutts, 2004, p. 182-188). Grading is not based on a curve distribution; therefore, it is possible to achieve a grading distribution in which all students pass and meet the standard. Previous studies show SBG teaching practices correlate to higher academic achievement. (Craig, 2011). However, this grading system does not extend to most high school settings today (Craig, 2011). Pass-fail grading policies were adopted in various high schools across the United States during the beginning of the COVID-19 pandemic which allowed high achieving students and low achieving students to pass with a lower learning threshold (Malkus, Christensen, and Schurtz, 2020).

Recently, most schools, however, still use "traditional" grading policies. This includes the assignment of letter grades based on testing, homework, and extra credit. Is grading policy related to behavioral economics? Does behavioral economics play a role in educational outcomes? This paper argues that, aside from which grading policy is used as a measure academic achievement, the actual design and structure can have substantial influence on a student's behavior and motivation to learn and overall academic achievement and educational outcomes.

## Literature Review

In this section of the paper, I will discuss the relevant literature in the fields of behavioral economics and its impact on educational policy. To begin, I will broadly discuss the effect that both neoclassical and behavioral economic theory have on student motivation and academic achievement. Next, I will dive into the different grading systems that are present today and how they correlate with the two different economic theories including the use of behavioral nudges

to increase student motivation. Within this, I will mention deadlines, homework, curving grades, and many other elements of how grades are determined.

## **Economic Theory**

First, I review neoclassical economic theory's effect on academic behavior. Young (2017) details the underlying assumptions of neoclassical theory suggesting people are expected to be rational, maximize their utility, carry themselves through selfishness, and have consistent preferences over time. Neoclassical theory suggests that students earning high test scores can repeatedly earn high test scores and excel academically. Students not performing well on tests will continue to perform poorly and lose motivation to even try. In many instances, people will not always act the same, and their actions will change over time. For example, Young (2017, pp. 76-90) mentions that innately human concepts such as altruism, biases, emotions, and social norms can create differences in the way that people act.

Next, I review the elements of behavioral economics, an alternate approach to challenge the neoclassical assumptions, which combines elements of economics and psychology to understand how and why people behave the way they do in the real world. (Corr and Plagnol, 2018) The main premise behind behavioral economics is that people will not always take an action that will completely maximize their own utility; there is room for individuals to act irrationally. This happens for a couple of reasons. (Kahneman 2004, cited in Young 2017, notes that in "fast thinking," people make decisions very quickly, as if it were an impulse, and do not take time to contemplate the possible outcomes of their thinking. This is responsible for instant gratification and can explain why humans answer 2+2 almost instantly. It differs from neoclassical economics which assumes people have well defined preferences and make well informed self-interested decisions based on preferences and that people will always engage in "slow thinking" when making decisions. But behavioral scientists understand that this will not happen.

## **Nudge Theory in Behavioral Economics & Student Motivation**

What is a nudge in behavioral economics? In behavioral economics, a nudge is a way to influence people's choices to lead them to make a specific decision or to change their environment, so they make a different choice that may be better for them (Sunstein, 2014). For example, allowing students to earn extra credit is a nudge to motivate students to learn more and improve on their academic achievement. Allowing a student to retake an exam or rewrite a paper for a better score is also a nudge to support subject area expertise or specific skill such as argumentative writing or debate and public speaking. Behavioral nudges are supported by the Prospect Theory (Young, 2017) that says humans are sensitive to changes, have inconsistent preferences, and can overestimate low probabilities and underestimate high ones. This means students will not always make similar choices but often make different choices. Neoclassical economists would say that these nudges should not influence how people make decisions; however, obviously, they do play a role. Students are motivated by nudges given the potential impact to their overall grade and grading policies that support that include nudges can motivate students to work harder and put in more effort to achieve the "A" grade.

## **Behavioral Economics & Academic Achievement**

Researchers in education focus on four main factors that influence an individual's ability to perform successfully in school. Koch, Nafziger, Skyt (2015, pp. 3-17) created an outline showing how a student's ability to achieve highly in school is based on four factors: *natural abilities, family, school, and peer inputs*. These can contribute in many ways, but the most notable takeaway is that one student's environment influences another student. For example, if the peers that a person spends time with do not exert much effort while studying for exams or preparing for classes, then it is highly likely that the student will follow suit. This refers to *Bounded Self-Interest* in behavioral economics which is the idea that people are often willing to choose a less-optimal outcome for themselves if it means they can support

others. Similarly, if the parents of a child continue their education to receive a post doctorate, it is extremely likely that the child will follow suit or if both parents are physicians, their children often end up in the healthcare field even if they dislike science. Behavioral economics refers to this action as *Bounded Rationality* suggesting that people have limited cognitive ability, and limited time, and do not always make the correct choice.

Given that grading policies utilized in high schools can immensely impact a student's performance and motivation within classes, how should teachers and professors set deadlines with assignments and homework? Should they set several smaller deadlines or one large deadline at the very end of an assignment? For example, should a teacher make an assignment of reading chapters of a book due chapter at a specific time, or simply tell students to read the entire book by a certain deadline? Koch, Nafaziger, and Nielson (2015, pp. 3-17) note that smaller deadlines are always better because accomplishment can lead to motivation. On the other hand, one large deadline favors individuals who can manage their time very well, which although promising, is not inclusive of many people. In fact, the authors analyzed a study in which people had the ability to set their own deadlines; one conclusion was that people who set their own deadlines were consistently behind and unable to finish their work on time. Teachers can encourage students to meet deadlines by grading each smaller assignment individually instead of grading everything all at once.

## Homework & Grading Policy

Homework can vary based on various grading policies and is considered a behavioral nudge. Lavecchia, Liu, and Oreopolous (2014) state that homework presents a trade-off between doing another activity that may seem to have more of an immediate benefit and one that might not even have much of a benefit at all. Often students will choose not to complete homework if it is not graded instead of considering the homework as practice for an exam later in the semester. This refers to the term *Bounded Willpower* in behavioral economics where people will often choose the short-term benefit over the incremental benefit towards a longer-term goal (Mullainathan and Thaler, 2000). On the other hand, the same homework could be graded and motivate students differently. In many instances, homework completion can be high-stakes and account for a substantial portion of the grade. However, as Salee and Rigler (2008) note, this is often inequitable and punishes students who are struggling to understand the material or simply have less time to learn it. They argue that homework should be practice and minimally weighted in grade calculation. Teachers admit that not weighting homework reduces the completion rate by students.

There are several other specific behavioral nudges, in the form of grading tactics, that can help students. For example, Guskey (2019, p. 42-47) points out that simply writing the letter grade at the top of an assignment does not provide the student much value. Instead, writing a personalized note to the student next to the grade including suggestions for improvement can help the student to perform better on the next assignment. Furthermore, Guskey (2019, pp. 42-47) mentions that this specific action influences the individual's psychology and motivates the student to improve on the next assignment to avoid disappointing the teacher. Additionally, Gordon and Fay (2010, pp. 93-98) share that when teachers are not willing to raise students' grades for subjective reasons, students try harder. This results from the lack of a safety net, in the form of a strong connection with the teacher, to raise grades in the case of a substandard performance.

## Differences in Behavior: High versus Low Achiever

On the topic of grading, there are also distinctions between what traditionally high-achieving and low-achieving students find helpful. Students who are high achievers can suddenly achieve a low grade in a class due to any circumstance; however, they are much more motivated to improve than a student who is traditionally low achieving (Main and Ost, 2014, pp. 1-10). More equitable grading can help to fix this. Feldman (2019) notes that systems in which assignments take on more weight as the semester progresses tend to benefit traditionally low achieving students. This happens because students feel that they have time to learn, tackle the challenges and ultimately time to succeed.

Low achieving students also prefer particularistic grading. Gordon and Fay (2010, pp. 93-98) define this type of grading to favor a particular group of students that can benefit with various grading elements that address low achieving students including curving grades based on the lowest performer, “dropping the lowest assignment,” and retaking exams. Low achieving students seek external elements to raise their grades while high achieving students do not value or need these methods.

### **Grading Types: Absolute versus Relative**

Finally, there are two distinct categories of grading types. Koch, Nafziger, and Neilson (2014, pp. 3-17) focus on absolute and relative grading. In absolute grading, students’ performance is purely based on their performance on assignments with no curve or any type of intervention from the teacher. Oppositely, relative grading compares students’ performance against other students. One way to look at this is through the lens of a bell curve, where students’ grades stretch exponentially. After many conclusive studies, the authors find that absolute grading always motivates students to study harder. In turn, this means that students achieve better scores, and a positive feedback loop occurs. Students earn good scores, they remain motivated and continue scoring well, and remain interested to learn.

There are two main overarching grading policies that are predominantly used across high schools. Specifically, standards-based grading (SBG) and traditional grading. In SBG, homework completion and extra credit play a minimal part in the final calculation of a student’s grade. The assignments that are part of the students’ grades are “assessments,” and these have “standards” attached to them. The “standards” are the skills that are associated with a specific task. For example, on a quiz, there might be several different standards, with each corresponding to the skill needed to answer a given question. According to Hochbein and Polio (2016, pp. 49-54), standards-based grading (SBG) can revolutionize the academic sphere by giving students more flexibility and time to master skills. Students are intrinsically motivated to demonstrate proficiency in competencies. Students receive appropriate feedback that will improve their skills and students can track their progress. Additionally, there is already evidence that students in this system perform better on state tests in both English and Mathematics concepts. On the other hand, researchers found that traditional grading is strict, less flexible and can often be extremely de-motivating to students because the grade does not reflect what the student learns or comprehends.

### **The Impact of Behavioral Nudges on Student Motivation and Academic Achievement**

Many behavioral economists believe that “defaults” prevent people from being more successful. With these defaults, people continue to engage in the same actions constantly, although, these actions do not help them. The example that Young (2017) provides is regarding pension saving plans- people know that they should save up, but still, they do not end up doing so. Nudges can help guide people in the correct direction and similarly nudges can help guide students to improve academic achievement. These nudges have also rapidly expanded and are used in 136 different countries (Whitehead et al., 2014)

Some critics of behavioral economics cite that using people’s cognitive shortcomings to make tailored solutions to guide them in the directions that others want is ethically harmful. Furthermore, some people think that behavioral policies are like forming laws, which go way beyond the scope of just behavioral economics. As of now, various tactics that prevent students from succeeding are in place. However, these types of issues can be solved by testing behavioral-focused alternatives like laws adding compulsory schooling, teachers setting more frequent deadlines, and using absolute grading.

### **Methodology**

I conduct qualitative primary research with three teacher interviews as case studies: Two at Menlo-Atherton High School in Atherton, California and one at Palo Alto High School in Palo Alto, California. I leverage the (Bryman, 2012, p. 473) case study “semi-structured” interview process to direct the conversation toward whether teachers had made their grading policies with any intention of appealing to behavioral economic concepts (Bryman, 2012, p. 473). To do this, I first ask respondents direct questions about (Bryman, 2012, p. 473) what type of grading system they use and what they perceive as its effect on students. Afterwards, I ask questions about the effect that the grading system had on homework performance and the overall focus of students. When do students seem to be the most invested in the classwork and paying attention? Later, I inform the teachers of the behavioral economic tendencies of students, discussed in the literature review, and ask if their grading policies reflect these nudges. All three teachers unanimously denied proactively planning for the use of behavioral nudges. However, two of the three teachers acknowledged that, even without their intention, their grading policies do perpetuate multiple behavioral nudges that demonstrate a positive impact on academic performance combined with increased levels of effort and motivation displayed in the classroom.

I will now briefly outline the limitations to the methodological design of the case study interviews, given the constraints faced, and how these impact the generalizability of the analysis and findings. I am a high school student with limited access to the educational community, my primary research is limited with a small number of teacher interviews, location of schools and caliber of students. On a broader level, the results, and findings that I have produced should continue to be evaluated and researched. However, Menlo Atherton High School and Palo Alto High School are diverse and account for various disparities in socioeconomic status of students. At Menlo Atherton High School, for example, the economic stability of students is stark. Located in Atherton, CA, many of its students come from one of the wealthiest zip codes in the United States. However, the school also draws students from East Palo Alto, CA. This area has been known to be one of the poorest in the San Francisco Bay Area, and a significant percentage of the community is on food stamps. Additionally, Palo Alto High School serves students with varying economic stability, however, the disparity gap is narrower than Menlo Atherton High School. My findings can be applied to a national setting of educational policy with more rigorous observations and analysis. However, the results are preliminary findings and appear to directionally support how behavioral nudges impact high school grading policies, student motivation and achievement. However, these findings should not be generalized to a wider educational policy without further validation even in situations with student income disparity.

## **Teacher Interviews and Case Studies**

### **Jackson Shaad, AP United States History, Menlo Atherton High School, Atherton, CA.**

Shaad uses the standards-based grading (SBG) policy with various behavioral nudges including class structure and a differentiated weighting of exams and projects. His class is quite different from many classes with traditional grading policies. He assigns letter grades, like the five points system for each 20% band (80-100: A, 60-80: B, 40-60: C, 20-40: D, 0-20: F). Shaad has made several- unique observations while employing this system. For example, homework completion is lower than normal because the weighting remains low in the overall grade. Additionally, the overall effort that students give on homework assignments is lower than in classes where the homework is a percentage of the overall grade. However, students remain extremely motivated to perform and achieve a high grade because of the decaying average grading on exams and projects -an element of the SBG where the specific grade the student receives with every assessment becomes 65% of the student’s overall score for that standard. In other words, even if a student does not perform well on one assignment or makes significant mistakes, they have plenty of opportunity to raise their grade later. Shaad has found that this consistently minimizes stress and anxiety when students face tests and quizzes; actually, this behavioral nudge keeps them eager to learn and confident in their performance; hence, achieving a high grade. However, there is one downside to this process. Due to the weight that each assignment carries at the time, a

potential final exam can be up to 65% of a student's overall grade. The most recent exam makes up the overwhelming majority of a student's grade. While Shaad makes it clear that his aim is to make his final exam worth about 30% of a student's grade by only including one-third of the total standards, he manages this tightly.

Nevertheless, Shaad's experiment with the SBG policy has gone extremely well as most students remain motivated and are performing exceptionally well. There is an ongoing push for more teachers at Menlo Atherton High to use it. Furthermore, this may achieve many of the goals that schools have sought for extended periods of time: focus on learning and less on actual scores. Instead of receiving assignments back and not knowing what they need to improve, a student under this policy knows the exact skills that he or she needs to work on. This is critical for students to make improvements on future assessment opportunities. Overall, Shaad's students are doing exceptionally well with a majority achieving above average grades, primarily A's and B's.

### **John McBlair, AP English & Composition, Menlo Atherton High School Atherton, CA**

McBlair uses a traditional grading policy with increasing weight assignments and rounding as behavioral nudges. Each writing assignment is given a letter grade like the five-point scale; however, associated with 10% bands (A: 90-100% B: 80-89%, C: 70-79%, D: 60-69% and E/F: 50-51%.); homework is considered practice and skill assessment is minimal. However, the final grade distribution in his class fits an overall distribution of 20% for each letter grade. He considers grade round up if student's fall borderline and have made significant effort to contribute to the classroom experience. McBlair recognizes the potential flaws in his system. He states, "the traditional grading policy is stressful for students because it can lower a grade due to a few missing assignments or a couple unusually bad grades." He also adds that traditional grading puts heavy emphasis on "completing assignments on time," and that for his class to work, "students need to be incentivized to complete assignments during a certain time." However, McBlair aims to solve this problem in two diverse ways. First, students' assignments receive higher weight as the semester carries on. For instance, AP Language & Composition is heavily focused on a type of essay called "rhetorical analysis." In this type of essay, students are forced to read a passage that is often difficult to comprehend and analyze rhetorical choices being made by the author. Due to the challenging nature of this type of essay, McBlair begins the semester by assigning very few points to these pieces, but as the semester nears the end, each essay takes on increasingly higher amounts of points.

According to McBlair, the heavyweight that assignments carry toward the end of a semester reflect the learning throughout the semester and he says, "these assignments aim to capture the growth mindset aspects of standards-based grading (SBG). Furthermore, with minimal skills assessments as compared to standards-based grading (SBG) policy, students often know what grade they are going to get long before the semester is over. Yet, even with this, students who are close to their desired grade may try extra hard. This is because they are aware of the possibility of a round up grade even if they do not reach the threshold. The roundup opportunity is a behavioral nudge that works well in his classroom. For example, with an 87.5%, a student would still try because even with an 88%, they could receive a 90% in a round up or distribution curve. McBlair is confident his students make decisions based on the various nudges he has implemented and keeps his students motivated and performing well.

### **Kelly Slaughter, Former 9<sup>th</sup> & 10<sup>th</sup> Grade English, Palo Alto High School, Palo Alto, CA**

Slaughter uses a traditionally based grading policy with the nudge focus on in-class participation and work completion. It is worth noting that the typical student in her class is quite different than those discussed in the previous three classes. As Advanced Placement (AP) courses, Shaad and McBlair's classes draw the most academically motivated students at Menlo-Atherton. However, Slaughter's class was not AP. Slaughter's class used the same 5-point grading scale (A-E/F) as McBlair's class, yet the individual calculation of grades was quite different. Instead of grouping together all points into the same category, adding up the points earned, and then dividing them by the total number of

points, Slaughter's system weights the individual points. She states, that "60 percent of the entire grade is essay writing, 30 percent is based on reading comprehension, 5 percent is based on homework completion, and 5 percent is based on participation." Slaughter states that "she never saw, and still does not see homework completion as a relevant factor in a student's grade." Instead, she relies entirely on work completed in the classroom. She feels that this raises the level of equity in her class and gives everyone a fair chance to achieve their best. As for rounding, Slaughter says that she uses a system in which students "who showed lots of improvement or effort throughout the semester" could have their grades raised at the end of the semester. This is different from McBlair's system of simply rounding based on an end distribution; she creates a more subjective system. Even though this might sound demotivating, Slaughter notes that students put lots of effort into the class because they want to demonstrate their level of effort and dedication to learning.

At the time of Slaughter's teaching at Palo Alto HS, the Covid-19 pandemic caused her to radically change her grading policy discussed above to the pass-fail grading system. A pass-fail grading system changes the way that students achieve credit for a class. Instead of a traditional grading policy, letter grade, students receive a pass or fail. Students with failing grades can access remedial help including school tutors summer programs. Although this system places less stress on the student versus a traditional grading system, it can be extremely de-motivating to high achievers because their work far exceeds the threshold of failure, but they will receive no additional credit for it. Their credit for taking the class, learning, doing well on tests and completing homework will be the same as someone who barely shows up and completes enough to pass the class. Slaughter says, "it was hard to get students to turn in any work at all" and called the process "quite the struggle." Slaughter mentioned that this system provides a behavioral nudge for low achievers; however, does not see the benefit for high achievers. Overall, it appears that the five-point grading policy or a standards-based grading (SBG) policy using letter grades is a critical component of raising student motivation in the classroom.

## Findings and Analyses

In review of the literature and the perspective of three high school teachers, there are several behavioral tendencies or nudges that appear to appeal favorably to human psychology. First, homework completion or graded homework can improve a student's academic performance and motivation. As mentioned earlier, through Koch, Nafazinger, and Skyt (2015), demonstrate that a student's ability to achieve is based on four primary factors: school, family, peer inputs, and their natural skills/abilities. Completing homework and allowing it to alter a student's grade, as it does under McBlair, can be motivating to students. Family and peer inputs will inevitably factor into the equation as a student's family can help with homework, and so can friends. On the other hand, students without a dedicated support system, are at a disadvantage. Salee and Rigler (2008) note that grading homework is a disadvantage for students struggling to understand the material; thus, basing a substantial portion of a student's grade from homework is disadvantageous for those students. This occurs because students do not have access or are not comfortable asking the teacher for help or do not have access to additional support including tutors, family, or friends. Grading policies like McBlair's may de-motivate students and lower academic performance. Alternatively, a standards-based grading (SBG) policy like the one used by Shaad, or simply a system where homework completion has minimal impact on a grade, like Slaughter, is beneficial in helping students gain additional practice and to learn the material more thoroughly. Koch, Nafazinger, and Skyt's (2015) four-part academic equations use of the term "natural skills and abilities," refers to these skills and abilities that can be improved through practice and motivate studying. Thus, aiming to get as close as possible to purely assessing students on their skills has been the goal of academics for decades, a system in which homework does not play a significant role in a student's grade.

Second, grade rounding is a behavioral nudge to motivate students. On one hand, according to Gordon and Fay (2010), rounding grades can harm students' motivation because they know that they could be "bailed out" at the end of the semester. Yet, for others, like Slaughter states, "rounding definitely motivates her students." The two sides can work in conjunction. For students in advanced placement (AP) courses, a distribution-based curve, like the one in



McBlair's class may be most beneficial. Students who would typically try less by knowing that their grade could be curved, as pointed out by Gordon and Fay (2010), would still be motivated to give their best effort. This works through the fact that the students in a distribution-based curving system do not know if their grades will, in fact, be curved. If there are enough students earning "raw" A's, then, a teacher would not curve grades at all. In this system, students who have grades lower than their desired grade, even those whose grades are lower, would also give a strong effort. Again, they could receive a significant curve, so every point that they earn would matter. Distribution-based curving would not make as much sense. Instead, particularistic grading would be much more beneficial. Students in regular courses are, obviously, less likely to be considered "high achieving." Otherwise, it is probable that they would be in an advanced course. According to Gordon and Fay (2010), these students benefit from nudges allowing students to drop their lowest grade or retake exams. This happens because the students are used to not achieving extremely high scores; if they see that there are "external" factors that may allow them to get a higher grade, it will provide them the necessary motivation to give that extra effort. Although none of the teachers in the case study directly address particularistic grading, it could help low-achieving students.

Third, a standards-based grading (SBG) policy with letter grades assigned to wider bands (20%) is more favorable and motivating to students as demonstrated in Shaad's grading policy over the traditional grading policy. Additionally, the flexible nature of SBG (Hochbein and Polio, 2016) motivates students by providing them with multiple opportunities to "recoup" after a poor assignment.

Finally, I see a few additional behavioral nudges that appear universally motivating to students when reviewing grading policies. Guskey (2019) notes that providing a simple comment at the top of the page of a graded assignment always motivates students to try harder. Additionally, retaking exams and or taking exams without time pressure are also nudges that lead to increased performance on assessments.

## Conclusion

While the issue of high school grading policy has seen slight change in decades, the recent pandemic has challenged the status quo giving evidence that supports adopting a standards-based grading (SBG) policy more widely outside the traditional based grading policy to improve academic performance and education outcomes. Despite the shortcomings previously mentioned my analyses and findings support that behavioral tendencies or nudges used along with high school grading policies including homework completion, borderline grade rounding, and wider distribution curves can motivate students and improve academic performance and educational outcomes. This all stems from the four factors that make up a person's academic ability: *natural skills, family, school, and peer inputs*. Standards-based grading (SBG) serves to create equity, allow for students to truly learn, and master the material they are presented, instead of regurgitating for a test. In addition, other, more specific nudges tend to help students. Decisions such as rounding grades, curving specific assignments, and allowing students to drop certain assignments from their grades can all help the low achieving student. On the other hand, some students may not actually like this "particularistic" grading. They may try less because they know that there is not as much work to be done. However, it appears that the standards-based grading (SBG) policy including nudges is most likely to have success in a variety of different school settings. To build upon these results, future research should be more rigorous by examining more schools and conducting more teacher interviews in various districts including students with various socioeconomic status.

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