

when they skip a test, thus flinging open the door to all of the grading penalties at the teacher's disposal. Such differences in parenting affect both to whom and to what extent penalties are levied.

Many educators still hold on to the assumption that parents are capable, grounded, and in control of their children. Add this to the list of traditional mind-sets in need of an overhaul. Too often, children are more capable than their parents, often attempting to balance school-work with raising younger siblings, buying groceries, and masking their parents' substance abuse and violence issues.

### **How Behavior-Based Grading Contributes to Statistical Sabotage**

If a student makes a concerted effort to complete a quiz and does not get a single answer correct, then a zero grade is arguably an accurate measure of the student's understanding. However, if the student receives a zero simply because he or she didn't complete the quiz, then the grade is not an accurate measure of understanding (O'Connor, 2010). Once the accuracy of grading data is compromised, a number of difficulties emerge.

Imagine a scenario in which Johnny is scheduled to take two quizzes for the same class, one on Monday and the other on Thursday. He skips the Monday quiz but is present for the one on Thursday. Johnny's teacher gives him an automatic zero on Monday's quiz because he didn't take it, and a zero on Thursday's quiz because he got all the answers wrong. Anyone looking at the teacher's grade book would find it impossible to determine whether the zeros reflect lack of work or lack of understanding. If Johnny also receives lates on assignments, his grading data are even more ambiguous. The teacher in this case might be advised to use special codes or symbols to understand and possibly defend Johnny's aggregate score. I will admit to having had the following type of conversation in parent-teacher meetings:

**Me:** Good afternoon, Ms. Smith. Thanks for attending the parent-teacher conference.

**Ms. Smith:** Thanks. My daughter Jill is really struggling in social studies. I was devastated to see that she got 55 percent on her report card.

**Me:** Well, perhaps she's not doing that badly.

**Ms. Smith:** What do you mean? Is she not at 55 percent?

**Me** (pausing, showing some discomfort): Well, I can see that, in my grade book, some of her scores are circled in blue and others are highlighted. Those symbols indicate a reduction in value from what she would have had if she had handed the work in on time.

**Ms. Smith:** I'm confused.

**Me:** Well, um, one circle indicates that the assignment was a day late and therefore the score would have been 10 percent greater than it is. Two circles means that the assignment was two days late and therefore would have been 20 percent greater. I see here that I used a highlighter over the top of the existing circles for her poster assignment, indicating that the score was reduced more than 30 percent—most likely to a maximum of 50 percent.

**Ms. Smith:** Most likely?

**Me** (deciding to switch tactics): Listen, if Jill would get her work in on time, we wouldn't be having this confusion.

**Ms. Smith:** Confusion is right. I wish I had known about all of these lates. Did you phone or e-mail me about these issues?

**Me:** Sorry, I guess I should have called, but I can't keep up with all of these lates in each of my classes and it is Jill's responsibility to let you know.

**Ms. Smith:** Do you think most teenagers will come home and tell their parents about late or missing assignments?

**Me:** Probably not.

**Ms. Smith:** I guess I just want to know where she is actually at academically and to know that 55 percent means something.

I have come to agree with parents like Ms. Smith. She does have the right to know her daughter's actual grade standing according to the learning outcomes.

Imagine the confusion and frustration that would occur if this type of punitive measurement system were used in the medical community—for example, if a patient's overdue hospital parking fine were factored into her blood pressure reading. It's a challenge to find any other profession that purports to offer personal, measurable data in which the numbers can be as warped as we allow them to be in education.

It is disturbing that the destructive power of a zero grade is often the reason that teachers use it. If the goal is to punish or compel, a zero is the ultimate numerical weapon. When factored into the average of an otherwise consistent set of scores, the result can be considerable. Consider the examples in Figure 1.1, showing two sets of identical scores except for a single zero. As a measure of learning, 59.6 percent

Figure 1.1  
Effect of a Zero Score on the Final Average (Example 1)

Scores	Scores
78	78
71	71
74	0
68	68
81	81
Final Average	Final Average
74.4	59.6

is clearly a misrepresentation of the extent to which the student likely understands the material. A serious statistical problem exists if we assume that the rest of the scores are based on sound assessments. None of the scores making up the 59.6 percent average come close to the mean score. The whole point of determining an average is to arrive at a singular representation of a set of numbers.

Clearly, zeros can blur the extent to which students demonstrate improvement or mastery of the material. Consider the set of scores in Figure 1.2, purporting to represent tennis-serving skills measured over the course of a two-week unit. The conclusion that the student

**Figure 1.2**  
Effect of a Zero Score on the Final Average (Example 2)

<b>Successful Serves (Out of 10)</b>	
March 1:	0
March 2:	0
March 3:	0
March 4:	2
March 5:	3
March 8:	5
March 9:	7
March 10:	8
March 11:	8
March 12:	9
<b>Average: 4.2/10</b>	

properly completed roughly 4 out of 10 serves is not accurate and in no way predicts future performance. If any of the non-zero scores have further been reduced for reasons not directly pertaining to her tennis-serving skills, such as for tardiness or talking out of turn, then the ambiguity of the scores is even further compounded.

Let's assume that Catherine, a high school sophomore, attends only half of her biology classes during a two-week unit on communicable diseases. On the day of the summative unit test, Catherine opts to skip class and go for coffee with her girlfriends instead. On account of her truancy, she gets a zero on the test. What are the chances that Catherine, at age 16, knows something about herpes, mononucleosis, or AIDS? If Catherine knows absolutely nothing about communicable diseases by the end of the unit, she has either been living under a rock for most of her life or her teacher is completely incompetent. Any score above zero would far more accurately represent the degree of Catherine's knowledge.

Growing up, I had a toy version of NASCAR legend Richard Petty's racecar—number 43. If we are after grades that accurately measure student understanding, adopting a policy of using the numbers of students' favorite racecars for missing work would make about as much sense as using zeros.

## Strategies for Addressing Uncompleted Work

Following are some possible solutions for ensuring that student grades more accurately measure

PE

Imagine that the history teachers at Colonial High School are so fed up with their students' late and missing assignments that they appropriate their department's budget to pay for a set of wooden stocks such as those used in colonial times to punish wrongdoers. Not only do the stocks serve to teach students a little history, but they also help motivate students to complete their work on time. The teachers institute a simple rule: get your assignments in by the due date or spend a day in the stocks. The students, terrified at the prospect of being constrained in a wooden device and having tomatoes pelted at them by jeering classmates, all begin delivering their assignments on time. To their delight, the teachers hardly ever need to resort to the stocks. The system is considered a resounding success: very few students are punished, and rates of homework completion skyrocket.

The history teachers throw a party at the house of the mastermind behind the idea, Mr. Bastille. Though Ms. Lamb, the head of the science department, can hear the revelry from her house down the street, she is not feeling the celebratory zeal. She is frustrated because many of her own students have suddenly stopped handing in their work on time, choosing to spend their time on history assignments instead. Though she's unaware of the history teachers' newly instituted method of punishment, she has overheard some of her students discussing stocks and is surprised at their newfound interest in economics.

If this story were to continue, the science teachers would either ask the history teachers to dismantle the stocks or institute their own draconian punishments. A less extreme version of this choice confronts teachers all the time, especially at the secondary level. I have been approached by teachers who feel caught between competing forces (cont.)