Standards-Based Grading for High School Physics

Mark Rowzee and Geoff Schmit Naperville North High School

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Who Are We?

- high school physics teachers (honors and general)
- in our third year of standards-based grading (SBG)
- have motivations, implementation details, and lessons-learned to share

What is Standards-Based Grading?

- a grade reflects student's understanding of the standards defined for the course
- not new; been around for 30 years
 increase in use in last couple of years
 - increase in use in last couple of years
- a change in educational philosophy
- also know as: standards-based assessment & reporting

http://pedagoguepadawan.net/22/threerealizations/

The most important realization is that standards-based assessment and reporting is a philosophical change made by teachers, students, parents, and administrators. It is not simply a function mapping a traditional grading scale to another set of numbers and symbols. If any participant; teacher, student, parent, or administrator; fails to realize this, the benefits of SBAR will not be realized. Even worse, the SBAR movement will suffer as misguided or half-hearted efforts labeled "SBAR" fail to improve learning. If the teacher doesn't make this philosophical jump, there is no hope that students or parents will. An administrator recently shared with me that the term Standards-Based Grading was a bit of a misnomer since grading is only a small part of what SBG encompasses. I shared the Standards-Based Assessment and Reporting term (which you'll notice I'm using exclusively in this post) as a more apt alternative. Last year, my colleague and I did not set out to implement SBG or SBAR or any other acronym. Rather, we set out to change students' perspectives on their learning and the role of grades in our class. SBAR was simply a tool that helped us achieve these goals. As more and more teachers and teams integrate SBAR practices into their classes, I'm very worried that they see SBAR as the end goal as opposed to the means to much more important ones.

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Our Motivation

frustrated with students' obsession with points and grades in honors physics



http://www.youtube.com/watch?v=WVvKnq5XT-g

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Friday, 28 October 2011

http://pedagoguepadawan.net/62/lookingbackbeforesbg/

Three years ago, everything that happened in my honors physics class was worth points. I checked homework almost every day and recorded points. I kept track of which students presented their solutions to problems to the rest of the class so I could record points. I stamped assignments that were submitted late so that I could calculate a late penalty when recording points. Every lab was collected and points recorded. There were opportunities to get extra points. I would pass back an exam so students could see how many points they lost and then we would begin the next unit. Students focused on collecting as many points as they could. Some played this game exceptionally well.

Students were not focused on learning they were focused on the game of accumulating points.

Our Motivation

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PLAYS A LOUD ALERT SOUND WHEN THERE IS A TORNADO WARNING FOR YOUR AREA.

RATING: ****

USER REVIEWS:



MANY ALERT CHOICES.



★★★★★ RUNNING GREAT, NO CRASHES



***** I LIKE HOW YOU CAN SET MUCTIPLE LOCATIONS

WARN ME ABOUT TORNADO.

THE PROBLEM WITH AVERAGING STAR RATINGS

http://xkcd.com/937/

The Problem with Traditional Grading

• Grade: B

- I do all my homework
- I participate in class
- I brought in tissues
- I still don't know anything

Standards-Based Grading



via Bowman Dickson

Friday, 28 October 2011 http://bowmandickson.com/2011/09/07/what-if-angry-birds-didnt-grade-with-sbg/

I realized that they already know Standards Based Grading from playing games like Angry Birds. Here is how Angry Birds grades with SBG: Right? Levels graded separately that you can play over and over until you gain mastery? I'm sure others have thought of this analogy, but it seems pretty solid to me.

Traditional Grading



via Bowman Dickson

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So now contrast this to what the Angry Birds score screen would look like if it "graded" in the traditional manner:

This would suck because I never get 3 stars the first time around.

Goals

- You will focus on learning.
- You will develop critical thinking and problem solving skills.
- You will know what you understand and demonstrate it to me.
- You will be responsible for your own learning.
- Your final grade will reflect your understanding of the standards for this course.

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http://pedagoguepadawan.net/37/whysbg/

- You will focus on learning.
 Points and grades often get in the way of this.
- You will develop critical thinking and problem solving skills.

 This requires you to take risks make mistakes, and the again. You should

This requires you to take risks, make mistakes, and try again. You should be rewarded for this and not penalized.

- You will know what you understand and demonstrate it to me. This requires frequent, useful feedback. 8/10 is not useful feedback.
- You will be responsible for your own learning. This requires you to have the information, tools, and freedom to do so.
- Your final grade will reflect your understanding of the standards for this course.
 This requires grades to be associated with standards and you to have multiple opportunities to demonstrate your understanding.

Which student would you choose to pack your parachute?



Adapted from How to Grade for Learning (O'Connor, 2002)

How We Got Started

- talked to another teacher
- refined existing objectives into standards
- grouped exam questions by standard
- selected a grading scale
- updated syllabus
- sent letter home to parents

Mastery Grading Scale

mastered

developing mastery

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You must show all your work to earn credit on free-response problems. Your work, rather than the final answer demonstrates mastery. That is, you can demonstrate mastery of a learning standard even though you obtained the wrong answer if you have the correct process. Similarly, you cannot demonstrate mastery if your process is incorrect even though your final answer is correct. On the multiple choice exam, you must answer a certain number of the questions associated with a specific learning standard correctly in order to demonstrate mastery of that standard.

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4 Point Assessment Scale

- 4: Clear demonstration of understanding (with minor mistakes being allowed)
- 3: Significant understanding is demonstrated, but a key aspect of the solution is not
- 2: Partial understanding is demonstrated (you are in the right ballpark, but misapplied some key information or concepts)
- 1: No demonstration of understanding

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Numbers need to be carefully explained since they do not result in percentages.

A student can miss a single question on an assessment and, if that missed question demonstrates a major misconception, they have earned a '2'.

Explaining Our SBG to Stakeholders

- students
- parents
- administrators
- other teachers

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students: syllabus, in-class discussions parents: letter, phone calls, conferences, SCFP meetings administrators: institute days, meetings, committees other teachers: informally, institute days

Flow of Learning and Assessment in Physics



The Practice: Learning Activities

- Explore, discover, take risks, fail, ask questions, help each other, practice, receive feedback, and self-assess through
 - Homework reading, questions, problems
 - Group whiteboarding
 - Lecture, demonstrations, in-class worksheets
 - Lab Activities

The Proof: Sumative Assessments

- Demonstrate understanding of standards through
 - homework packets
 - lab practicums and reports
 - weekly quizzes
 - unit exams

General Physics

- weekly quiz in class
- each standard assessed twice, score is averaged
- 1-4 scale
- final opportunity quiz offered before and after school on Tuesdays and replaces quiz grades
- summative multiple choice after all quizzes (no reassessments)

Honors Physics

- summative multiple choice and free response exam for each unit
- scored as mastery or developing mastery
- 2nd tries offered before and after school on Thursdays, replaces previous score
- final exam serves as 3rd try for more challenging standards

Tools

- standards calendars
- WebAssign
- clickers for multiple choice exam
- software tools to generate standardsbased reports for multiple choice exams
- gradebook reports

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Standards calendars communicate standards for the unit and provide a record for student to track their learning.

WebAssign is used for homework and for administering 2nd tries. However, for 2nd tries, students must still show work on paper.

Software tools are custom Perl scripts to parse the output from the clicker software and generate printable reports to share with students. For other gradebook programs, the software tools would generate files that could be imported into the gradebook to save time entering scores.

SnapGrades

Chapter 11	
 Define periodic motion, displacement, amplitude, period, frequency, and simple harmonic motion. 	М
11.2. Solve for the energy, displacement, and velocity of a simple harmonic oscillating spring.	м
11.3. Use the equation of vibration for simple harmonic motion to find displacement, frequency, period, and velocity.	М
11.4. Use the equation for the period of a pendulum to solve problems.	м
11.5. Distinguish between transverse and longitudinal waves and define the following in a wave: amplitude, wavelength, frequency, wave velocity, node, antinode.	D
11.6. Describe the behavior of pulses in strings or slinkies in terms of reflection, superposition, resonance, standing waves, and harmonics.	D
Solve problems involving standing waves in strings.	Μ

Gradebook that shall remain nameless

Assignments	Due date	Score	Possible	Pct	Comments
Free Response					
Target 2.5	9/10/2010	2	2	100% (A+)	
Target 3.5	9/24/2010	0	2	0% (F)	
Target 3.6	9/24/2010	0	2	0% (F)	
		2	6	33.333%	
Homework					
Chapters 1&2 WebAssign	9/10/2010	1	1	100% (A+)	
Chapter 3 WebAssign	9/24/2010	1	1	100% (A+)	
		2	2	100%	
Lab					
Target 3.7	9/22/2010	0	1	0% (F)	
Target 3.8	9/22/2010	1	1	100% (A+)	
		1	2	50%	
Multiple Choice					
Target 1.1	9/10/2010	1	1	100% (A+)	
Target 1.2	9/10/2010	1	1	100% (A+)	
Target 2.1	9/10/2010	1	1	100% (A+)	
Target 2.2	9/10/2010	1	1	100% (A+)	
Target 2.3	9/10/2010	1	1	100% (A+)	
Target 2.4	9/10/2010	1	1	100% (A+)	
Target 3.1	9/24/2010	1	1	100% (A+)	
Target 3.2	9/24/2010	1	1	100% (A+)	
Target 3.3	9/24/2010	1	1	100% (A+)	
Target 3.4	9/24/2010	1	1	100% (A+)	
		10	10	100%	

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Score Possibl	Due date S	Assignments))	Experiment Reports(Wt = 20
		Free Response		3	9/13/2010	Target Lab 06
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2 2	9/24/2010 2	Target 3.5		4	9/13/2010	Target Lab 04
0 2	9/24/2010 0	Target 3.6		3	9/13/2010	Target Lab 03
2 2	10/18/2010 2	Target 4.5		4	9/13/2010	Target Lab 02
0 2	10/18/2010 0	Target 4.6		2	9/13/2010	Target Lab 01
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	-			4.4.3	9/14/2010	arget Quizzes(VVI = 40)
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1 1	9/7/2010 1	Target 2.11		3, 4, 3	10/9/2010	rget 104
1 1	9/22/2010	Target 3.7				
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1 1	9/10/2010	Target 2.3				
1 1	9/10/2010	Target 2.4				
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1 1	9/24/2010	Target 3.2				
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Grade Summary			
Key: ** Group excluded from grade calculation	In-Progres	s Grade	
Term S1 - Semester Grade	77.07%	C+	
(15%)Term S1 - Final Exam			
(85%)Term S1 - Coursework	77.07%	C+	
(10%)Term S1 - HP Science as a Process Demonstrate the intricate process of scientific in	100.00%	A+	
(25%)Term S1 - HP Kinematics Understand the basic concepts of kine	77.79%	C+	
(35%)Term S1 - HP Newton's Laws Understand, explain, discuss, and apply Newton's	70.01%	C-	
(15%)Term S1 - HP Energy Understand the basic concepts of energy and energy conservation			
(15%)Term S1 - HP Momentum Understand the basic concepts of momentum and its conservation			

Assignment Detail

Key: *M = Missing *L = Late *I = Incomplete *Ch = Cheated *Dr = Dropped *X = Exempt ** Assignment excluded from grade calculation

Term S1 - HP Science as a Process Demonstrate the intricate process of scientific in							
Assignment	Group	Due Date	Score				
**1D motion multiple choice (SaaP 1)	SaaP 1 measurement uncertainty	09/02/2011	D*Dr				
SaaP 1 2nd Try	SaaP 1 measurement uncertainty	09/15/2011	M				
acceleration lab	SaaP 2 create data tables	08/29/2011	M				
acceleration lab	SaaP 3 perform measurements	08/29/2011	M				
acceleration lab	SaaP 4 create graphs	08/29/2011	M				
**acceleration lab	SaaP 5 analyze graphs	08/29/2011	D*Dr				
acceleration lab revision	SaaP 5 analyze graphs	10/05/2011	M				
**acceleration lab	SaaP 6 analyze uncertainty	08/29/2011	D*Dr				
projectile lab errors	SaaP 6 analyze uncertainty	10/05/2011	Μ				
acceleration lab	SaaP 7 formal experiment report	08/29/2011	M				
atwood lab	SaaP 8 analyze relationship between 3 variables	09/26/2011					
atwood lab	SaaP 9 create a general model of three variables	09/26/2011					

Term S1 - HP Kinematics Understand the basic concepts of kine

Assignment	Group	Due Date	Score
Chapters 1-2 WebAssign	Homework	09/02/2011	М
Chapter 3 WebAssign	Homework	09/16/2011	М
1D motion multiple choice (2.1)	2.1 vector and scalar quantities	09/02/2011	М
1D motion multiple choice (2.2)	2.2 instantaneous & avg. velocity & acceleration	09/02/2011	Μ
1D motion multiple choice (2.3)	2.3 constant acceleration problems	09/02/2011	М
**1D motion multiple choice (2.4)	2.4 straight-line motion graphs	09/02/2011	D*Dr
2.4 2nd Try	2.4 straight-line motion graphs	09/15/2011	M
**1D motion free response (2.5)	2.5 free-fall problems	09/02/2011	D*Dr
2.5 2nd Try	2.5 free-fall problems	09/15/2011	D
2D motion multiple choice (3.1)	3.1. Add and subtract vectors	09/16/2011	Μ
**2D motion multiple choice (3.2)	3.2. Describe the motion of a projectile.	09/16/2011	D*Dr
3.2 2nd Try	3.2. Describe the motion of a projectile.	09/29/2011	М
2D motion multiple choice (3.3)	3.3. Solve horizontal projectile motion problems	09/16/2011	М
2D motion multiple choice (3.4)	3.4. Describe the 1D relative motion of an object	09/16/2011	Μ
**2D motion free response (3.5)	3.5. Solve problems projectile motion problems	09/16/2011	D*Dr
3.5 2nd Try	3.5. Solve problems projectile motion problems	09/29/2011	М
**2D motion free response (3.6)	3.6. Describe the 2D relative motion of an object	09/16/2011	D*Dr
3.6 2nd Try	3.6. Describe the 2D relative motion of an object	09/29/2011	D
projectile lab	3.7. Model the path of a projectile based on data	09/13/2011	М
projectile lab	3.8. Compare actual vs. predicted results	09/13/2011	М
Term S1 - HP Newton's Laws Understand, explain, o	discuss, and apply Newton's		
Assignment	Group	Due Date	Score
**dynamics multiple choice (4.1)	4.1. Explain phenomena in terms of Newton Laws	10/03/2011	D*Dr

Term S1 - HP Newton's Laws Understand, explain, discu	iss, and apply Newton's		
Assignment	Group	Due Date	Score
**dynamics multiple choice (4.1)	4.1. Explain phenomena in terms of Newton Laws	10/03/2011	D*Dr
4.1 2nd Try	4.1. Explain phenomena in terms of Newton Laws	10/20/2011	M
dynamics multiple choice (4.2)	4.2. Distinguish & convert between mass and weight	10/03/2011	М
**dynamics multiple choice (4.3)	4.3. Solve problems in terms of Newton's 2nd law	10/03/2011	D*Dr
4.3 2nd Try	4.3. Solve problems in terms of Newton's 2nd law	10/20/2011	M
dynamics multiple choice (4.4)	4.4. Solve problems involving friction.	10/03/2011	М

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Assig Key:

Term S Assign **1D m SaaP 1 acceler acceler **accel projecti acceler atwood atwood

In-Progress Grade 77.07% C+

Term S1 - Semester Gr	ade	
(15%)Term S1 - F (85%)Term S1 - C	Grade	Summary

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Key: *M = Missing *L = Late *I = Incomplete *Ch = Cheated *Dr = Dropped *X = Exempt ** Assignment excluded from grade calculation

erm S1 - HP Science as a Process Demonstrate the intricate process of scientific in						
Assignment	Group	Due Date	Score	l		
**1D motion multiple choice (SaaP 1)	SaaP 1 measurement uncertainty	09/02/2011	D*Dr			
SaaP 1 2nd Try	SaaP 1 measurement uncertainty	09/15/2011	М			
acceleration lab	SaaP 2 create data tables	08/29/2011	M			
acceleration lab	SaaP 3 perform measurements	08/29/2011	Μ			
acceleration lab	SaaP 4 create graphs	08/29/2011	М			
**acceleration lab	SaaP 5 analyze graphs	08/29/2011	D*Dr			
acceleration lab revision	SaaP 5 analyze graphs	10/05/2011	M			
**acceleration lab	SaaP 6 analyze uncertainty	08/29/2011	D*Dr			
projectile lab errors	SaaP 6 analyze uncertainty	10/05/2011	Μ			
acceleration lab	SaaP 7 formal experiment report	08/29/2011	M			
atwood lab	SaaP 8 analyze relationship between 3 variables	09/26/2011				
		00/00/0014				

1D motion multiple choice (2.3)	2.3 constant acceleration problems	09/02/2011	М
**1D motion multiple choice (2.4)	2.4 straight-line motion graphs	09/02/2011	D*Dr
2.4 2nd Try	2.4 straight-line motion graphs	09/15/2011	Μ
**1D motion free response (2.5)	2.5 free-fall problems	09/02/2011	D*Dr
2.5 2nd Try	2.5 free-fall problems	09/15/2011	D

**2D motion multiple choice (3.2)	3.2. Describe the motion of a projectile.	09/16/2011	D*Dr
3.2 2nd Try	3.2. Describe the motion of a projectile.	09/29/2011	М
2D motion multiple choice (3.3)	3.3.Solve horizontal projectile motion problems	09/16/2011	M
2D motion multiple choice (3.4)	3.4. Describe the 1D relative motion of an object	09/16/2011	М
**2D motion free response (3.5)	3.5. Solve problems projectile motion problems	09/16/2011	D*Dr
3.5 2nd Try	3.5. Solve problems projectile motion problems	09/29/2011	M
**2D motion free response (3.6)	3.6. Describe the 2D relative motion of an object	09/16/2011	D*Dr
3.6 2nd Try	3.6. Describe the 2D relative motion of an object	09/29/2011	D
and the state of t	2.7 Model the path of a projectile based on data	09/13/2011	M
projectile lab	5.7. Woder the path of a projectile based off data	00/10/2011	141
projectile lab	3.8. Compare actual vs. predicted results	09/13/2011	M
projectile lab projectile lab Term S1 - HP Newton's Laws Understand, e Assignment	3.8. Compare actual vs. predicted results explain, discuss, and apply Newton's Group	09/13/2011 Due Date	M
projectile lab projectile lab Term S1 - HP Newton's Laws Understand, e Assignment **dynamics multiple choice (4.1)	3.8. Compare actual vs. predicted results axplain, discuss, and apply Newton's Group 4.1. Explain phenomena in terms of Newton Laws	09/13/2011 Due Date 10/03/2011	M Score D*Dr
projectile lab projectile lab Term S1 - HP Newton's Laws Understand, e Assignment **dynamics multiple choice (4.1) 4.1 2nd Try	3.8. Compare actual vs. predicted results axplain, discuss, and apply Newton's Group 4.1. Explain phenomena in terms of Newton Laws 4.1. Explain phenomena in terms of Newton Laws	09/13/2011 Due Date 10/03/2011 10/20/2011	M Score D*Dr M
projectile lab projectile lab Term S1 - HP Newton's Laws Understand, e Assignment **dynamics multiple choice (4.1) 4.1 2nd Try dynamics multiple choice (4.2)	3.7. Moder the part of a projectile based of data 3.8. Compare actual vs. predicted results explain, discuss, and apply Newton's Group 4.1. Explain phenomena in terms of Newton Laws 4.1. Explain phenomena in terms of Newton Laws 4.2. Distinguish & convert between mass and weight	09/13/2011 Due Date 10/03/2011 10/20/2011 10/03/2011	M Score D*Dr M M
projectile lab projectile lab Term S1 - HP Newton's Laws Understand, e Assignment **dynamics multiple choice (4.1) 4.1 2nd Try dynamics multiple choice (4.2) **dynamics multiple choice (4.3)	3.8. Compare actual vs. predicted results explain, discuss, and apply Newton's Group 4.1. Explain phenomena in terms of Newton Laws 4.1. Explain phenomena in terms of Newton Laws 4.2. Distinguish & convert between mass and weight 4.3. Solve problems in terms of Newton's 2nd law	09/13/2011 Due Date 10/03/2011 10/20/2011 10/03/2011 10/03/2011	M Score D*Dr M M D*Dr
projectile lab projectile lab Term S1 - HP Newton's Laws Understand, of Assignment **dynamics multiple choice (4.1) 4.1 2nd Try dynamics multiple choice (4.2) **dynamics multiple choice (4.3) 4.3 2nd Try	3.8. Compare actual vs. predicted results explain, discuss, and apply Newton's Group 4.1. Explain phenomena in terms of Newton Laws 4.1. Explain phenomena in terms of Newton Laws 4.2. Distinguish & convert between mass and weight 4.3. Solve problems in terms of Newton's 2nd law 4.3. Solve problems in terms of Newton's 2nd law	09/13/2011 Due Date 10/03/2011 10/20/2011 10/03/2011 10/03/2011 10/03/2011	M Score D*Dr M D*Dr M D*Dr

Infinite Campus

Misconceptions

- I have to rewrite my curriculum, tests, everything!
- parents and students will revolt!
- students won't do labs!
- students will turn in work late!
- students will blow off first assessment!
- students will fall behind and can't catch up!
- students won't reassess!
- I will be overwhelmed creating and grading reassessments!
- I need a special SBG gradebook!

Friday, 28 October 2011

http://pedagoguepadawan.net/62/lookingbackbeforesbg/

Students won't do labs if they aren't graded. If the labs are engaging (not cookbook) and you have established a classroom culture that values learning, they will. If they don't, maybe you need to revise that lab. Students learn to take advantage of learning opportunities because they appreciate their value. Labs can be much more responsive to needs because we don't have to define every single point that counts. We have a lot more flexibility to change labs. Class is more fun. We can make changes overnight if needed.

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- Students will turn in work late. Some will; some did before. Don't make a big deal about it. Work submitted late, results in delayed feedback which is
- disadvantageous to students.
- Students won't study for exams if they have multiple opportunities. Some won't. Some didn't before. They get to prioritize and make choices. Learning to do
 that and the consequences of their choices in a valuable skill which is better practiced in high school than college. Make subsequent opportunities as
 challenging as the first.
- Students will get behind and can't catch up. Some do and can't. Some do and can. At least now they have the opportunity to catch up instead of being left behind as the class plows onward. Before SBG, I can remember only one student who would go back and study topics they still didn't understand after the exam. Now almost every student does.
- Students won't reassess. Honors Physics students in line, out the door, down the hallway for 2nd tries. More of a challenge with General Physics students.
- I will be overwhelmed creating multiple assessments. It was work but not overwhelming since we split it. We limited reassessment opportunities and leveraged technology where feasible.
- I will be overwhelmed with students assessing multiple times. When a line formed out the door of my classroom the afternoon after our first exam, I realized I would have to set some boundaries. Reassessments are offered one day a week before and after school. Period.
- I will be overwhelmed grading reassessments. Grading reassessments is more grading, but checking for understanding is faster than deducting points.
 Overall, I do a lot less grading and provide a lot more useful feedback.
- Parents will revolt. Many were extremely supportive. Some couldn't let go of the points game that their child had learned to play so well. Some couldn't focus
 on anything other than the GPA that will be on a transcript for college. Patience, open house discussions, and phone calls help.
- Students will revolt. If you take the time to share the rationale for the structure of the class, discuss their concerns, and truly change your philosophy of education, <u>a strong majority of students prefer SBG</u>. After a career of playing the points game, some students are so frustrated that the rules of the game have changed, that they can't adjust. I don't give up on these students, but I'm not always successful in changing their perspective towards learning.
- I need a special SBG gradebook. ActiveGrade, SnapGrades, BlueHarvest are all excellent tools, but you can make any gradebook work

Results

- classroom is full before school
- students develop better understanding
- students are more relaxed and engaged in labs
- students share their understanding (or lack thereof)
- students are more responsible (self assessment and prioritization essential)
- grade reflects students' understanding

Friday, 28 October 2011

On September 30th, there were 30 kids in classroom helping each other and asking questions.

"the final should be easy because we actually have to learn everything as we go along."

The year before SBG, I had one student sufficiently focused on learning to come in and go over each exam with me to make sure he improved his understanding. One.

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Before SBG, students would write the bare minimum and a vague answer hoping that they could hide their lack of understanding and the answer would be good enough to count for credit. Now students write, "I don't understand this"

Students have freedom to prioritize. For example, they can defer homework.

Does not favor students who play "the school game" well since they are unable to artificially inflate their grade (no homework grade, no extra credit).

Benefits for You

- grade less; provide feedback more
- more rewarding as you are the students ally not their adversary taking away points
- less guarded and more guided since we are not "giving away points"
- easier conversations with parents

Friday, 28 October 2011

http://pedagoguepadawan.net/10/ilikereadinglabreports/

Your attention is focused on feedback, not counting points. Easier to assess mastery than maintain a running count of points to take away. Can phrase feedback as questions which provides students with an opportunity to answer those question when preparing for reassessment.

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Final exams are much faster to grade. Easier to grade free response since it is mastery and not points.

Overall, less time spent grading and time better spent.

I approach "grading" as giving students feedback to help them learn; we're partners. This is better than the adversarial role of penalizing them for making mistakes.

conversations with parents: there is almost always something a student can do;

Lessons Learned

- small number of broad standards
- balance general standards with specific daily learning targets
- don't work harder than students
- communicate proactively
- use consistent terminology
- choose grading scale carefully: avoid numbers
- balance frequency, duration, and location of reassessments

http://pedagoguepadawan.net/31/adjustmentsforsecondsemester/

http://pedagoguepadawan.net/23/growingsbarschoolwide/

For each standard, ask yourself, "how am I going to assess this multiple times and do I really care if students master this?"

Our initial mapping of 1-4 to percentages was problematic and caused issues that could have been avoided (also inflated grades).

We sent letters, we talked SFCP, we presented at institute days, we had discussions in class.

Our school is in the process of creating a glossary of terms with common definitions to address this aspect that is in need of improvement. One especially egregious example concerns the use of the word "target." Our school has a history of defining "target" as a student-understandable and demonstrable goal for a daily lesson. We have been using "target" as a synonym for standard which is much broader.

Get away from numbers as much as possible. Mastery and developing mastery works much better than any number system (e.g., 1-4) which can be interpreted as a percentage.

We used to assess every standard three times in General Physics. Too much class time spent on summative assessment.

Make reassessments at least as hard as the initial assessment to discourage students blowing off the initial assessment.

One day a week we're stuck doing reassessments.

If you want to clearly communicate that something has changed and means something different, make it obvious by making its initial appearance very different. I think this is why explaining a system where understanding is scored with "mastery (M)" and "developing mastery (D)" indicators is easier to explain than a 1-4 grading scale that appears to be based on a percentage of 4 points or a typical GPA.

We have to be proactive in our communication of change to teachers, students, and parents. The conversation about SBAR is significantly easier and much more likely to result in a positive outcome if the participants are starting from a position of curiosity. Even starting from a position of confusion or skepticism is better than starting from a position of hostility. The burden is upon the SBAR advocates to initiate these conversations proactively instead of reactively. The first time a student or parent hears about SBAR needs to be from a passionate educator who can clearly explain its purpose and goals.

When you are evangelizing a significant change in an organization, frame the conversation in your terms. In my previous career, I spent a lot of time and effort evangelizing wide-spread change. I quickly learned that I had to set that stage for the discussion, not the detractors. This applies to education reform as much as software development methodologies. Advocates for standards-based assessment and reporting need to frame the conversation in terms of the primary focus of student learning and not a letter grade; opportunities to demonstrate understanding, not retakes; feedback, not scores; standards-based assessment and reporting (SBAR), not standards-based grading (SBG). Choice of language is critical in framing the conversation.

The second key realization is that clearly presenting the rationale behind SBAR to my students is critical. Last year, I made a very conscious and deliberative effort to explain SBAR, it purpose, and my rationale for integrating it into our class. My colleague and I received feedback that our students had a very clear understanding of SBAR in our class and our rationale for integrating it. I expect that I haven't made enough of an effort this year to communicate the rationale. While I may be more familiar and comfortable with SBAR, many of my students are not. Until this year, I didn't fully appreciate that the manner in which grades are reported to students and parents affects my ability to change students' attitudes about learning and grades. Last year we reported learning progress with <u>SnapGrades</u>. The "report card" had no percentages and no letter grades. Just a list of standards and a note of which the student had demonstrated mastery:

Watchpoints

grades fluctuate and are not static

 requires better pedagogical content knowledge to assess

Friday, 28 October 2011

A grade is like a damped harmonic oscillator.

Processes that assume traditional grading don't always work well with SBG (e.g., athletic eligibility).

Need to infer student intention with pedagogical content knowledge in order to distinguish "close" from "no clue" and "minor misconception" from "major misconception"

Disappointments

- students are still stressed
- students still cheat
- students continue to think too much about grades
- we still grade homework

Friday, 28 October 2011

Cheating doesn't result in a zero. We still permit reassessments. We deal with cheating behavior via Dean's office as a behavior issue.

Pressure is less during labs. Pressure is somewhat less during in-class tests because there are reassessments. Pressure is somewhat less during reassessments because time constraints are removed.

After this ineffective whiteboard session, a few students with whom I had stronger relationships made a point to talk to me about why they hadn't attempted their homework. All of them said that they appreciated that they needed to practice these problems. All of them said that they knew that they wouldn't be able to effectively whiteboard the problems without having at least attempted the homework. All of them knew that eventually they would need to practice in order to do well on the summative assessments. However, all of them also explained that not doing their homework was a conscious decision. They explained that they get home late due to soccer/marching band/play practice. They explained that they have more homework assigned then they can possibly complete in a night (another issue to address). If they don't complete their math/social studies/other science homework, they lose points, their grade is impacted, their GPA is affected. They believe the only logical choice is not to do their physics homework.

When other classes assign points to homework, overloaded students that are grade-centric won't do homework that isn't assigned points.

Dreams

- don't count homework
- more tries
- increase ownership
- more authentic
- no numbers
- no grade ever

Alternatives

- assessments can change score either way
- conjunctive standards-based grading
- require demonstration of additional practice and formal request of reassessment
- better tools: SnapGrades, ActiveGrade, BlueHarvest

we don't take away mastery or lower scores based on subsequent reassessments

http://kellyoshea.wordpress.com/2011/08/02/conjunctive-standards-based-grading/

I learned this summer that what I do is apparently called "conjunctive scoring". That is, students cannot compensate for a low score in one area (say, their understanding of forces) with a high score in another area (say, conservation of energy). Rather, it requires at least a minimum amount of mastery in every area to earn a passing grade overall.

capstones and goal-less problems

http://samjshah.com/2011/06/15/to-reassess-or-how-to-make-more-work-for-me/

BlueHarvest: http://shawncornally.com/BlueHarvest/

What is Required to <u>Adapt SBG?</u>

please don't adopt our methodology
not a major organizational change
major philosophical change

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We didn't change test questions; we just grouped them by standard.

We didn't change curriculum.

We completely changed our approach to teaching, learning, and students.

My Whole School Should Do This!

- be careful
- not everyone is ready
- potential to tarnish reputation of SBG
- potential to prohibit anyone from adapting SBG at your school
 - this happened two days ago in Round Rock, Texas

Friday, 28 October 2011

http://pedagoguepadawan.net/152/dangerofmisapplyingpowerfultools/

Be very careful about requiring people to move the SBG: if done incorrectly or without a change in philosophy it can poison the whole idea.

Additional Resources

• #sbar on Twitter

pedagoguepadawan.net

- materials from this session
- posts
- blog role
- SBG Galas

Student Comments

• Standards-Based Grading is...

... a good alternative to the traditional grading system. In many of my other classes that do not use standards based grading, I feel that I do not really understand what I am learning, but rather, I am worried about my grade more than anything. The type of standards based grading utilized in physics ensures that I can focus on actually learning new material, as I know that if I learn the material, I'll have a good grade. Additionally, I like the fact that we don't keep losing points for simple "silly" mistakes, as this is where I usually lose points on, even though I usually understand the overall concept. This is why I feel that standards based grading is also a more accurate depiction of what people really know.

"... a great way to show learning in physics. It makes me think less about a letter grade and more about actually mastering the concepts we cover."

"... a great way for people to show what they know. If they did not understand the full idea, they can always go back and learn what they need to know. It also gives the students the knowledge as to what the teacher will be grading them on. It also saves the grade of a student who learns at a slower pace or looks at the curriculum at a different aspect than others."

"... fantastic. There's more focus on what school should be about: comprehension of material retention. It is a wonderful new program; I believe courses should be taught with a much stronger foothold of standardized based grading."

"...very helpful in increasing my grade and helping me further understand the material in class. The clear targets allow me to study specifically what I need to know, and I feel like I will better retain the information that I've learned this year."

"... a way to break down the material of a class and be assessed on individual topics."

"... only being able to move on when you fully understand a concept"

"... awesome. This is the first year that I've had it, and I actually have A's in both of the classes that I have that use it I think that this system really gives students the opportunity to show that they know the material, rather than getting points for doing homework and such."

"... more helpful than regular grading for most classes because you are not penalized for small non targetrelated mistakes."

"... good because you get a second chance to prove yourself, and improve, where as normal grading does not allow that."

"... a system that can be harsh if you don't completely understand a concept, but forgiving if you spend the time to learn it and utilize second-tries."

"... detrimental to my grade. Though it places less pressure on me, I don't feel like my grade in the class accurately reflects my understanding of the material nor the amount of work that I put into it."

"... Stressful and unindividual. My grade should be a reflection of my personal effort and growth."

"... REALLY ANNOYING, it penalizes you more then anything else because you have less points, and even if you just miss a few questions, you still get a zero for that target which has a huge impact on your overall test score instead of just getting a number grade which would be like an 85% or something. I hate SBG. I don't see the point of it what so ever."

"... another type of conspiracy, but less severe and possibly more helpful, although, it still will create a schism between those who understand, and those who don't; however, this sort of grading measures how well someone knows the right answers rather than how well they can repeat it."

"... pretty cool..i guess it could screw you over if you're not careful...but whatever"

Additional Resources

• #sbar on Twitter

pedagoguepadawan.net

- materials from this session
- posts
- blog roll
- SBG Galas

Standards-Based Grading for High School Physics

Mark Rowzee and Geoff Schmit Naperville North High School