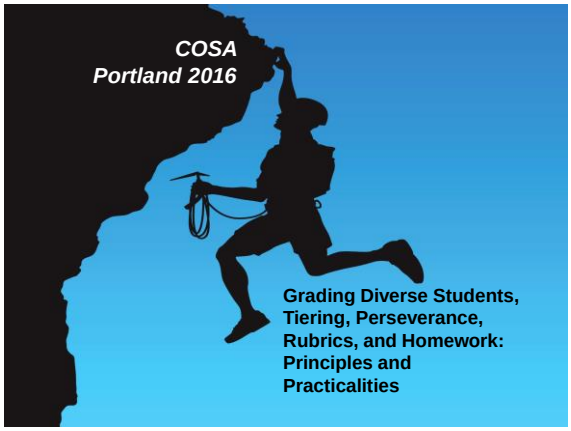

For further conversation about any of these topics:

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Discrete mathematics is the study of mathematical structures that are fundamentally discrete rather than continuous. In contrast to real numbers that have the property of varying "smoothly," the objects studied in discrete mathematics – such as integers, graphs, and statements in logic – do not vary smoothly in this way, but have distinct, separated values. Discrete mathematics therefore excludes topics in, "continuous mathematics," such as calculus and analysis. Discrete objects can often be enumerated by integers. More formally, discrete mathematics has been characterized as the branch of mathematics dealing with countable sets (sets that have the same cardinality as subsets of the natural numbers, including rational numbers but not real numbers). However, there is no exact, universally agreed, definition of the term "discrete mathematics." Indeed, discrete mathematics is described less by what is included than by what is excluded: continuously varying quantities and related notions.

The set of objects studied in discrete mathematics can be finite or infinite. The term finite mathematics is sometimes applied to parts of the field of discrete mathematics that deals with finite sets, particularly those areas relevant to business. Research in discrete mathematics increased in the latter half of the twentieth century partly due to the development of digital computers which operate in discrete steps and store data in discrete bits. Concepts and notations from discrete mathematics are useful in studying and describing objects and problems in branches of computer science, such as computer algorithms, programming languages, cryptography, automated theorem proving, and software development. Conversely, computer implementations are significant in applying ideas from discrete mathematics to real-world problems, such as in operations research. Although the main objects of study in discrete mathematics are discrete objects, analytic methods from continuous mathematics are often employed as well.

The history of discrete mathematics has involved a number of challenging problems which have focused attention within areas of the field. In graph theory, much research was motivated by attempts to prove the four color theorem, first stated in 1852, but not proved until 1976 (by Kenneth Appel and Wolfgang Haken, using substantial computer assistance).

In logic, the second problem on David Hilbert's list of open problems presented in 1900 was to prove that the axioms of arithmetic are consistent. Gödel's second incompleteness theorem, proved in 1931, showed that this was not possible – at least not within arithmetic itself. Hilbert's tenth problem was to determine whether a given polynomial Diophantine equation with integer coefficients has an integer solution. In 1970, Yuri Matiyasevich proved that this could not be done.

The need to break German codes in World War II led to advances in cryptography and theoretical computer science, with the first programmable digital electronic computer being developed at England's Bletchley Park. At the same time, military requirements motivated advances in operations research. The Cold War meant that cryptography remained important, with fundamental advances such as public-key cryptography being developed in the following decades. Operations research remained important as a tool in business and project management, with the critical path method being developed in the 1950s. The telecommunication [illegible] motivated advances in discrete mathematics, [illegible]n theory and information theory. Formal [illegible]ments in logic has been necessary for software [illegible]ety-critical systems, and advances in automated [illegible]ave been driven by this need.

-- Downloaded from Wikipedia, April 1, 2014

Readability Level: "Appropriate for University Graduates"

Model reliability. Goodwin and Miller: 2013 study demonstrating that adult experimenters who followed through on promises positively affected children's resilience. Children whose experimenters did not keep their promises were less resilient than the other group. Actions speak louder than words.

- Education Leadership, ASCD, September 2013, p. 75

- What kept you reading this passage?
- What would have helped you invest more thought into what you were reading?

There is no such thing as laziness.

Walter Mischel on his Marshmallow Experiment
http://www.youtube.com/watch?v=0b3SWsjWzdA

Three Premises:

- We can ***control*** and ***coerce*** someone to do something, but we can't ***motivate*** anyone to do anything they don't already want to do.
- Motivation is only doing to the best of our ability what we are *already capable* of doing. *(Rick Lavoie, F.A.T. City Workshop: How Difficult Can This Be?" PBS Video)*
- Motivation is not something we do ***to*** teachers or students, it is something we create *with* them.

Engaged **Compliant**

LeAnn Nikelsen

-The Inner Net"
- David Bowden

Active Creators, NOT Passive Consumers!

"Learning is fundamentally an act of creation, not consumption of information."

- Sharon L. Bowman, Professional Trainer

If those are true, then:

Our focus is to create an environment that cultivates curiosity and personal investment, making sure students and teachers feel safe to engage in the activity or topic without fear of embarrassment or rejection.

And, we accept the fact that there is no such thing as laziness.

Our job is not to make up anybody's mind, but to open minds and to make the agony of decision-making so intense you can escape only by thinking." - ***Fred Friendly, broadcaster***

"All thinking begins with wonder."
-- Socrates

When it comes to cognitive perseverance, carrots and stick approaches don't work. Avoid them.

Three elements in intrinsic motivation:

- Autonomy -- the ability to choose what and how tasks are completed
- Mastery -- the process of becoming adept at an activity
- Purpose -- the desire to improve the world.

-- Daniel H. Pink
Drive: The Surprising Truth about What Motivates Us
2009

Somebody Wanted But So

[Fiction]

Somebody ***(characters)…***

wanted ***(plot-motivation)…,***

but ***(conflict)…,***

so ***(resolution)… .***

Something Happened And Then

[Non-fiction]

Something ***(independent variable)…***

happened ***(change in that independent variable)…,***

and ***(effect on the dependent variable)…,***

then ***(conclusion)… .***

Components of Blood Content Matrix

	Red Cells	White Cells	Plasma	Platelets
Purpose	Carries 02 and nutrients			
Amount	5,000,000 per cc			
Size & Shape	Small, round,like Cheerios			
Nucleus ?	No			
Where formed	Bone marrow, spleen			

The student's rough draft:

Red blood cells carry oxygen and nutrients around the body. They are small and indented in the middle, like little Cheerios. There are 5 million per cc of blood. There is no nucleus in mature red blood cells. They are formed in the bone marrow and spleen.

Word Morphology:

Teach Prefixes, Roots, and Suffixes!

Mal – badly, poor
Meta – beyond, after, change
Mis – incorrect, bad
Mono – one
Multi – many
Neo – new
Non – not
Ob, of, op, oc – toward, against
Oct – eight
Paleo – ancient
Para – beside, almost
Penta – five
Per – throughout, completely
Peri – around
Poly – many
Post – after
Pre – before
Pseudo – false

Common Analogous Relationships

Antonyms
Synonyms
Age
Time
Part : Whole
Whole : Part
Tool : Its Action
Tool user : Tool
Tool : Object It's Used With
Worker: product he creates
Category : Example
Effect : Cause
Cause : Effect
Increasing Intensity
Decreasing Intensity
Person : closely related adjective

- **Person : least related adjective**
- **Math relationship**
- **Effect : cause**
- **Action : Thing Acted Upon**
- **Action : Subject Performing the Action**
- **Object or Place : Its User**
- **Object : specific attribute of the object**
- **Male : Female**
- **Symbol : what it means**
- **Classification/category : example**
- **Noun : Closely Related Adjective**
- **Elements Used : Product created**
- **Attribute : person or object**
- **Object : Where it's located**
- **Lack (such as drought/water – one thing lacks the other)**

Meaning Matters ☺

An English professor wrote the words, "A woman without her man is nothing," on the blackboard and directed the students to punctuate it correctly. The men wrote: "A woman, without her man, is nothing," while the women wrote, "A woman: without her, man is nothing."

"Let's eat, Dad!"
"Let's eat Dad."

"To a person uninstructed in natural history, his country or seaside stroll is a walk through a gallery filled with wonderful works of art, nine-tenths of which have their faces turned to the wall."

-- Thomas Huxley, 1854

Yes, teach students to memorize content.

Which one leads to more willingness to stick with a lengthy article and learn how microscopes work?

1. Kellen plays with the microscope, trying out all of its parts, then reads an article about how microscopes work and answers eight comprehension questions about its content.
2. Kellen reads the article about how microscopes work, answers eight comprehension questions about its content, then plays with the microscope, trying out all of its parts.

Perception

What do you see?
What number do you see?
What letter do you see?

Perception is when we bring meaning to the information we receive, and it depends on prior knowledge and what we expect to see. (Wolfe, 2001)

Are we teaching so that students perceive, or just to present curriculum and leave it up to the student to perceive it?

Journalistic vs. Encyclopedic Writing

"**The breathing of Benbow's pit is deafening, like up-close jet engines mixed with a cosmic belch. Each new breath from the volcano heaves the air so violently my ears pop in the changing pressure – then the temperature momentarily soars. Somewhere not too far below, red-hot, pumpkin size globs of ejected lava are flying through the air.**"

-- ***National Geographic*, November 2000, p. 54**

"A volcano is a vent in the Earth from which molten rock (magma) and gas erupt. The molten rock that erupts from the volcano (lava) forms a hill or mountain around the vent. Lava may flowout as viscous liquid, or it may explode from the vent as solid or liquid particles…"

-- *Global Encyclopedia*, Vol. 19 T-U-V, p. 627

Read complex text aloud with proper vocal inflection and pacing. Students can understand text in readabilities above their own independent, silent reading proficiency when the complex text is read aloud by someone who understands the material.

And students who understand text are more inclined to stick with it when reading it silently later.

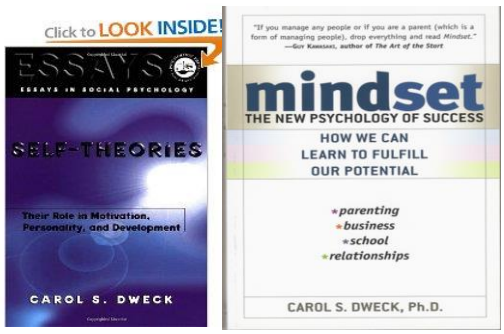
With hocked gems financing him,
Our hero bravely defied all scornful laughter
That tried to prevent his scheme.
Your eyes deceive, he had said;
An egg, not a table
Correctly typifies this unexplored planet.
Now three sturdy sisters sought proof,
Forging along sometimes through calm vastness
Yet more often over turbulent peaks and valleys.
Days became weeks,
As many doubters spread
Fearful rumors about the edge.
At last from nowhere
Welcome winged creatures appeared
Signifying momentous success.

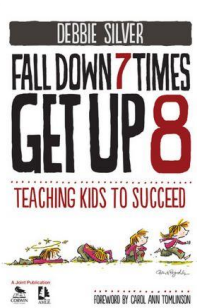
-- Dooling and Lachman (1971)
pp. 216-222

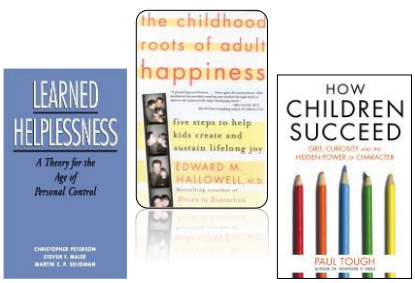
Meaningful Arrangement and Patterns are Everything

d-a-o-o-u-i-d-y-v-l-e

Novelty, Surprise, Curveballs, Whoops, and the Unexpected



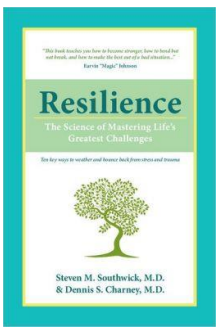


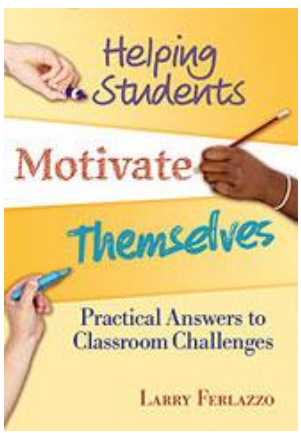


10 Roots of Resilience:

- **Realistic optimism**
- **Facing fear**
- **Moral compass**
- **Social support**
- **Resilient role models**
- **Physical fitness**
- **Brainfitness**
- **Cognitive and emotional flexibility**
- **Meaning and purpose**

BY: Steven Southwick and Dennis Charney (2012), Cambridge University Press

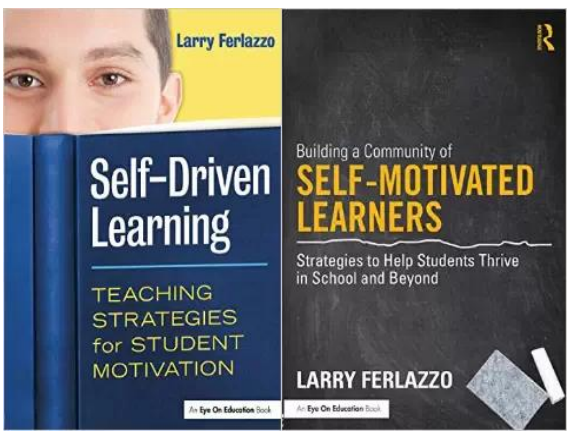


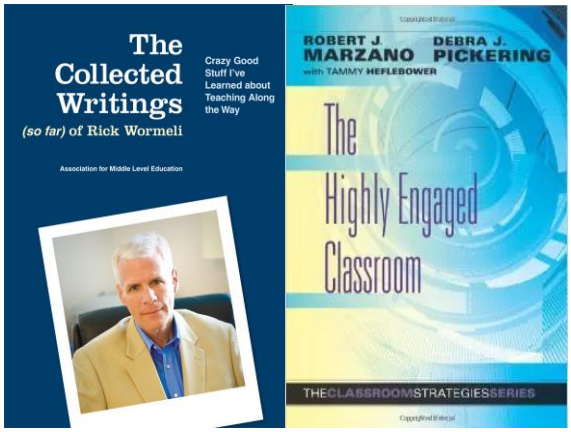


Larry Ferlazzo

Helping Students Motivate Themselves: Practical Answers to Classroom Challenges

Practical, Creative, Real….





Being good at taking standardized tests doesn't qualify students for creative contribution to society or successful citizenship.

Our future depends on this one here.

Schools aren't meant to meet the needs of diverse students.

'Anyone out there know me?

It is counter-cultural, subversive to differentiate instruction and assessment.

Create moral imperative.

Identify the Principles Involved, THEN Gather the Solutions

Example: How do I grade English Language Learners?

Principles/Tenets Involved:

- **Teachers must be ethical. They cannot knowingly falsify a score or grade.**
- **To be useful, grades must be accurate reports of evidence of students' performance against standards.**
- **Regular report cards report against regular, publicly declared standards/outcomes. They cannot report about irregular standards or anything not publicly declared.**
- **Any test format that does not create an accurate report of students' degree of evidence of standards must be changed so that it does or replaced by one that does.**

(continued)

Identify the Principles Involved, THEN Gather the Solutions

Example: How do I grade English Language Learners?

Principles Involved: (Continued)

- **English Language Learners have a right to be assessed accurately.**
- **Lack of language proficiency does not mean lack of content proficiency.**
- **Effective teachers are mindful of cultural and experiential bias in assessments and try to minimize their impact.**

If teachers act upon these principles, what decisions/behaviors/policies should we see in their assessment and grading procedures?

"Is my purpose to **select** talent or **develop** it?…If your purpose as an educator is to select talent, then you must work to maximize the differences among students. In other words, on any measure of learning, you must try to achieve the greatest possible variation in students' scores …Unfortunately for students, the best means of maximizing differences in learning is poor teaching. Nothing does it better."

-- Thomas R. Guskey, *Education Leadership*, ASCD, November 2011, Pages 16-21

"If, on the other hand, your purpose as an educator is to develop talent, then you…clarify what you want students to learn and be able to do. Then you do everything possible to ensure that all students learn those things well. If you succeed, there should be little or no variation in measures of student learning. All students are likely to attain high scores on measures of achievement, and all might receive high grades.

-- Thomas R. Guskey, *Education Leadership*, ASCD, November 2011, Pages 16-21

What is standards-based assessment and grading?

It's assessing and grading only in reference to evidence of standard(s), nothing else. If it's listed in the course curriculum, it can be evaluated and included in the final grade. If not, it can be reported, but reported in a separate column on the report card.

It often requires the removal or changing of several conventional grading practices in order to maintain grade integrity.

Define Each Grade

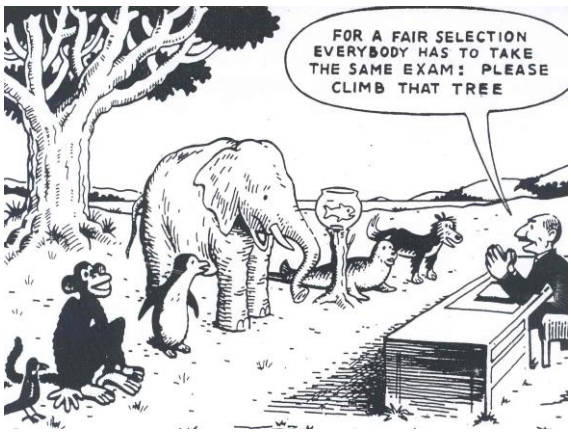
A:

B:

C:

D:

E or F:



Time is a variable, not an absolute.

"Nobody knows ahead of time how long it takes anyone to learn anything."

Dr. Yung Tae Kim, "Dr. Tae," Physics Professor, Skateboarding Champion

We are criterion-referenced, evidenced-based, *not* norm-referenced in classroom assessment and reporting.

Great differentiated assessment is never kept in the dark.

"Students can hit any target they can see and which stands still for them."

-- Rick Stiggins, Educator and Assessment expert

If a child ever asks, "Will this be on the test?".....we haven't done our job.

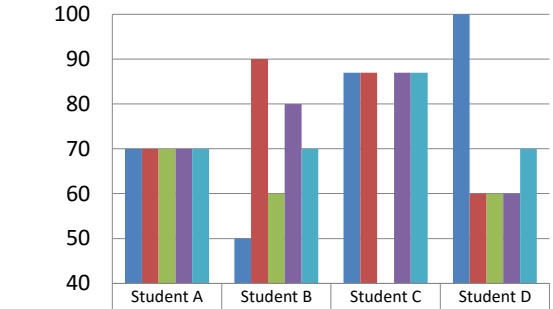
We cannot conflate reports of compliance with evidence of mastery. Grades are reports of *learning*, not *doing*.

'Time to Change the Metaphor:

Grades are NOT ***compensation***. Grades are ***communication***: They are an accurate report of what happened.

Fair Isn't Always Equal

Just because it's mathematically easy to calculate doesn't mean it's pedagogically correct.



	Student A	Student B	Student C	Student D
Fiction	70	50	87	100
Non-Fiction	70	90	87	60
Writing	70	60	0	60
Speaking	70	80	87	60
Listening	70	70	87	70

'Time to Stop Averaging

1. Society's definition of normal/"average" changes over time
2. Averaging tells us how a student is doing in relation to others, but we are criterion-referenced in standards-based classrooms.
3. Averaging was invented in statistics to get rid of the influence of any one sample error in experimental design, not how a student is doing in relation to learning goal.
4. Mode and in some cases, median, have higher correlation with outside the classroom testing.

This quarter, you've taught:

- **4-quadrant graphing**
- **Slope and Y-intercept**
- **Multiplying binomials**
- **Ratios/Proportions**
- **3-dimensional solids**
- **Area and Circumference of a circle.**

The student's grade: B

What does this mark tell us about the student's proficiency with each of the topics you've taught?

Unidimensionality – A single score on a test represents a single dimension or trait that has been assessed

Student	Dimension A	Dimension B	Total Score
1	**2**	**10**	**12**
2	**10**	**2**	**12**
3	**6**	**6**	**12**

Problem: Most tests use a single score to assess multiple dimensions and traits. The resulting score is often invalid and useless. -- Marzano, CAGTW, page 13

"We can learn without grades; we can't learn without descriptive feedback."

What are you supposed to be learning,

…and where are you in relation to that goal?

Working Definition of Mastery
(Wormeli)

Students have mastered content when they demonstrate a thorough understanding as evidenced by doing something substantive with the content beyond merely echoing it. Anyone can repeat information; it's the masterful student who can break content into its component pieces, explain it and alternative perspectives regarding it cogently to others, and use it purposefully in new situations.

- Determine the surface area of a cube.
- Determine the surface area of a rectangular prism (a rectangular box)
- Determine the amount of wrapping paper needed for another rectangular box, keeping in mind the need to have regular places of overlapping paper so you can tape down the corners neatly
- Determine the amount of paint needed to paint an entire Chicago skyscraper, if one can of paint covers 46 square feet, and without painting the windows, doorways, or external air vents

Which one qualifies for an "A" in the gradebook?

Do's for Rubrics:

1. Use fewer levels.
2. Reference the same domain all the way through the rubric or scale.
3. Keep the evaluative criteria for each level authentic to the learner's experience.
4. Keep the same part of speech all the way through the rubric.

Do's for Rubrics:

4. Test-drive the rubric on real student work before giving it to students.
5. Provide exemplars for each level.
6. Ask students to design the evaluative criteria and rubric themselves.
7. Occasionally, exchange assessments with another teacher and, using the rubric, assess the students in each other's classes.

Do's for Rubrics:

8. When providing multiple choices in projects or assessments, create and use only one rubric.
9. For grading scales in particular, remember to seek clear and consistent evidence over time.
10. Reflect on the rubric's use and quality. See separate slides on questions to ask yourself and colleaguesUse fewer levels.

Don'ts for Rubrics:

1. Don't use average, above average, or below average for the descriptor at any level.
2. Don't write out every level of descriptors for most assessments.
3. Don't let reports of compliance distort reports of learning.
4. Don't use symbols with a natural sequence.

Don'ts for Rubrics:

5. Use caution on the "4.0" descriptor as, "Exceeds Expectations." Report advanced work separately from grade-level work.
6. Use caution here as well: By their very nature, rubrics limit students

Ways for Students to Transcend Rubric Criteria:

- **Demonstrate divergent thinking.**
- **Add your own voice: If we left your name off the project, would we know it was you that created it?**
- **Make meaningful connections that the rest of us did not consider.**
- **Extend your investigation beyond the parameters put forth in the descriptors**

Ways for Students to Transcend Rubric Criteria:

- **Give the teacher alternative proposals for how to demonstrate evidence of your learning.**
- **Teach the teacher and your classmates something they did not know about the topic.**
- **Express content from a different perspective or through a different domain:**
  - **'Norse mythology expressed through careful cultivation of Bonsai trees?**
  - **Debate as a form of dance?**
  - **The human circulatory system could be used as a form of cryptography?**
  - **Cultures, furniture, languages, and technology experience entropy?**

Ways for Students to Transcend Rubric Criteria:

- **Make the content your own, not something you borrow from the teacher and return passively at the end of the unit. Let the teacher see what YOU bring to learning's table. Don't subordinate who you are for the sake of what a previous generation thought was salient.**

And best of all: There are no penalties for giving all of these a try, even when you fail in the first attempts.

Guiding Questions for Rubric Design:

- Does the rubric account for everything we want to assess?
- Is a rubric the best way to assess this product?
- Is the rubric tiered for this student group's readiness level?
- Is the rubric clearly written so anyone doing a "cold" reading of it will understand what is expected of the student?
- Can a student understand the content yet score poorly on the rubric? If so, why, and how can we change the rubric to make sure it doesn't happen?

Guiding Questions for Rubric Design:

- Can a student understand very little content yet score well on the rubric? If so, how can we change that so it doesn't happen?
- What are the benefits to us as teachers of this topic to create a rubric for our students?
- How do the elements of this rubric support differentiated instruction?
- What should we do differently the next time we create this rubric?

"Metarubric Summary"

To determine the quality of a rubric, examine the:

- **Content -- Does it assess the important material and leave out the unimportant material?**
- **Clarity -- Can the student understand what's being asked of him, Is everything clearly defined, including examples and non-examples?**
- **Practicality -- Is it easy to use by both teachers and students?**
- **Technical quality/fairness -- Is it reliable and valid?**
- **Sampling -- How well does the task represent the breadth and depth of the target being assessed?**

(p. 220). Rick Stiggins and his co-authors of Classroom Assessment for Student Learning (2005)

Holistic or Analytic?

Task: Write an expository paragraph.

- Holistic: One descriptor for the highest score lists all the elements and attributes that are required.
- Analytic: Create separate rubrics (levels of accomplishment with descriptors) within the larger one for each subset of skills, all outlined in one chart. Examples for the paragraph prompt: Content, Punctuation and Usage, Supportive Details, Organization, Accuracy, and Use of Relevant Information.

Holistic or Analytic?

Task: Create a drawing and explanation of atoms.

- Holistic: One descriptor for the highest score lists all the features we want them to identify accurately.
- Analytic: Create separate rubrics for each subset of features –
  - Anatomical Features: protons, neutrons, electrons and their ceaseless motion, ions, valence
  - Periodic Chart Identifiers: atomic number, mass number, period
  - Relationships and Bonds with other Atoms: isotopes, molecules, shielding, metal/non-metal/metalloid families, bonds – covalent, ionic, and metallic.

Rubric for the Historical Fiction Book Project – Holistic-style

5.0 Standard of Excellence:

- **All material relating to the novel was accurate**
- **Demonstrated full understanding of the story and its characters**
- **Demonstrated attention to quality and craftsmanship in the product**
- **Product is a realistic portrayal of media used (examples: postcards look like postcards, calendar looks like a real calendar, placemats can function as real placemats)**
- **Writing is free of errors in punctuation, spelling, capitalization, and grammar**
- **Had all components listed for the project as described in the task**

4.5, 4.0, 3.5, 3.0, 2.5, 2.0, 1.5, 1.0, .5, and 0 are awarded in cases in which students' projects do not fully achieve all criteria described for excellence. Circled items are areas for improvement.

Two Rubric Ideas to Consider:

- Only give the fully written description for the standard of excellence. This way students won't set their sights on something lower.
- 4.0 rubrics carry so much automatic, emotional baggage, parents and students rarely read and internalize the descriptors. Make it easier for them: Use anything except the 4.0 rubric – 2.0, 3.0, 5.0, 6.0.

4.0 Scale (Rubric) Grading Approach:

A rubric would've been given to the student prior to the test. Universal "look-fors" would have been identified for the student to demonstrate. For the 4.0 Standard of Excellence, the evaluative criteria might include:

The student recognizes the need to convert the mixed numbers into improper fractions for ease in calculating.

The student understands the need to divide fractions by multiplying by the reciprocal of the second fraction.

The student multiplies the two improper fractions correctly.

The student simplifies the answer into lowest terms.

The student double-checks his work to make sure there were no careless errors.

The student arrives at the correct response.

The student is given full credit for anything from this list that he or she does correctly. If the student seems to understand everything and follows all procedures except for one careless error that results in an incorrect response, he or she might earn a 3.5 or 3.0 instead of the 4.0, but it's not an absolute 0.0. This is a more accurate rendering of mastery, and it's significantly more useful to the teacher and the student. Anything that needs improvement is circled for the student on the rubric; he learns something from the scoring of the problem.

Designing a Rubric

Identify the essential and enduring content and skills you will expect students to demonstrate. Be specific.

Identify what you will accept as acceptable evidence that students have mastered content and skills. This will usually be your summative assessments and from these, you can create your pre-assessments.

Write a descriptor for the highest performance possible.

Designing a Rubric

4. **Determine the label for each level of the achievement. Consider using three, four, or six levels instead of five.**
5. **Test drive" the rubric with real student products. Remember, *there is no perfect rubric*.**

Examples of Rubric Descriptor Labels:

- Proficient, capable, limited, poor
- Sophisticated, mature, good, adequate, developing, naïve
- Exceptional, strong, capable, developing, beginning, emergent
- exceeds standard, meets standard, making progress, getting started, no attempt
- exemplary, competent, satisfactory, inadequate, unable to begin effectively, no attempt

Caution about Labels:

Descriptor terms need to be parallel; it's important to keep the part of speech consistent. Use all adjectives or all adverbs, not a mixture of parts of speech.

Example of Poorly Done Scale:

Top, adequately, average, poorly, zero

Scale: / Criteria:	4	3	2	1
Crftsmnshp	♫			
Accuracy	♫			
Reasoning		♫		
Preparation			♫	
Presentation		♫		

Scale refers to the numerical or one-word rating such as 4,3,2,1 or "Proficient, adequate, limited, poor." Criteria refers to the areas of assessment, such as craftsmanship, accuracy of information, reasoning skills, preparation, and presentation.

Great Idea: Ask Students to Examine Well-done Examples and Generate the Rubric

Qualities of Successful Reading Autobiographies as Identified by Students:

Be honest; don't be afraid to tell the truth.
Back up your opinions with examples of what you mean.
Choose good words to express your meaning.
Mention specific books by title.
Explain what effect reading has on you.
Explain which books you like and why you like them, as well as what books you don't like, and why you don't like them.
Stick to the topic. Get to the point.
Describe how your attitudes and reading abilities have changed since you were a child.
Explain how you started reading.
Mention someone who helped you learn to read or learn to enjoy books.
Be real - Express yourself in a relaxed, personable way, like you were talking to the reader.
Describe the particular situations or settings in which you learned or enjoyed reading.
Don't be repetitive.
Be organized: either chronologically (time order), or in sections.
Use real life connections and experiences, if possible.
Double check spelling, punctuation and grammar.
Write in complete sentences.
Have spunk.

- *How to Assess Higher-Order Thinking Skills in Your Classroom* by Susan M. Brookhart
- *From Standards to Rubrics in Six Steps: Tools for Assessing Student Learning* by Kathleen (Kay) B. Burke
- *Scoring Rubrics in the Classroom: Using Performance Criteria for Assessing and Improving Student Performance* by Judith A. Arter and Jay McTighe
- *Rubric Nation: Critical Inquiries on the Impact of Rubrics in Education* (2015) by Michelle Tenam-Zemach (Editor), Joseph E. Flynn Jr. (Editor)

- *Essential Questions: Opening Doors to Student Understanding* by Jay McTighe and Grant Wiggins
- *Creating & Recognizing Quality Rubrics* by Judith A. Arter, Jan Chappuis
- *How to Create and Use Rubrics for Formative Assessment and Grading* by Susan M. Brookhart
- *Introduction to Rubrics: An Assessment Tool to Save Grading Time, Convey Effective Feedback, and Promote Student Learning* by Dannelle D. Stevens, Antonia J. Levi, Barbara E. Walvoord

C
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2016

The goal of any teacher is to put himself out of a job.
– Oscar Wilde

Samples of Tiered Tasks

Grade Level Task:

- **Draw and correctly label the plot profile of a novel.**

Advanced Level Tasks:

- **Draw and correctly label the general plot profile for a particular genre of books.**
- **Draw and correctly label the plot profile of a novel and explain how the insertion or deletion of a particular character or conflict will impact the profile's line, then judge whether or not this change would improve the quality of the story.**

Samples of Tiered Tasks

Early Readiness Level Tasks:

- **Draw and correctly label the plot profile of a short story.**
- **Draw and correctly label the plot profile of a single scene.**
- **Given a plot profile of a novel, correctly label its parts.**
- **Given a plot profile with mistakes in its labeling, correct the labels.**

Tiering

Common Definition -- Adjusting the following to maximize learning:

- Readiness
- Interest
- Learning Profile

Rick's Preferred Definition:

-- Changing the level of complexity or required readiness of a task or unit of study in order to meet the developmental needs of the students involved (Similar to Tomlinson's "Ratcheting").

Tiering Assignments and Assessments

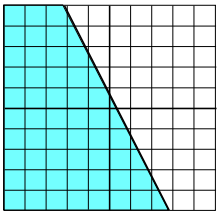
Example -- Graph the solution set of each of the following:

1. $y > 2$ 2. $6x + 3y \leq 2$ 3. $-y < 3x - 7$

2. $6x + 3y \leq 2$
$3y \leq -6x + 2$
$y \leq -2x + 2/3$

x	y
0	2/3
3	-5 1/3

Given these two ordered pairs, students would then graph the line and shade above or below it, as warranted.



Tiering Assignments and Assessments

For *early* readiness students:

- **Limit the number of variables for which student must account to one in all problems. ($y > 2$)**
- **Limit the inequality symbols to, "greater than" or, "less than," not, "greater then or equal to" or, "less than or equal to"**
- **Provide an already set-up 4-quadrant graph on which to graph the inequality**
- **Suggest some values for x such that when solving for y, its value is not a fraction.**

Tiering Assignments and Assessments

For *advanced* readiness students:

- **Require students to generate the 4-quadrant graph themselves**
- **Increase the parameters for graphing with equations such as: $-1 \leq y \leq 6$**
- **Ask students what happens on the graph when a variable is given in absolute value, such as: $/y/ > 1$**
- **Ask students to graph two inequalities and shade or color only the solution set (where the shaded areas overlap)**

Primary Reading Example

Track eye movement across the line – Lines presented with lots of space in between each one:

1. Follow pattern of rotating shapes:

2. Follow pattern of alternating letters and similar patterns:

A B A B A B A B A B A B A B A B A B A B

C F C C F F C C C F F F C C C C F F F F

3. Follow increasingly complex letter patterns:

- B B D J D B B D J D B B E E R X R E E R X R
- W N M P O U I P L K G P A B N P Q V T P

4. Repeat with lines closer to together and with smaller fonts, making sure students focus doesn't stray higher or lower than the line:

eeiiaabbxxrruuwwxxyyzziittooppqqrrssaagg

ffff rrrr ttss ppii uuoo aaoo eeoo iioo oooo ffff rrrr

fop pof rip pir tap pat lot tol tab bat sir ris lip pil bor rob kep pek moo oom

5. Track along the line with simple words, adding simple punctuation:

Bob can bark. Bob can bark. Bob can bark.
Rob can purr. Rob can purr. Rob can purr.
Rat wears a hat. Rat wears a hat. Rat wears a hat.

Tiering Assignments and Assessments -- Advice

- **Begin by listing every skill or bit of information a student must use in order to meet the needs of the task successfully. Most of what we teach has subsets of skills and content that we can break down for students and explore at length.**

Tiering Assignments and Assessments -- Advice

- **Tier tasks by designing the full-proficiency version first, then design the more advanced level of proficiency, followed by the remedial or early-readiness level, as necessary.**

Tiering Assignments and Assessments -- Advice

- **Respond to the unique characteristics of the students in front of you. Don't always have high, medium, and low tiers.**

Tiering Assignments and Assessments -- Advice

- **Don't tier every aspect of every lesson. It's often okay for students to do what everyone else is doing.**

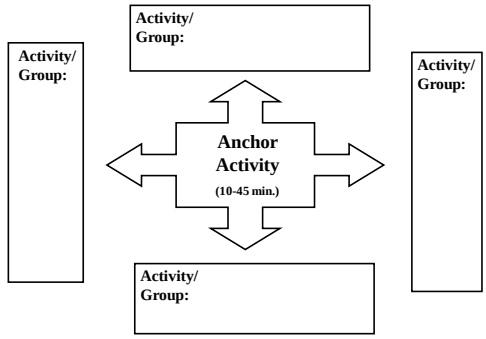
Tiering Assignments and Assessments -- Advice

- **When first learning to tier, stay focused on one concept or task.**

<u>Anchor activities</u> refer to two types of learner management experiences:

- **"Sponge" activities that soak up down time, such as when students finish early, the class is waiting for the next activity, or the class is cleaning up or distributing papers/supplies**
- **A main activity everyone is doing from which the teacher pulls students for mini-lessons**

Anchor Lesson Design



Anchor Activities Advice

- Use activities with multiple steps to engage students
- Require a product – 'increases urgency and accountability
- Train students what to do when the teacher is not available
- Start small: Half the class and half the class, work toward more groups, smaller in size
- Use a double t-chart to provide feedback
- Occasionally, videotape and provided feedback

Sample Anchor Activities

History:

Read pages 45-52 on the Industrial Revolution. Identify the five policies/ideas for which the meat-packing industry labor unions were fighting, then design a flag that incorporates symbols of each of those ideas in its pattern. Write a short paragraph describing the flag's symbols.

Math:

Identify the number of faces, edges, and vertices for each of the following 3-dimensional shapes: cube, rectangular prism, rectangular pyramid, triangular pyramid, triangular prism, pentagonal pyramid, pentagonal prism, cylinder. Then draw the patterns on paper that, when folded and edges taped together, would create each of these shapes. Then, actually build each 3-d shape from your 2-d drawings.

Sample Anchor Activities, continued

Language Arts:

Draw and label the plot profile of the novel. Then, draw a second plot profile of the same story, but this time pretend a character from another book is inserted into the story at the mid-point and has a major influence on the outcome of the story. Draw the new changes in the plot profile and explain in writing how the story might change as a result of this new character being added.

Science:

Draw two graphs to represent the data collected in the experiment: One that provides us with an accurate portrayal of what happened, and one that changes the vertical scale and thereby distorts our interpretations of the data. Write an explanation on the importance of proper scale when graphing data, including how data can be misinterpreted based on the scale used in data's graphing. Finally, choose one of the sample graphs of data given to you and explain whether or not the scale was appropriate for the data – does it lead to accurate interpretations?

Double-T Charts

[eye]	[ear]	[heart]
Char.'s of success we'd <u>see</u>	Char.'s of success we'd we'd <u>hear</u>	Char.'s of success we'd <u>feel</u>

What to Do When the Teacher is Not Available

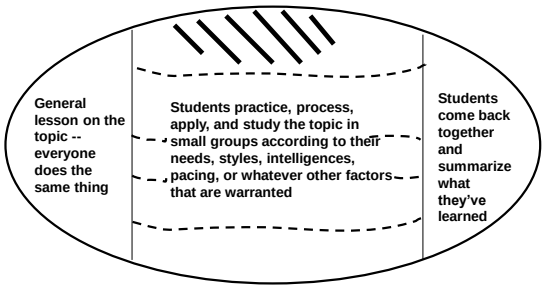
<u>Suggestions include</u>:

- Move on to the next portion; something may trigger an idea
- Draw a picture of what you think it says or asks
- Re-read the directions or previous sections
- Find a successful example and study how it was done
- Ask a classmate ("Ask Me," "Graduate Assistant," "Technoids")
- Define difficulty vocabulary
- Try to explain it to someone else

The Football Sequence

1. **First teach a general lesson to the whole class for the first 10 to 15 minutes.**
2. **After the general lesson, divide the class into groups according to readiness, interest, or learning profile and allow them to process the learning at their own pace or in their own way. This lasts for 15 to 20 minutes. We circulate through the room, clarifying directions, providing feedback, assessing students, and answering questions. This section is very expandable to help meet the needs of students.**
3. **Bring the class back together as a whole group and process what they've learned. This can take the form of a summarization, a Question and Answer session, a quick assessment to see how students are doing, or some other specific task that gets students to debrief with each other about what they learned. This usually takes about 10 minutes.**

The football metaphor comes from the way we think about the lesson's sequence: a narrow, whole class experience in the beginning, a wider expansion of the topic as multiple groups learn at the own pace or in their own ways, then narrowing it back as we re-gather to process what we've learned.



To Increase (or Decrease) a Task's Complexity, Add (or Remove) these Attributes:

- **Manipulate information, not just echo it**
- **Extend the concept to other areas**
- **Integrate more than one subject or skill**
- **Increase the number of variables that must be considered; incorporate more facets**
- **Demonstrate higher level thinking, i.e. Bloom's Taxonomy, William's Taxonomy**
- **Use or apply content/skills in situations not yet experienced**
- **Make choices among several substantive ones**
- **Work with advanced resources**
- **Add an unexpected element to the process or product**
- **Work independently**
- **Reframe a topic under a new theme**
- **Share the backstory to a concept – how it was developed**
- **Identify misconceptions within something**

To Increase (or Decrease) a Task's Complexity, Add (or Remove) these Attributes:

- **Identify the bias or prejudice in something**
- **Negotiate the evaluative criteria**
- **Deal with ambiguity and multiple meanings or steps**
- **Use more authentic applications to the real world**
- **Analyze the action or object**
- **Argue against something taken for granted or commonly accepted**
- **Synthesize (bring together) two or more unrelated concepts or objects to create something new**
- **Critique something against a set of standards**
- **Work with the ethical side of the subject**
- **Work in with more abstract concepts and models**
- **Respond to more open-ended situations**
- **Increase their automacity with the topic**
- **Identify big picture patterns or connections**
- **Defend their work**

- **Manipulate information, not just echo it:**
  - **"Once you've understood the motivations and viewpoints of the two historical figures, identify how each one would respond to the three ethical issues provided."**
- **Extend the concept to other areas:**
  - **"How does this idea apply to the expansion of the railroads in 1800's?" or, "How is this portrayed in the Kingdom Protista?"**
- **Work with advanced resources:**
  - **"Using the latest schematics of the Space Shuttle flight deck and real interviews with professionals at Jet Propulsion Laboratories in California, prepare a report that…"**
- **Add an unexpected element to the process or product:**
  - **"What could prevent meiosis from creating four haploid nuclei (gametes) from a single haploid cell?"**

- **Reframe a topic under a new theme:**
  - **"Re-write the scene from the point of view of the antagonist," "Re-envision the country's involvement in war in terms of insect behavior," or, "Re-tell Goldilocks and the Three Bears so that it becomes a cautionary tale about McCarthyism."**
- **Synthesize (bring together) two or more unrelated concepts or objects to create something new:**
  - **"How are grammar conventions like music?"**
- **Work with the ethical side of the subject:**
  - **"At what point is the Federal government justified in subordinating an individual's rights in the pursuit of safe-guarding its citizens?"**

The Equalizer

(Carol Ann Tomlinson)

Foundational ---------- Transformational
Concrete ---------- Abstract
Simple ---------- Complex
Single Facet/fact ---------- Multi-Faceted/facts
Smaller Leap ---------- Greater Leap
More Structured ---------- More Open
Clearly Defined ---------- Fuzzy Problems
Less Independence -------- Greater Independence
Slower ---------- Quicker

Practice Complex-ifying.
'Really.
'A lot.

Practice turning regular education objectives and tasks into advanced objectives and tasks.

Analyze…	**Construct…**
Revise…	**Rank…**
Decide between…	**Argue against…**
Why did…	**Argue for…**
Defend…	**Contrast…**
Devise…	**Develop…**
Identify…	**Plan…**
Classify…	**Critique…**
Define…	**Rank…**
Compose…	**Organize…**
Interpret…	**Interview…**
Expand…	**Predict…**
Develop…	**Categorize…**
Suppose…	**Invent…**
Imagine…	**Recommend…**

Learning Menus

Similar to learning contracts, students are given choices of tasks to complete in a unit or for an assessment. "Entrée" tasks are required, they can select two from the list of "side dish" tasks, and they can choose to do one of the "desert" tasks for enrichment.
(Tomlinson, *Fulfilling the Promise of the Differentiated Classroom,* 2003)

Tic-Tac-Toe Board

Geometry	Summarize (Describe)	Compare (Analogy)	Critique
A Theorem			
An math tool			
Future Developments			

Summarization Pyramid

_____

_____

_____

_____

_____

_____

Great prompts for each line: *Synonym, analogy, question, three attributes, alternative title, causes, effects, reasons, arguments, ingredients, opinion, larger category, formula/sequence, insight, tools, misinterpretation, sample, people, future of the topic*

One-Word Summaries

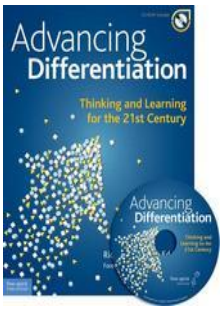
"The new government regulations for the meat-packing industry in the 1920's could be seen as an <u>opportunity</u>…,"

"Picasso's work is actually an <u>argument</u> for…."

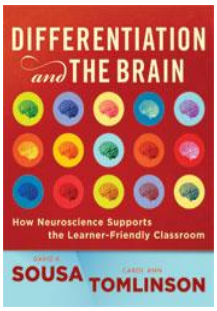
"NASA's battle with Rockwell industries over the warnings about frozen temperatures and the O-rings on the space shuttle were <u>trench warfare</u>…."

Basic Idea: Argue <u>for</u> or <u>against</u> the word as a good description for the topic.

Two More Helpful books!



Richard Cash



David Sousa
Carol Ann Tomlinson

What is the Role of Each One?

- Formative Assessment
- Summative Judgment
- Common Formative Assessment
  [Focus on Common Evidence first!]
- Alternative Assessment

Formative vs Summative in Focus:

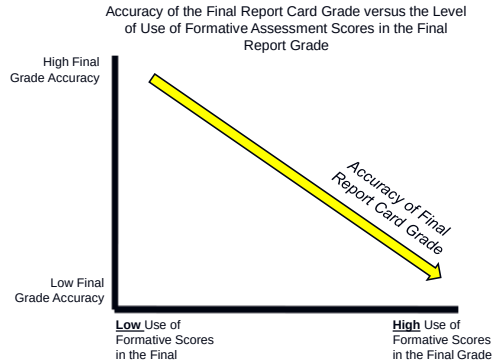
Lab Reports in a Science Class

Two Homework Extremes that Focus Our Thinking

- **If a student does none of the homework assignments, yet earns an "A" (top grade) on every formal assessment we give, does he earn anything less than an "A" on his report card?**
- **If a student does all of the homework well yet bombs every formal assessment, isn't that also a red flag that something is amiss, and we need to take corrective action?**

Be clear: We mark and grade against standards/outcomes, *not* the routes students take or techniques teachers use to achieve those standards/outcomes.

Given this premise, marks/grades for these activities can no longer be used in the academic report of what students know and can do regarding learner standards: maintaining a neat notebook, group discussion, class participation, homework, class work, reading log minutes, band practice minutes, dressing out in p.e., showing up to perform in an evening concert, covering textbooks, service to the school, group projects, signed permission slips, canned foods for canned food drive…



Set up your gradebook into two sections:

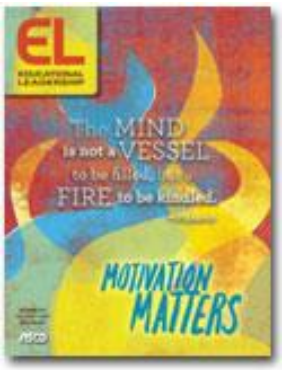
Formative	Summative
Assignments and assessments completed on the way to mastery or proficiency	Final declaration of mastery or proficiency

Study Executive Function!

Late, Lost, and Unprepared
Joyce Cooper-Kohn, Laurie Dietzel

Smart, but Scattered
Peg Dawson, Richard Guare

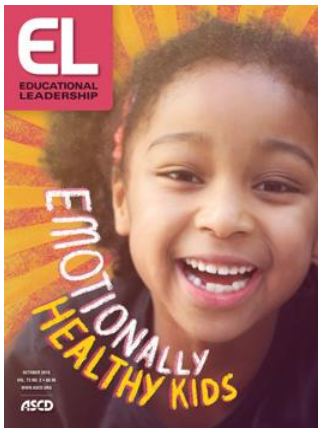
Also, ***Smart, but Scattered for Teens***!



Motivation Matters

September 2014 | Volume 72 | Number 1

www.ascd.org



ASCD's *Education Leadership* "Emotionally Healthy Kids"

October 2015| Volume 73 | Number 2

www.ascd.org

From Assessment/Grading Researcher, Doug Reeves, *The Chronicle of Higher Education*, September 18, 2009:

"The Class of 2013 grew up playing video games and received feedback that was immediate, specific, and brutal – they won or else died at the end of each game. For them, the purpose of feedback is not to calculate an average or score a final exam, but to inform them about how they can improve on their next attempt to rule the universe."

Feedback vs Assessment

Feedback: Holding up a mirror to students, showing them what they did and comparing it what they should have done – There's no evaluative component!

Assessment: Gathering data *so we can make a decision*

Greatest Impact on Student Success:

Formative feedback

When providing descriptive feedback that builds perseverance,

…comment on decisions made and their impact, NOT quality of work.

Two Ways to Begin Using
Descriptive Feedback:

- "Point and Describe"
  (from ***Teaching with Love & Logic,*** **Jim Fay, David Funk)**
- "Goal, Status, and Plan for the Goal"
  1. **Identify the objective/goal/standard/outcome**
  2. **Identify where the student is in relation to the goal (Status)**
  3. **Identify what needs to happen in order to close the gap**

Effective Protocol for Data Analysis
and Descriptive Feeddback found in many Schools:
Here's What, So What, Now What

1. Here's What: *(data, factual statements, no commentary)*
2. So What: *(Interpretation of data, what patterns/insights do we perceive, what does the data say to us?)*
3. Now What: *(Plan of action, including new questions, next steps)*

Item	Topic or Proficiency	Right	Wrong	Simple Mistake?	Really Don't Understand
1	**Dividing fractions**		✓		✓
2	**Dividing Fractions**		✓		✓
3	**Multiplying Fractions**		✓	✓	
4	**Multiplying fractions**	✓			
5	**Reducing to Smplst trms**	✓			
6	**Reducing to Smplst trms**	✓			
7	**Reciprocals**	✓			
8	**Reciprocals**		✓	✓	
9	**Reciprocals**		✓	✓	

Date

Mr./Mrs./Miss _____,

I understand….

I need assistance in….

I suggestion the following four steps for me to take in order to learn these content and skills:

Sincerely,

_____

Teacher Action	Result on Student Achievement
Just telling students # correct and incorrect	**Negative influence on achievement**
Clarifying the scoring criteria	**Increase of 16 percentile points**
Providing explanations as to why their responses are correct or incorrect	**Increase of 20 percentile points**
Asking students to continue responding to an assessment until they correctly answer the items	**Increase of 20 percentile points**
Graphically portraying student achievement	**Increase of 26 percentile points**

-- Marzano, CAGTW, pgs 5-6

A child is attempting to ride a bicycle, and the bike falls over. Another child, learning to walk, loses her balance and lands on her bottom. A baby's green peas slide off his spoon as he moves it toward his mouth. How do their parents respond? Good parents don't say, "You fail, you're not able to meet bicycling standards," "I'll develop a rubric for walking without falling," or, "We need a Common Core curriculum to help you keep your food in your spoon." ….[They] simply say, "Try again."

- Richard L. Curwin, *Education Leadership*, ASCD, September 2014, p.38

Students should be allowed to re-do assessments until they achieve acceptable mastery, and they should be given full credit for having achieved such.

Perspective that Changes our Thinking:

A 'D' is a coward's 'F.' The student failed, but you didn't have enough guts to tell him."

-- Doug Reeves

- **A**
- **B**
- **C**
- **I, IP, NE, or NTY**

Once we cross over into D and F(E) zones, does it really matter? We'll do the same two things: Personally investigate and take corrective action

If we do not allow students to re-do work, we deny the growth mindset so vital to student maturation, and we are declaring to the student:

- This assignment had no legitimate educational value.
- It's okay if you don't do this work.
- It's okay if you don't learn this content or skill.

None of these is acceptable to the highly accomplished, professional educator.

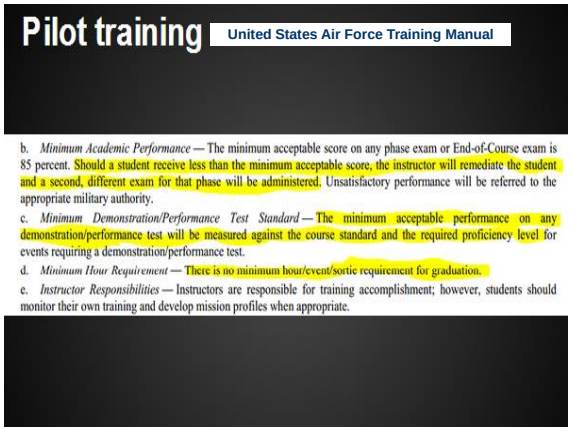
Recovering in full from a failure teaches more than being labeled for failure ever could teach.

Re-Do's & Re-Takes: Are They Okay?

More than "okay!" After 10,000 tries, here's a working light bulb. 'Any questions?

It's a false assumption that giving a student an "F" or wagging an admonishing finger from afar builds moral fiber, self-discipline, competence, and integrity.

Thomas Edison



F.A.I.L.

First Attempt in Learning

From Youtube.com:

Dr. Tae Skateboarding
(Ted Talk)

http://www.youtube.com/watch?v=lHfo17ikSpY

Helpful Procedures and Policies for Re-Do's and Re-Takes

- **Always, "…at teacher discretion."**
- **Don't hide behind the factory model of schooling that perpetuates curriculum by age, perfect mastery on everyone's part by a particular calendar date.**
- **As appropriate, students write letters explaining what was different between the first and subsequent attempts, and what they learned about themselves as learners.**
- **Re-do's and re-takes must be within reason, and teachers decide what's reasonable.**

- **Identify a day by which time this will be accomplished or the grade is permanent, which, of course, may be adjusted at any point by the teacher.**
- **With the student, create a calendar of completion that will help them accomplish the re-do. If student doesn't follow through on the learning plan, he writes letters of apology. There must be re-learning, or learning for the first time, before the re-assessing.**
- **Require the student to submit original version with the re-done version so you and he can keep track of his development.**
- **If a student is repeatedly asking for re-doing work, something's up. Investigate your approach and the child's situation.**

- **C, B, and B+ students get to re-do just as much as D and F students do. Do not stand in the way of a child seeking excellence.**
- **If report cards are due and there's not time to re-teach before re-assessing, record the lower grade, then work with the student in the next marking period, and if he presents new evidence of proficiency, submit a grade-change report form, changing the grade on the transcript from the previous marking period.**
- **Reserve the right to give alternative versions and ask follow-up questions to see if they've really mastered the material.**
- **Require parents to sign the original attempt.**

- **It's okay to let students, "bank," sections of the assessment/assignment that are done well.**
- **No-re-do's the last week of the grading period.**
- **Replace the previous grade with the new one, do NOT average them together.**
- **Sometimes the greater gift is to deny the option.**
- **Choose your battles. Push for re-doing the material that is transformative, leveraging, fundamental.**

10 Practices to *Avoid* in a Differentiated Classroom

[*They Dilute a Grade's Validity and Effectiveness]*

- **Penalizing students' multiple attempts at mastery**
- **Grading practice (daily homework) as students come to know concepts [Feedback, not grading, is needed]**
- **Withholding assistance (not scaffolding or differentiating) in the learning when it's needed**
- **Group grades**
- **Incorporating non-academic factors (behavior, attendance, and effort)**

- **Assessing students in ways that do not accurately indicate students' mastery (student responses are hindered by the assessment format)**
- **Grading on a curve**
- **Allowing Extra Credit**
- **Defining supposedly criterion-based grades in terms of norm-referenced descriptions ("above average," "average", etc.)**
- **Recording zeroes on the 100.0 scale for work not done**

Grading Late Work

- **One whole letter grade down for each day late is punitive. It does not teach students, and it removes hope.**
- **A few points off for each day late is instructive; there's hope.**
- **Yes, the world beyond school *is* like this.**

Helpful Consideration for Dealing with Student's Late Work:

Is it chronic….

…or is it occasional?

We respond differently, depending on which one it is.

Summative Assessments **Student:** _____

Standards/ Outcomes	XYZ Test, part 1	PQR Project	EFG Observ.	XYZ Test, part 2	GHI Perf. Task	Most Consistent Level
1.1 [Descriptor]		3.5			3.5	3.5
1.2 [Descriptor]	2.5	5.0	4.5	4.5		4.5
1.3 [Descriptor]		4.5	3.5	3.0	3.5	3.5
1.4 [Descriptor]	3.5			3.5		3.5
1.5 [Descriptor]	2.0			1.5		1.75

Gradebooks and Report Cards in the Differentiated Classroom: Ten Important Attributes

1. Everything is clearly communicated, easily understood
2. Use an entire page per student
3. Set up according to Standards/Outcomes
4. Disaggregate!
5. No averaging – Determine grades based on central tendency, trend, mode

Gradebooks and Report Cards in the Differentiated Classroom: Ten Important Attributes

6. Behavior/Effort/Attendance separated from Academic Performance
7. Grades/Marks are as accurate as possible
8. Some students may have more marks/grades than others
9. Scales/Rubric Descriptors readily available, even summarized as possible
10. Grades/marks revisable

Responsive Report Formats

Adjusted Curriculum Approach:

Grade the student against his own progression, but indicate that the grade reflects an adjusted curriculum. Place an asterisk next to the grade or check a box on the report card indicating such, and include a narrative comment in the cumulative folder that explains the adjustments.

Responsive Report Formats

Progression <u>and</u> Standards Approach:

Grade the student with two grades, one indicating his performance with the standards and another indicating his own progression. A, B, C, D, or F indicates the student's progress against state standards, while 3, 2, or 1 indicates his personal progression.

Responsive Report Formats

Multiple Categories Within Subjects Approach:

Divide the grade into its component pieces. For example, a "B" in Science class can be subdivided into specific standards or benchmarks such as, "Demonstrates proper lab procedure," "Successfully employs the scientific method," or "Uses proper nomenclature and/or taxonomic references."

The more we try to aggregate into a single symbol, the less reliable that symbol is as a true expression of what a student knows and is able to do.

Report Cards without Grades

Course: English 9	Standard Descriptor	Standards Rating (1) (2) (3) (4)
Standard 1	Usage/Punct/Spelling	----------2.5
Standard 2	Analysis of Literature	----------1.75
Standard 3	Six + 1 Traits of Writing	----------3.25
Standard 4	Reading Comprehension	----------3.25
Standard 5	Listening/Speaking	----------2.0
Standard 6	Research Skills	----------4.0

Additional Comments from Teachers:

Health and Maturity Records for the Grading Period:

Grading Inclusion Students

Question #1:

"Are the standards set for the whole class also developmentally appropriate for this student?"

- If they ***are*** appropriate, proceed to Question #2.
- If they are ***not*** appropriate, identify which standards are appropriate, making sure they are as close as possible to the original standards. Then go to question #2.

Grading Inclusion Students

Question #2:

"Will these learning experiences (processes) we're using with the general class work with the inclusion student as well?"

- If they ***will*** work, then proceed to Question #3.
- If they will ***not*** work, identify alternative pathways to learning that *will* work. Then go to Question #3.

Grading Inclusion Students

Question #3:

"Will this assessment instrument we're using to get an accurate rendering of what general education students know and are able to do regarding the standard also provide an accurate rendering of what this inclusion student knows and is able to do regarding the same standard?

- If the instrument will provide an accurate rendering of the inclusion student's mastery, then use it just as you do with the rest of the class.
- If it will not provide an accurate rendering of the inclusion student's mastery, then identify a product that will provide that accuracy, and make sure it holds the student accountable for the same universal factors as your are asking of the other students.

Education Leadership (ASCD)
February 2010 | Volume 67 | Number 5
Meeting Students Where They Are Pages
Grading Exceptional Learners
Lee Ann Jung and Thomas R. Guskey

The next four slides' content can be found in this article.

For more details, see:

Office of Civil Rights. (2008, October 17). Dear colleague letter: Report cards and transcripts for students with disabilities. Available: www.ed.gov/about/offices/list/ocr/letters/colleague-20081017.html

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"Myth 2: Report cards cannot identify the student's status as an exceptional learner.

"Fact: According to guidance recently provided by the U.S. Department of Education's Office of Civil Rights (2008), a student's IEP, 504, or ELL status can appear on report cards (which communicate information about a student's achievement to the student, parents, and teachers) but not on transcripts (which are shared with third parties—other schools, employers, and institutes of higher education) (Freedman, 2000). Even on report cards, however, schools must carefully review whether such information is necessary."

"Myth 3: Transcripts cannot identify the curriculum as being modified.

"Fact: This is perhaps the most common of all reporting myths. Under the Individuals with Disabilities Education Act (IDEA) of 1997 and 2004, Section 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act of 1990, transcripts cannot identify students as qualifying for special services or accommodations— supports that provide access to the general curriculum but do not fundamentally alter the learning goal or grade-level standard. However, schools can legally note curriculum modifications—changes that fundamentally alter the learning goal or grade-level expectation (Freedman, 2000, 2005)."

Three types of learning criteria related to standards (see Guskey, 2006):

"Product criteria address what students know and are able to do at a particular point in time. They relate to students' specific achievements or level of proficiency as demonstrated by final examinations; final reports, projects, exhibits, or portfolios; or other overall assessments of learning."

"Process criteria relate to students' behaviors in reaching their current level of achievement and proficiency. They include elements such as effort, behavior, class participation, punctuality in turning in assignments, and work habits. They also might include evidence from daily work, regular classroom quizzes, and homework.

"Progress criteria consider how much students improve or gain from their learning experiences. These criteria focus on how far students have advanced, rather than where they are. Other names for progress criteria include learning gain, value-added learning, and educational growth."

Stenhouse PUBLISHERS
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www.stenhouse.com

Check out the FREE Website for Perspective and Practicality on Assessment and Grading Issues!

www.stenhouse.com/fiae

1. Two new, substantial study guides for *Fair Isn't Always Equal*
2. Q&A's - abbreviated versions of correspondence with teachers and administrators
3. Video and audio podcasts on assessment and grading issues
4. Testimonials from educators
5. Articles that support the book's main themes

EL EDUCATIONAL LEADERSHIP

Also, check out
ASCD's *Education Leadership*
November 2011 issue
Vol. 69, Number 3
Theme: Effective Grading Practices
Single Issue: $7.00, 1-800-933-2723
www.ascd.org

Among the articles:

- Susan M. Brookhart on starting the conversation about the purpose of grades
- Rick Wormeli on how to make redos and retakes work
- Thomas R. Guskey on overcoming obstacles to grading reform
- Robert Marzano on making the most of standards-based grading
- Ken O'Connor and Rick Wormeli on characteristics of effective grading
- Cathy Vatterott on breaking the homework grading addiction
- Alfie Kohn on why we should end grading instead of trying to improve it

Classroom Q&A With Larry Ferlazzo

New Resource on Grading:

"The Grading System We Need to Have"

http://blogs.edweek.org/teachers/classroom_qa_with_larry_ferlazzo/2014/05/response_the_grading_system_we_need_to_have.html

Response to a parent of an AP student when his teachers started doing re-assessments for full credit in their AP classes:

http://www.stenhouse.com/html/fiae-grading.htm

http://www.adams12.org/files/learning_services/Wormeli_Response.pdf

Principal's Blog as he worked with faculty on Re-do's and SBG:

http://blog.stenhouse.com/archives/2013/03/21/profiles-of-effective-pd-initiatives-owen-j-roberts-middle-school/

Former AP Teacher,
now Building Administrator,
Reed Gillespie

Responses to Re-Do Concerns:

http://www.reedgillespie.blogspot.com/2013/04/redos-and-retakes.html

12 Practical Steps to Conducting Re-do's:

http://www.reedgillespie.blogspot.com/2013/04/12-steps-to-creating-successful-redo.html

Particularly Helpful: The Work of High School Teacher, now District Leader, Matt Townsley

"What is the Difference between Standards-Based Grading (or Reporting) and Competency-Based Education?"

http://www.competencyworks.org/analysis/what-is-the-difference-between-standards-based-grading/

And,

www.sbgvideos.org

Great Books on Feedback, Assessment, and Grading:

- ***Elements of Grading*** **(Reeves)**
- ***How to Give Feedback to Your Students*** **(Brookhart)**
- ***Balanced Assessment, From Formative to Summative*** **(Burke)**
- ***Grading Smarter, Not Harder*** **(Dueck)**
- ***Grading*** **(Brookhart)**
- ***How to Grade for Learning*** **(O'Connor)**
- ***A Repair Kit for Grading: 15 Fixes for Broken Grades*** **(O'Connor)**
- ***Fair Isn't Always Equal*** **(Wormeli)**
- ***Checking for Understanding: Formative Assessment Techniques for your Classroom (*** **Fisher and Frey)**
- ***Transforming Classroom Grading*** **(Marzano)**
- ***Classroom Assessment and Grading that Work*** **(Marzano)**
- ***How to Assess Higher-Order Thinking Skills in your Classroom*** **(Brookhart)**
- ***Grading Exceptional and Struggling Students: RTI, ELL, IEP*** **(Guskey, Jung)**
- ***On Your Mark: Challenging the Conventions of Grading and Reporting*** **(Guskey)**

Three particularly helpful books I just read and I highly recommend:

- Keeley, Page. *Science Formative Assessment: 75 Practical Strategies for Linking Assessment, Instruction, and Learning,* Corwin Press, NSTA Press, 2008
- Brookhart, Susan. *How to Assess Higher-Order Thinking Skills in your Classroom*, ASCD, 2010
- *Alternatives to Grading Student Writing*, Stephen Tchudi, Editor, NCTE, 1997

Possibilities for finding extra time for student learning outside the classroom:

- **Saturday school**
- **Early back programs**
- **Audio and video podcast of the day's lesson for student and family access later**
- **Lunch period**
- **One assignment demonstrating content in two different classes -- Teaming**
- **After school work**
- **Before school work**
- **E-mail "fan out" to all faculty to send student to you if he finishes early in their classes**
- **Teacher Action Research, PLC's, Critical Friends groups**

Possibilities for finding extra time for student learning outside the classroom:

- **Summer school**
- **Mentoring**
- **On-line tutorials, distance learning, Skype**
- **Volunteer adults sitting with him in the classroom**
- **Resource room/program**
- Peer tutoring programs
- Alternative, less time intensive assignments/assessments
- Teaching the student personal study skills
- Other ideas?

Possibilities for Finding Extra Time for Lesson Planning:

- Divide and conquer with colleagues
- Prioritize with subject-like colleagues what standards/outcomes are Power Standards/Outcomes, and which are of lesser importance
- On-line search of lesson plans already created, **and** of standards/outcomes already unwrapped
- "Bank" portions of assignments/assessments on which students do well
- www.schooltube.com, www.teachertube.com, Khan Academy and similar Websites
- Smartbrief (www.smartbrief.com)

Possibilities for Finding Extra Time for Lesson Planning:

- Use of volunteers in the classroom to assist with students and instruction
- Subscribe to professional education magazines/journals – they have great ideas!
- Read some of those education books you've been thinking about reading
- Participate in listserv's and other on-line communities
- Read and use some of the materials and content publishers put in the teacher's version of the basal text
- Establish a Faculty Portfolio of Ideas (FPI) at every photocopier in the building
- Other ideas?

Great On-line Tutorials about Teaching and/or the Subjects We Teach

- www.teachingchannel.org
- www.schooltube.com
- www.teachertube.com
- www.khanacademy.org
- www.youtube.com
- Authors/Publishers often have videos (www.stenhouse.com/fiae)

Don't forget On-line, Live Professional Development just for you or faculty:

- Google Hangout
- Skype
- Live Webinars

Teacher Inservice Training

- **www.sde.com**
- **www.ascd.org**
- **www.leadandlearn.org**
- **www.nassp.org**
- **Specific subject professional organizations**
- **Authors and presenters**
- **www.aeispeakers.com**
- **Speaker's bureaus**
- **"Wisdom Within" – experts in the building already**
- **Consider Webcasts, E-Seminars, or Videocasts**

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Sample Smartbrief Topics:

- **Stem Education**
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- **Global News**
- **Ed Tech**
- **Geography**
- **English and Literacy**
- **Social Studies**
- **Math**
- **Scientific Research**
- **Education Leadership**
- **Education Policy**

Good Idea:

Maintain a place on the school's Intranet to post notes from conferences, article summaries, relevant blogs, etc. as well as questions. Have those questions answered by teachers or guest experts (local and national trainers and authors on differentiation).

Conduct Instructional Roundtables

- **One-hour or less**
- **Someone (not limited to leaders) posts a topic for discussion and a location for the meeting two weeks in advance**
- **All are invited, but 'must have one idea to share (photocopied) as ticket to the roundtable**

Video Clips:

- Alfie Kohn
- News report about student trying to abolish homework
- Trailer for "Race to Nowhere" movie

Five Purposes for Homework

✓ Practice
✓ Interaction
✓Application
✓ Extension
✓ Preparation

Important:

- **Homework is never given to teach students the material the first time. We assign homework only after checking to make sure students already understand the material.**
- **Homework is never used to demonstrate full mastery. It is formative. We provide ample feedback, but not ultimate evaluation of mastery.**

Something to Consider: Exposure to a wide variety of experiences will do more for children's learning and maturation than practicing one thing for endless hours after school will do.

Be clear: We grade against standards, *not* routes students take or techniques teachers use to achieve those standards.

What does this mean we should do with class participation or discussion grades?

Four Inappropriate Purposes for Homework

- ✘ **To appear vigorous and demanding**
- ✘ **To teach material the first time**
- ✘ **To keep students busy**
- ✘ **To assess students' final, summative mastery of a topic**

Let "No homework"

be the default response,

not "Yes, there's homework."

Then we have to fight for the justification.

Consider, too, how personal technology is changing the way our students do things.

We've entered a 24-7 work cycle. Official homework as we know it will soon fade.

More Concerns and Tips

- **Make sure homework practices what you're teaching. How does building a diorama or making a coloring book based on scenes from the novel, *Touching Spirit Bear* (Mikaelsen), teach students literary devices, reading, writing, theme, critical analysis, novel structure, or anything else about literacy?**
- **Any assignment requiring parent involvement in order to understand and/or complete it is usually inappropriate. 'Example of inadequate student preparation: "Mom, I have to do a report on cells. How do I start?"**

More Concerns and Tips

- **During novel studies: Stop the note-taking! Don't commit *Reader Rigormoritis*! -- "How would you like it if you were watching a movie and someone interrupted you every ten minutes and asked you questions about what you were seeing?"** (Bennett and Kalish, p. 130)
- **Daily exercise has dramatic impact on the development of the brain's frontal lobe** (Bennett and Kalish, p. 91). **This affects decision-making, abstract and moral reasoning, personality, impulsivity control, immediate working memory, insight, and being aware of consequences**

More Concerns and Tips

- **Avoid any homework assignment that requires the purchase of any item(s) beyond the standard school supply list**
- **In order to maximize learning, students need 9 – 11 hours of sleep per night regularly. Help parents make sure they get them.**
- **Practice makes permanent**
- **Practice builds automacity**
- **"Homework is like coming home and doing your taxes every night."** (Bennett and Kalish, p. 18)

"The best way to make students hate reading is to make them prove to you that they have read."

-- Jim Deluca, as quoted in Kohn, p. 177

"To design in advance that homework in certain subjects will be assigned on certain days is to sacrifice thoughtful instruction on the altar of predictability."

-- Kohn, p. 166

"If we sat around and deliberately tried to come up with a way to further enlarge the achievement gap, we might just invent homework."

-- Deborah Meier, as quoted in Kohn, p. 126

Two Homework Extremes that Focus Our Thinking

- **If a student does none of the homework assignments, yet earns an "A" (top grade) on every formal assessment we give, does he earn anything less than an "A" on his report card?**
- **If a student does all of the homework well yet bombs every formal assessment, isn't that also a red flag that something is amiss, and we need to take corrective action?**

If we do not allow students to re-do work, we deny the growth mindset so vital to student maturation, and we are declaring to the student:

- **This assignment had no legitimate educational value.**
- **It's okay if you don't do this work.**
- **It's okay if you don't learn this content or skill.**

None of these is acceptable to the highly accomplished, professional educator.

"If we don't count homework heavily, students won't do it."

Do you agree with this?
Does this sentiment cross a line?

How much should homework count in the overall grade?

- 0%, though moderate hypocrites use 5% -

[If this is a big stretch, start with 10%]

Homework performance is <u>not</u> an accurate portrayal of final proficiency or mastery. It's what we do in route to mastery. We grade students against standards, <u>not</u> the routes by which they achieve them.

Prime the brain prior to students doing homework. The impact on learning is much greater!

<u>Priming</u> means we show students:

1) **What they will get out of the experience (the objectives)**
2) **What they will encounter as they go through the experience (itinerary, structure)**

Motivating Homework Assignments

1. **Provide a clear picture of the final product.**
2. **Incorporate a cause.**
3. **Incorporate cultural products.**
4. **Incorporate students and their classmates in the assignment.**
5. **Create an audience for the product.**

Motivating Homework assignments

6. **Allow choices. [Mult. Intellig.]**
7. **Make students collaborators in how homework will be assessed.**
8. **Have everyone turn in a paper, regardless of whether or not they did the assignment.**

Motivating Homework Assignments

9. **<u>Spruce up your prompts</u>. Try better action words:**

Decide between, argue against, Why did _____ argue for, compare, contrast, plan, classify, retell ____ from the point of view of _____, organize, build, interview, predict, categorize, simplify, deduce, formulate, blend, suppose, invent, imagine, devise, compose, combine, rank, recommend, defend, and choose.

Motivating Homework Assignments

10. **Do not give homework passes. Try Homework Deadline Extension Certificates instead.**
11. **Avoid extra credit assignments.**
12. **Integrate homework with other subjects.**

Motivating Homework Assignments

13. **Do not give homework on weekends or holidays.**
14. **Occasionally, let students identify what would be most effective.**
15. **Five are as good as 15, 10 as good as 30. 1-page can demonstrate mastery more often than 3 pages.**

Motivating Homework Assignments

16. **Return papers in a timely manner.**
17. **Break up routine homework with not-so-routine homework.**
18. **Increase complexity. No "fluff" assignments.**

It's interesting to note:

As complexity of assessments go up, so does their completion rate. Complexity usually involves more meaningful work, making connections, recoding content for personal relevance, and applying knowledge as students do something meaningful or useful.

To Increase (or Decrease) a Task's Complexity, Add (or Remove) these Attributes:

- **Manipulate information, not just echo it**
- **Extend the concept to other areas**
- **Integrate more than one subject or skill**
- **Increase the number of variables that must be considered; incorporate more facets**
- **Demonstrate higher level thinking, i.e. Bloom's Taxonomy, William's Taxonomy**
- **Use or apply content/skills in situations not yet experienced**
- **Make choices among several substantive ones**
- **Work with advanced resources**
- **Add an unexpected element to the process or product**
- **Work independently**
- **Reframe a topic under a new theme**
- **Share the backstory to a concept – how it was developed**
- **Identify misconceptions within something**

To Increase (or Decrease) a Task's Complexity, Add (or Remove) these Attributes:

- **Identify the bias or prejudice in something**
- **Negotiate the evaluative criteria**
- **Deal with ambiguity and multiple meanings or steps**
- **Use more authentic applications to the real world**
- **Analyze the action or object**
- **Argue against something taken for granted or commonly accepted**
- **Synthesize (bring together) two or more unrelated concepts or objects to create something new**
- **Critique something against a set of standards**
- **Work with the ethical side of the subject**
- **Work in with more abstract concepts and models**
- **Respond to more open-ended situations**
- **Increase their automacity with the topic**
- **Identify big picture patterns or connections**
- **Defend their work**

Motivating Homework Assignments

19. **Journalistic versus encyclopedic**
20. **Require students to change their interaction with the way they received the information. Ex: If they read it, they draw a response.**

Sample Interesting assignments

- **Identify the mistake in other's students' approaches to the problem.**
- **Rank these items in order of importance to Andrew Johnson.**
- **Write a Constitution of the your underwater city that reflects the politics of ancient Rome.**
- **Create 12 intelligent questions to which the answer is "Ironic" or "Irony."**

More Interesting assignments

- **Create a six-panel comic strip that portrays the event or process.**
- **Argue against the decision.**
- **Create a PSA for third graders that persuades them to make good snack choices after school.**
- **Describe five ways this painting expresses the theme, "Passage."**

Research on homework's impact

Setting purpose for assignments has huge impact on completion rate and its impact on learning.

As we increase the number of practices, competence grows, but leaps in competence decrease.

When it's early in the learning, choose to do 2 or 3 examples in depth instead of 30 quickly done.

Recommended Homework Amounts per Night for High School

50 to 120 minutes,

for all subjects put together

General approach for the number of minutes of homework each night:

Add a zero to the grade level

Providing feedback on homework

- **Assignments with multiple entries: check/zero most pages, grade one on which students place a star**
- **Small group consensus on answers, raise unresolved problems to the teacher**
- **Feedback doesn't have to come from you, the teacher**
- **Separate effort from achievement**
- **Make sure there's feedback**

Feedback on Homework: Effect Size on Learning

(1.0 is maximum positive Effect, 0.25 and below is educationally insignificant)

.28, if there's no feedback

.78, if classmates or self provides feedback

.83, if teacher provides feedback

Great Vocabulary Homework Assignments

Shape spellings

Restaurant Menu

Wanted Dead or Alive Posters

Taboo Cards

Vocabulary Rummy Cards

Competitive Conversation using vocabulary

Great Writing Homework Assignments

Descriptive Paragraph with no adjectives

"Show, Don't Tell" samples

One-Word Summaries

Proving historical fiction's authenticity

R.A.F.T. S.– Role, Audience, Format, Topic (Time), Strong Adverb or Verb

Inventing a new language (beyond just an alphabet code)

Great Math Homework Assignments

Analyze how four different students completed the same math problem.

Write about a math discovery that changed the world.

Draft a proposal to the city council for a bridge structure for a river, explaining why it is the sturdiest and most cost-efficient option.

Present a report on the geometry of a basketball court.

Design a lunar colony made only of three-dimensional solids, schematic designs included.

Summary of interest earned on a savings account in which the interest rate changed twice.

An autobiography of a right angle.

Create a physical demonstration or expression of an abstract math concept.

Great Social studies/history Homework Assignments

A conversation between two famous people

'how a piece of literature changed an era

An analysis of a political cartoon (or create one)

A comic strip that retells a famous incident

A response to the question, "If someone from the time period we're studying were around today, what would he say about modern world issues?"

A pledge/anthem/flag/constitution for a historical movement

A movie poster with eye-catching graphics, titles, sound-bite reviews from movie critics, and a list of the cast and crew responsible for the film about _____ (fill in the vocabulary term, such as "democracy")

Great Science Homework Assignments

Write the life story of a _____

Create a science calendar in which the picture for each month conveys _____

Observe _____ for a period of ___ days and determine two hypotheses about it that would make for good investigations

Examine a common science misconception and how it is perpetuated

Explain why another student obtained certain lab results

Create a board game focusing on the basic steps of (insert science cycle or principle)

Collect and categorize your collection of _____

Great Art Homework Assignments

Write autobiographies to go with portraits

Sculpt with clay while using writing process terms

Answer the question: "If a picture/sculpture could talk, what would it say?"

Develop synthesis writings: "What does blue sound like?" "Describe red through other senses and experiences not associated with what we can see."

Explain what a piece of art tells us about a particular time period

Explain how four different art concepts are expressed in a gymnasium

Great Physical Education Homework Assignments

Design and maintain a personal daily exercise regimen for two weeks.

Design a Web site or library display that promotes at least four successful ways to get into good physical shape.

Explain the impact of exercise on metabolism, muscle health, and academic learning in a way that's appropriate for students four years younger than you.

Identify one life-important decision you have to make and hold it up to each of the criteria for successful decision-making.

Determine the target heart rate for people with the following characteristics: _____

Great Thinking Homework Assignments

Translate the passage from French to English.

What's the difference between osmosis and diffusion?

Classify the items according to their origin.

Explain how any whole number with an exponent of zero equals one.

Which part/word doesn't fit?

Which comments support the President's position?

Predict what would happen if we changed the temperature in the terrarium.

Determine the surface area of the building.

Explain how music changed the tone of the film.

Great Thinking Homework Assignments

Which comment seems politically motivated?

Defend the character's decision to _____.

What's the logical fallacy in his argument?

Add _____ to the scene in the novel. How would it change?

Design a better inventory system.

Which persuasive essay is most convincing and why?

According to the standards set forth by the Treaty, is the country in compliance? Explain.

Which algorithm is the most efficient and why?

Improve upon the idea in at least one way.

Bennett, Sara, Kalish, Nancy; *The Case Against Homework: How Homework is Hurting our Children and What We Can Do About It*, Crown Publishers, 2006

Connors, Neila. *Homework: A New Direction*, National Middle School Association, 1999

Cooper, Harris. *The Battle Over Homework, Second Edition*, Corwin Press, Inc., 2001

Kohn, Alfie. *The Homework Myth: Why Our Kids Get Too Much of a Bad Thing,* Da Capo Press, 2006

Marzano, Robert, et al. *Classroom Instruction That Works*, Association for Supervision and Curriculum Development, 2001

Vatterott, Cathy. *Re-Thinking Homework: Best Practices That Support Diverse Needs,* ASCD, 2009

Wormeli, Rick. *Day One and Beyond: Practical Matters for New Middle Level Teachers*, Stenhouse Publishers, 2003

Wormeli, Rick. *Fair Isn't Always Equal: Assessment and Grading in the Differentiated Classroom*, Stenhouse Publishers, 2006

Two more resources to help you consider your approach:

English Journal (NCTE) November 2008, Volume 98, No. 2 "Does Homework Help?" --- This is a whole journal dedicated to homework! It's great!

Homework Done Right: Powerful Learning in Real-life Situations, Corwin Press, 2010 Written by Janet Alleman, Barbara Knighton, Ben Botwinski, Jere Brophy, Roby Ley, Sarah Middlestead