



Never sacrifice sound pedagogy because someone above you isn't there yet.

"A student is not an interruption of our work...the student is the purpose of it. We are not doing a favor by serving the student...the student is doing us a favor by giving us the opportunity to do so."

-- William W. Purkey from an L.L. Bean Co. poster:
"What is a customer?" by J.M. Eaton

If I had been a kid in my class today,

***...would
I want
to come
back?***

-- Elisabeth
Murphy,
Chalkdust,
1979

"...[N]o research supports the idea that low grades prompt students to try harder. More often, low grades prompt students to withdraw from learning. To protect their self-images, many students regard the low grade as irrelevant or meaningless. Others may blame themselves for the low grade but feel helpless to improve (Selby & Murphy, 1992)."

= Tom Guskey, "Five Obstacles to Grading Reform,"
Education Leadership, ASCD, November 2011

Topics We'll encounter today:

- Motivation
- Perseverance
- Delaying self-gratification
- Over-reliance on external validation
- Building self-efficacy
- Innately social nature of the brain
- Trust and Model-reliability
- Debate/Logic
- Restorative Justice
- Cognitive Coaching
- Executive Function Structure
- Meaning-making
- Descriptive Feedback

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.

Dopamine: POWERFUL Neurotransmitter

Dopamine increases our general level of inquisitiveness and goal-directed behavior as we seek to fill those needs.

We feel good while we are doing the task (not just upon completion).

Released in great amounts when goals are accomplished.



We Can Alter Dopamine Release

1. The brain can be trained to feed off bursts of dopamine sparked by accomplishment (rewarding experiences)
 - Little incremental goals
 - Accomplishing task is reward
 - Positive Feedback
 - Progress through series of goals to accomplish the BIG one!
2. Other Dopamine-Releasing Triggers:
 - Successful problem solving
 - Positive, deeper-learning, group experiences
 - Eating protein
 - Laughter, fun, anticipation
 - Movement, exercise

There is no such thing as laziness.

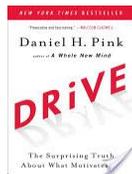
When it comes to cognitive perseverance, carrots and stick approaches don't work. Avoid them.

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** students, it is something we create *with* 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

Characteristics of Motivational Classrooms
(Rick Lavoie, *The Motivation Breakthrough*, 2007)

1. Relevance
2. Control
3. Balance of Support and Challenge
4. Social Interaction
5. Safety and Security

Motivational Forces (Needs):

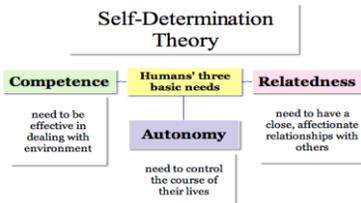
- | | |
|-------------------|--------------------|
| To Belong | To be Acknowledged |
| To be Independent | To Control |
| To be Important | To Assert |
| To Know | |

The amount of risk someone takes in the work place is directly proportional to his sense of strong relationship with the person in charge.

Self-Determination Theory
(Deci and Ryan, 1985)

Innate Need to Grow:

1. Competence and mastery of skills
2. Connection and relatedness and a sense of belonging
3. Autonomy – sense of control over their goals and behavior.



Goal-Performance

- People with goals outperform people without goals
- Goals can be self-created or accepted (from others)
- When goals are difficult, behaviors are energized (increased effort, persistence, etc.)
- When goals are specific, behaviors are directed (increases attention, improves planning – work smarter)
- Plan to receive FEEDBACK on your goals since feedback is the single most important predictor of achievement (Hattie and Timperley, 2007)

What's the Greatest Motivator to Humans in a Workplace?

- a) Recognition for good work?
- b) Incentives for work well done?
- c) Management support?
- d) Interpersonal support (other staff)?
- e) Clear, achievable goals?
- f) Making progress?

Amabile, TM, Kramer S. J. (2007, May). Inner work life: understanding the subtext of business performance. *Harvard Bus Review*, 85(5):72-83, 144.

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

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

B

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, 2010)

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

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



Prime the brain prior to asking students to do any learning experience.

Priming 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)

Creating Background Where There is None

Tell the story of the Code of Hammurabi before discussing the Magna Charta.
Before studying the detailed rules of baseball, play baseball.
Before reading about how microscopes work, play with microscopes.
Before reading the Gettysburg Address, inform students that Lincoln was dedicating a cemetery.

Good metaphors give us *new* information (Glucksberg, 2001), not the same information. They don't restate the obvious: *cars are like automobiles*. To be useful, they must provide fresh perspective or insight: *My son's car is a sports locker on wheels*.

Consider this, too: In order to be a good metaphor, they must factually be false!



We think primarily in physical terms. Over time we become adept at translating symbolic and abstract concepts into meaningful structures or experiences.

Metaphors Break Down

"You can't think of feudalism as a ladder because you can climb up a ladder. The feudal structure is more like sedimentary rock: what's on the bottom will always be on the bottom unless some cataclysmic event occurs."

— Amy Benjamin, *Writing in the Content Areas*, p. 80

- "A classroom is like a beehive." Where does the simile sink?
- Students are not bees.
 - Students have a variety of readiness levels and skill sets for completing tasks. Bees are more uniform.
 - Students don't respond blindly or purely to the pheromones of the queen bee.
 - Students are busier throughout the day and night than bees.
 - Students don't swarm when angered.

Test the Verb Strength

Did we *invade* the country, or did we *liberate* it? The choice of verbs frames our thinking. Ask students to change only the verb and explain how the reader or listener's interpretation of the topic would change as a result.

- The senator *corralled* her constituents.
- The senator *coddled* her constituents.
- The senator *ignited* her constituents.
- The senator *stonewalled* her constituents.
- The senator *suckered* her constituents.
- The senator *mollified* her constituents.
- The senator *lifted* her constituents.

Same Concept, Multiple Domains

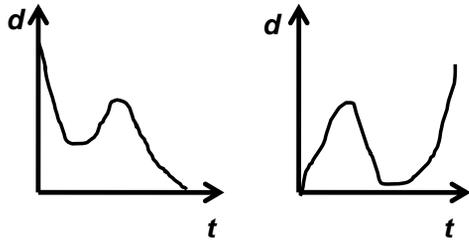
The Italian Renaissance: Symbolize curiosity, technological advancement, and cultural shifts through mindmaps, collages, graphic organizers, paintings, sculptures, comic strips, political cartoons, music videos, websites, computer screensavers, CD covers, or advertisements displayed in the city subway system.

The economic principle of supply and demand: What would it look like as a floral arrangement, in the music world, in fashion, or dance? Add some complexity: How would each of these expressions change if were focusing on a bull market or the economy during a recession?

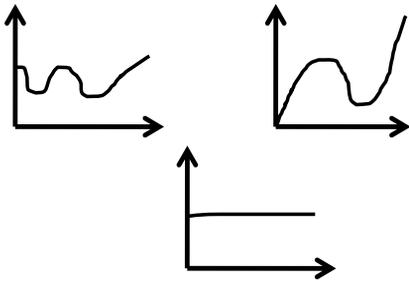
Creating and interpreting patterns of content, not just content itself, creates a marketable skill in today's students. A look at data as indicating "peaks and valleys" of growth over time, noticing a trend runs parallel to another, or that a new advertising campaign for dietary supplements merges four distinct worlds -- Greco-Roman, retro-80's, romance literature, and suburbia -- is currency for tomorrow's employees.

To see this in a math curriculum, for example, look at algebraic patterns. Frances Van Dyke's *A Visual Approach to Algebra* (Dale Seymour Publications, 1998)

A submarine submerges, rises up to the surface, and submerges again. Its depth d is a function of time t . (p.44)



Consider the following graphs. Describe a situation that could be appropriately represented by each graph. Give the quantity measured along the horizontal axis as well as the quantity measured along the vertical axis.



Descriptions With and Without Metaphors

- | | |
|--------------------------|------------------|
| Friendship | Family |
| Infinity | Imperialism |
| Solving for a variable | Trust |
| Euphoria | Mercy |
| Worry | Trouble |
| Obstructionist Judiciary | Honor |
| Immigration | Homeostasis |
| Balance | Temporal Rifts |
| Economic Principles | Religious fervor |
| Poetic License | Semantics |
| Heuristics | Tautology |
| Embarrassment | Knowledge |

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)

4-Square Synectics

1. Brainstorm four objects from a particular category (examples: kitchen appliances, household items, the circus, forests, shopping malls).
2. In small groups, brainstorm what part of today's learning is similar in some way to the objects listed.
3. Create four analogies, one for each object.

Example: *How is the human digestive system like each household item: sink, old carpet, microwave, broom*

Example: *How is the Pythagorean Theorem like each musical instrument: piano, drum set, electric guitar, trumpet?*

Body Analogies

Fingers and hands can be associated with dexterity, omnidirectional aspects, working in unison and individually, flexibility, or artwork.

Feet can relate to things requiring "footwork" or journey.

Anything that expresses passion, feeling, pumping, supplying, forcing, life, or rhythm could be analogous to the heart.

Those concepts that provide structure and/or support for other things are analogous to the spinal column.

A picture is worth a thousand words, but the right metaphor is worth a thousand pictures.

-- Daniel Pink, 2008

Great Resources on Metaphors

- *From Molecule to Metaphor: A Neural Theory of Language* by Jerome Feldman
- *Metaphor: A Practical Introduction* by Zoltan Kovecses
- *Poetic Logic: The Role of Metaphor in Thought, Language, and Culture* by Marcel Danesi
- *Metaphors & Analogies: Power Tools for Teaching any Subject* by Rick Wormeli
- *I Is an Other: The Secret Life of Metaphor and How It Shapes the Way We See the World* by James Geary

Great Resources on Metaphors

- *Metaphors We Live By* by George Lakoff
- *The Political Mind: Why You Can't Understand 21st-Century American Politics with an 18th-Century Brain* by George Lakoff
- *A Bee in a Cathedral: And 99 Other Scientific Analogies* by Joel Levy
- *On Metaphor (A Critical Inquiry Book)* edited by Sheldon Sacks

Petals Around the Rose

The name of the game is, "Petals Around the Rose." The name is very important. For each roll of the game, there is one answer, and I will tell you that answer.

Petals Around the Rose

					<small>Answer</small> 6
					0
					1 0

Petals Around the Rose

Clues to give students if they struggle:

- 1. All the math you need to solve this problem you learn in kindergarten or before.*
- 2. The sequence of the dice patterns has no bearing on the answer.*



Enticement Elements

- Anticipation
- Foreshadow
 - Suspense
 - Curiosity
- Situational Interest
- Gentle Competition (Games)
- Personal Voice

Plagiarize in front of students...

...and get caught!

- **Special Pleading (Stacking The Deck)** -- Using the arguments that support your position, but ignoring or even denying the arguments against.
- **The Excluded Middle (False Dichotomy, Faulty Dilemma)** -- Assuming there are only two alternatives when in fact there are more.
- **Short Term Versus Long Term** -- This is a particular case of the Excluded Middle. For example, "We must deal with crime on the streets before improving the schools." (But why can't we do some of both?)
- **Fallacy Of The General Rule** -- Assuming that something true in general is true in every possible case. For example, "All chairs have four legs." Except that rocking chairs don't have any legs.
- **Argument To The Future** -- Arguing that evidence will someday be discovered which will (then) support your point.

- **Poisoning The Wells** -- Discrediting the sources used by your opponent.
- **Appeal To Pity (Appeal to Sympathy, The Galileo Argument)** -- For example, "Scientists scoffed at Copernicus and Galileo; they laughed at Edison, Tesla and Marconi; they won't give my ideas a fair hearing either. But time will be the judge. I can wait; I am patient; sooner or later science will be forced to admit that all matter is built, not of atoms, but of tiny capsules of TIME."
- **Begging The Question (Assuming The Answer, Tautology)** -- Reasoning in a circle. The thing to be proved is used as one of your assumptions. For example: "We must have a death penalty to discourage violent crime". (This assumes it discourages crime.)
- **Argument From False Authority** -- A strange variation on Argument From Authority. For example, the TV commercial which starts "I'm not a doctor, but I play one on TV." Just what are we supposed to conclude?

- **Appeal To Authority** -- "Albert Einstein was extremely impressed with this theory." (But a statement made by someone long-dead could be out of date. Or perhaps Einstein was just being polite.)
- **Misquote a real authority**, Chevy Chase: "Yes, I said that, but I was singing a song written by someone else at the time."
- **Bad Analogy** -- Claiming that two situations are highly similar, when they aren't. For example, "The solar system reminds me of an atom, with planets orbiting the sun like electrons orbiting the nucleus. We know that electrons can jump from orbit to orbit; so we must look to ancient records for sightings of planets jumping from orbit to orbit also."
- **False Cause** -- Assuming that because two things happened, the first one caused the second one. (Sequence is not causation.) For example, "Before women got the vote, there were no nuclear weapons." Or, "Every time my brother Bill accompanies me to Fenway Park, the Red Sox are sure to lose." We confuse correlation and causation -- Earthquakes in the Andes were correlated with the closest approaches of the planet Uranus. Therefore, Uranus must have caused them. (But Jupiter is nearer than Uranus, and more massive too.)

- Appeal To Widespread Belief (Bandwagon Argument, Peer Pressure) -- The claim, as evidence for an idea, that many people believe it, or used to believe it. In the 1800's there was a widespread belief that bloodletting cured sickness. All of these people were not just wrong, but horribly wrong, because in fact it made people sicker. Clearly, the popularity of an idea is no guarantee that it's right.
- Fallacy Of Composition -- Assuming that a whole has the same simplicity as its constituent parts. Example: "Atoms are colorless. Cats are made of atoms, so cats are colorless."
- Fallacy Of Division -- Assuming that what is true of the whole is true of each constituent part. For example, human beings are made of atoms, and human beings are conscious, so atoms must be conscious.
- Argument By Half Truth (Suppressed Evidence) -- A book on the Bermuda Triangle might tell us that the yacht Connemara IV was found drifting crewless, southeast of Bermuda, on September 26, 1955. None of these books mention that the yacht had been directly in the path of Hurricane Iona, with 180 mph winds and 40-foot waves.

- Argument By Generalization -- Drawing a broad conclusion from a small number of perhaps unrepresentative cases. For example, "They say 1 out of every 5 people is Chinese. How is this possible? I know hundreds of people, and none of them is Chinese." So, by generalization, there aren't any Chinese anywhere.
- Non Sequitur -- Something that just does not follow. For example, "Tens of thousands of Americans have seen lights in the night sky which they could not identify. The existence of life on other planets is fast becoming certainty!"
- Argument By Prestigious Jargon -- Using big complicated words so that you will seem to be an expert. Why do people use "utilize" when they could utilize "use"?

- Argument By Gibberish (Bafflement) -- An invented vocabulary helps the effect. Perfectly ordinary words can be used to baffle. For example, "Each autonomous individual emerges holographically within egoless ontological consciousness as a non-dimensional geometric point within the transcendental thought-wave matrix."
- Euphemism -- The use of words that sound better. The lab rat wasn't killed, it was sacrificed.
- Least Plausible Hypothesis -- Example: "I left a saucer of milk outside overnight. In the morning, the milk was gone. Clearly, my yard was visited by fairies."

Helpful mindset for students and teachers:

Assessment and Feedback are considered information, NOT evaluation or judgment.

Two Questions to Ask Students:

- **What are you supposed to be learning?**
- **Where are you in relation to that goal?**

What do these all have in common?

- | | |
|----------------------------|----------------------------|
| Good job. | Well done. |
| Excellent. | Sloppy. |
| Little effort here. | Intelligent! |
| Unacceptable. | Missing supportive detail. |
| Confusing. | Poorly designed. |
| Did not follow directions. | Outstanding! |
| One of the best in class! | Significant errors. |
| Well organized. | |

Negating Students' Incorrect Responses While Keeping Them in the Conversation

- Act interested, "Tell me more about that..."
- Empathy and Sympathy: "I used to think that, too," or "I understand how you could conclude that..."
- Alter the reality:
 - Change the question so that the answer is correct
 - That's the answer for the question I'm about to ask
 - When student claims he doesn't know, ask, "If you DID know, what would you say?"

Negating Students' Incorrect Responses and While Them in the Conversation

- Affirm risk-taking
- Allow the student more time or to ask for assistance
- Focus on the portions that are correct

Remember: Whoever is responding to students is processing the information and learning. Who, then, should be responding to students in the classroom? Students.

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

Feedback begins with non-emotional, non-judgmental facts...

From Teacher's perspective:

*"You included one piece of evidence for each claim."
"You accounted for the amplitude of the wave."*

From student's perspective:

*"I did not use distilled water in the lab."
"I arched my back on the dismount."*

...then it is followed by reflection on how those elements relate to student's success relative to the evaluative criteria:

From the teacher's perspective:

- *"The criteria called for two pieces of evidence per claim, not one."*
- *"Because you accounted for the wave amplitude, your declarations of energy outputs were correct."*

From the student's perspective:

- *"If I used distilled water, I would not have as many contaminants potentially affecting my lab results."*
- *"Because I arched my back, I am able to make a fluid transition into the next element of the routine."*

What about teachers receiving constructive, descriptive feedback?

"Your lesson was engaging."

[Judgement/Unhelpful]

"You incorporated students' personal interests and culture in your examples, and you started with a real-life problem that needed to be solved. As a result, students spent most of their time discussing the math involved instead of just socializing."

[Commenting on Decisions and their Impact – Helpful, professional]

What gets listed in the criteria, gets the focus – But to what end?

“If we mark students’ everyday, coming-to-know writing on spelling and punctuation, they will only use words they know how to spell and sentences they know how to punctuate.”

- Rick’s wording, but based on an idea originated by Marjorie Frank

**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

**When providing
descriptive feedback
that builds
perseverance,**

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

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

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.

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



Thomas Edison

**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.

- She makes unsupported claims in an information essay and says she was never told to she had to support them with facts even though the requirement was underlined in her printed directions and you emphasized it with her orally three times.
- She reasons well through tricky word problems last week, but can't figure out similar ones this week using the same processes.
- When doing a Web search on the speed of light, she gives up when she inputs, "light" in the search box and gets 2,220,000,000 possible websites.

- He Tweets a line in poor taste from a movie, but doesn't put quotes around it and cite the movie, so friends and family think he said it himself and he is confused when they are upset with him.
- He demonstrates "learned helplessness," citing very fixable problems for why he can't start the assignment, such as he doesn't have a pen, his desk is askew, he doesn't know which page to use, and he can't find his folder on the computer.

Executive Function skills:

(Guare, Dawson, Guare, 2013, p. 15-17)

- Response inhibition
- working memory
- emotional control
- flexibility
- sustained attention
- task initiation
- planning/prioritizing
- organization
- time management
- goal-directed persistence
- metacognition

**And How Do We Build
These Skills in Students?**

*There's
no one strategy that works.*

And even more interesting:

*The strategies will need to
change as the students
mature*

Exercise daily.

"Aerobic exercise can grease the wheels of executive brain function." "...[R]ecent research indicates that exercising students...can expand their working memory...as well as improve their selective attention and their ability to inhibit disruptive impulses. Regular exercise and overall physical fitness have been linked to academic achievement, as well as to success on specific tasks like safely crossing a busy street while talking on a cell phone."

And later, "...[E]xercising young adults...post quicker reaction times, give more accurate responses, and are more effective at detecting errors when they engage in fast-paced tasks in the lab."

-- "The Science of Smart: A Surprising Way To Improve Executive Function,"
Annie Murphy Paul, author of *Brilliant: The New Science of Smart*
posted on her PBS on-line article, March

Video Students.

Video students struggling with EF skills, and in a quiet moment away from other students, sit with them and watch it, asking questions so the student can see and articulate the reality of what he is doing and its impact on his own learning and the learning of those around him.

Provide a compelling visual aide for pretty much everything students have to learn.

Provide students with time-keeping tools with alarms such as watches and timers.

Confirm, Reconfirm, and Reconfirm Again.

Do this with directions and evaluative criteria for assignments and assessments, and calendars. Making it ritualistic helps, but the occasional asynchronous confirmation is wise, too.

Cue from Afar.

“Communicate indirectly (Example: note, text message) The idea is to create distance between you and your teen so that the cue can work without the two of you being in the same space at the same time.”

-- P. 144, Guare, Dawson, Guare, 2013

Analyze, Break Down Tasks.

Break larger tasks down into smaller chunks and as Atul Gawande wisely taught us (*The Checklist Manifesto: How to Get Things Right*, 2011); it's particularly effective to put these task analyses in a checklist.



Practice breaking down tasks: preparing a bibliography, doing an Internet search, washing a P.E. uniform, getting himself ready for musical, athletic, or theatrical performance.

Analyze, Break Down Tasks - Example: Homework

- Ten minutes before the end of class, confirm assignment with the teacher.
- Write it in Daily Planner.
- List everything I need to bring home in order to do the assignment.
- Get every item on that list, cross off each one as I do.
- Re-explain the assignment's directions to someone in my family and confirm that I have it right. If confused, check with the class Website.
- Do assignment in room at home without distractions.
- Half way through the assignment, check with someone that I'm doing it correctly.
- Finish the assignment.
- Put it in my book bag.
- Put book bag on table near the front door.

Components of Blood Content Matrix

	Red Cells	White Cells	Plasma	Platelets
Purpose	Carries Oxygen and Nutrients			
Amount	5,000,000 per CC			
Size & Shape	Small, indented, like Cheerios			
Nucleus ?	None			
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.

T-List or T-Chart: Wilson's 14 Points

Main Ideas	Details/Examples
Reasons President Wilson Designed the Plan for Peace	1. 2. 3.
Three Immediate Effects on U.S. Allies	1. 2. 3.
Three Structures/Protocols created by the Plans	1. 2. 3.

Cornell Note-Taking Format

Reduce

[Summarize in short phrases or essential questions next to each block of notes.]

Record

Write your notes on this side.]

Review -- *Summarize (paragraph-style) your points or responses to the questions. Reflect and comment on what you learned.*

Somebody Wanted But So

[Fiction]

Somebody (*characters*)...

wanted (*plot-motivation*)...,

but (*conflict*)...,

so (*resolution*)... .

Something Happened And Then

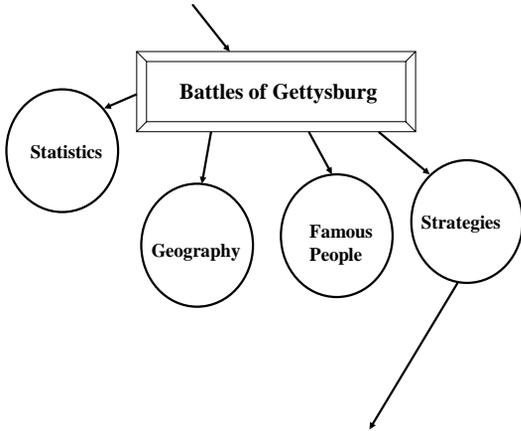
[Non-fiction]

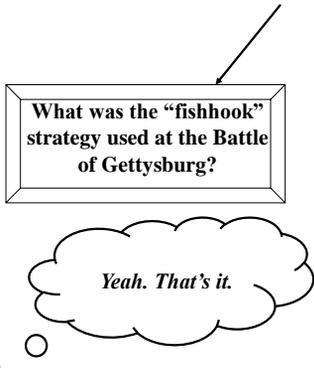
Something (*independent variable*)...

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

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

then (*conclusion*)... .



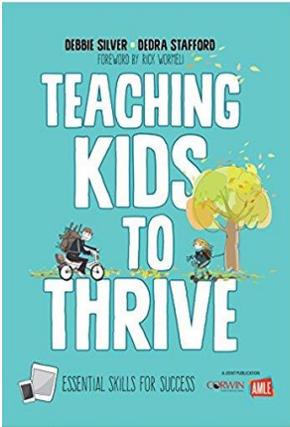


Recommended Resources:

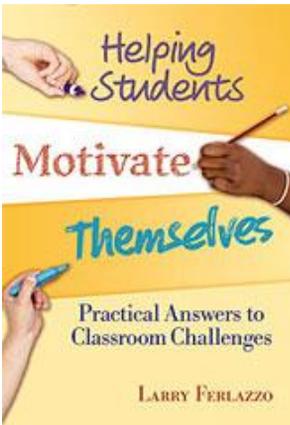
- *Smart but Scattered: The Revolutionary "Executive Skills" Approach to Helping Kids Reach Their Potential* by Peg Dawson and Richard Guare
- *Smart but Scattered Teens: The "Executive Skills" Program for Helping Teens Reach Their Potential* by Richard Guare, Peg Dawson, and Colin Guare
- *Late, Lost, and Unprepared: A Parents' Guide to Helping Children with Executive Functioning* by Joyce Cooper-Kahn and Laurie Dietzel
- *Promoting Executive Function in the Classroom (What Works for Special-Needs Learners)* by Lynn Meltzer
- The National Center for Learning Disabilities (www.ncl.org)
- http://developingchild.harvard.edu/resources/multimedia/videos/inbrief_series/inbrief_executive_function/
- "Worth a Closer Look: Executive Function," Rick Wormeli, *Middle Ground* magazine (Now, *AMLE Magazine*), August 2013, Association for Middle Level Education

Recommended Resources for ADHD information:

- *The Attention Deficit Disorder Association* (www.add.org)
- http://www.helpguide.org/mental/adhd_add_signs_symptoms.htm
- *National Resource Center on ADHD* (<http://www.help4adhd.org/>), which includes resources for the organization, CHADD (Children and Adults with Attention-Deficit/Hyperactivity Disorder)



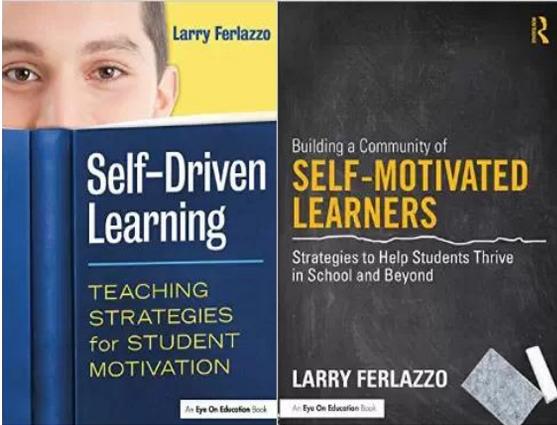
Highly recommended,
new book!

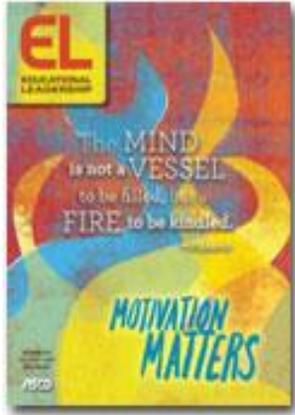


Larry Ferlazzo

Helping Students Motivate Themselves: Practical Answers to Classroom Challenges

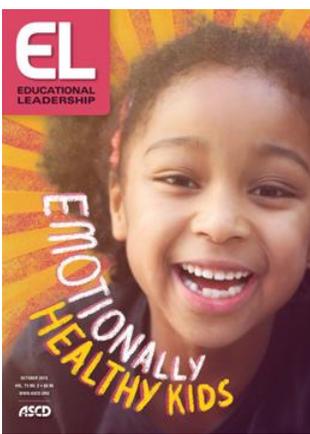
Practical, Creative, Real....





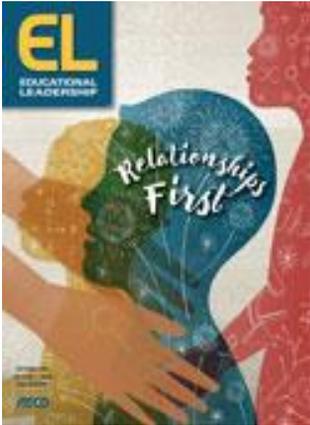
Motivation Matters

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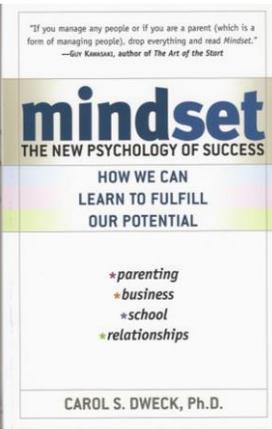
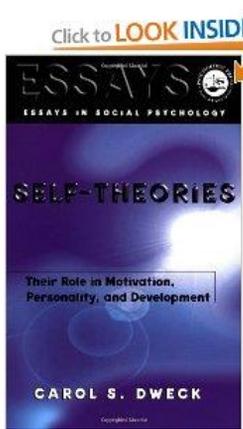


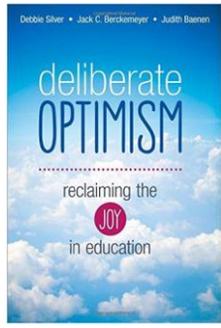
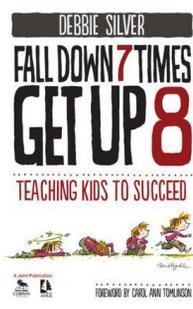
**ASCD's Education Leadership
"Emotionally Healthy Kids"**

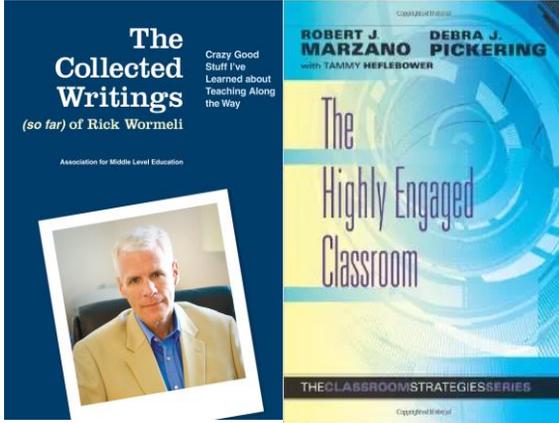
October 2015|
Volume 73 |
Number 2
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September 2016
Volume 74 | Number 1
Relationships First
Pages 10-15
"What to Do
in Week One?"







Resources...

Mindware: www.mindwareonline.com (1-800-999-0398)
 Fluegelman, Andrew, Editor. *The New Games Book*, Headlands Press Book, Doubleday and Company, New York, 1976
 Henton, Mary (1996) *Adventure in the Classroom*. Dubuque, Iowa: Kendall Hunt
 Lundberg, Elaine M.; Thurston, Cheryl Miller. (1997) *If They're Laughing...* Fort Collins, Colorado: Cottonwood Press, Inc.
 Rohnke, K. (1984). *Silver Bullets*. Dubuque, Iowa: Kendall Hunt.
 Rohnke, K. & Butler, S. (1995). *QuickSilver*. Dubuque, Iowa: Kendall Hunt
 Rohnke, K. (1991). *The Bottomless Bag Again*. Dubuque, Iowa: Kendall Hunt
 Rohnke, K. (1991). *Bottomless Baggie*. Dubuque, Iowa: Kendall Hunt
 Rohnke, K. (1989). *Cowstail and Cobras II*. Dubuque, Iowa: Kendall Hunt

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