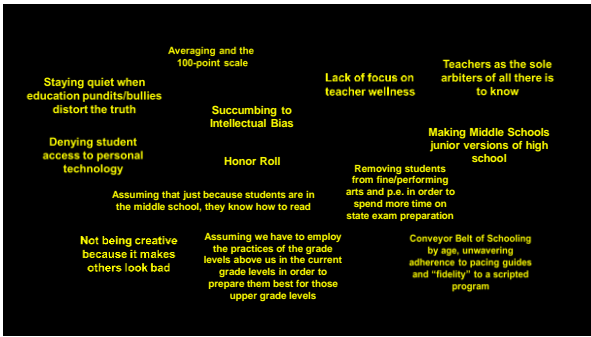


- 1. Teacher Professionalism/Intellect/Mindset
 - 2. Reframing/Recognizing Bias
 - 3. Timely, Descriptive Feedback
 - 4. Re-Learning/Re-doing
 - 5. Creativity
 - 6. Meaning-Making
 - 7. Cognitive Science
 - 8. Summarization
 - 9. Civil Discourse
 - 10. Differentiation and Equity
-and one extra one!

What Won't Stand the Test of Time?

"What's that foul odor coming from the middle school?"

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



**In some schools,
there is a pervading,
anti-intellectual bias.**

*[Note:
www.rickwormeli.com/articles for
article with suggestions on
cultivating teacher intellect]*

**If we find ways for educators to experience curiosity,
awe, induction, deduction, analysis, synthesis,
resilience, empathy, extrapolation, juxtaposition, and
other mental dexterities in their own development,
they are better thinkers with our children. They can
solve their own problems, connect with students,
innovate their way to meaningful lessons, and
persevere in the midst of challenge.**

Success in the classroom is not so much following a list of recipes in your teacher cookbook as it is paying diligent attention to constructive mindsets (dispositions) and the influences our inherited narratives.

Working Premise:

Examined pedagogy elevates; students thrive.

Unexamined pedagogy harms; students wither.

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?

With colleagues and the community, reflect on the bigger questions:

- How does my approach reflect what we know about young adolescents?
- Why do we grade students?
- Does our current approaches best serve students?
- How do we communicate with parents?
- How does assessment inform our practice?
- Is what we're doing fair and developmentally appropriate?
- How can we counter the negative impact of poverty on our students' learning?
- What role does practice play in mastery?
- What is mastery for each curriculum we teach?
- What is homework, and how much should it count in the overall grade?
- How are our current structures limiting us?

- Whose voice is not heard in our deliberations?
- What do we know about differentiated practices and the latest in cognitive theory and how are those aspects manifest in our classrooms? If not, why not?
- Are we mired in complacency?
- Are we doing things just to perpetuate what has always been done?
- Are we open to others' points of view – why or why not?
- Does our report card express what we're doing in the classroom?
- How are modern classrooms different from classrooms thirty years ago?
- Where will our practices look like 15 years from now?
- To what extent do we allow state, provincial, country, or international exams to influence our classroom practices?

"Courage is not the absence of fear. It's the judgment that something else is more important than that fear."

--Ambrose Redmoon

Absent moral imperative, nothing in education changes. (Reeves)

What's the moral thing we do?

"People must be sufficiently dissatisfied with the present state of affairs – and their role in maintaining it – or they have no reason to endure the losses and challenges of change." - Evans, p. 57

"The humiliation of becoming a raw novice at a new trade after having been a master craftsman at an old one, and...the deep crisis caused by the need to suppress ancient prejudices, to put aside the comfort of the familiar to relinquish the security of what one knows well." (Kaufman, 1971, p. 13)" - Evans, p. 48

"The Grief of Accepting New Ideas" - www.rickwormell.com/articles

In order for someone to accept feedback or take a risk with a new idea, he must admit first what he was doing was less effective than his ego thought it was.

“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.”

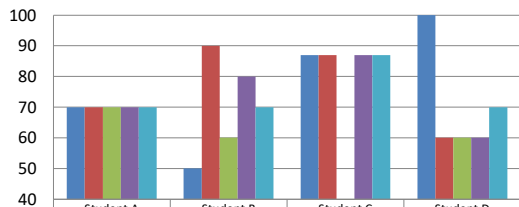
-- William W. Purkey from an L.L. Bean Co. poster:
“What is a customer?” by J.M. Eaton

*Time to Change
the Metaphor:*

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

It's not an *answer chase*.
It's a question journey.

Time is NOT immutable.



	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

Embrace the fact that, "[l]earning is fundamentally an *act of creation*, not *consumption of information*."

-- Sharon L. Bowman, Professional Trainer

**Active Creators,
NOT Passive
Consumers!**

There's no such thing as laziness.

Embrace the very real and positive effects of fiction reading on critical-thinking, scholarly analysis, problem-solving, empathy, and civil discourse.

"I used to think...,
but now I think..."

And in English and Language arts classes, spend considerable time actually reading.

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.

F.A.I.L.

First Attempt in Learning

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:

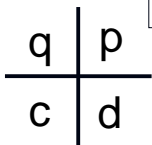
- This assignment had no legitimate educational value.
- It's okay if you don't do this work.
- It's okay if you don't learn this content or skill.

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

If an "F" on a project really motivated students to work harder and achieve, retention rates would have dropped by now. They haven't; they've increased. We need to do something more than repeatedly document failure.

Re-learning/Re-do's are one of the most preparatory and maturing things we can facilitate with our students that effectively prepares them for their future professions. *One-and-done* practices employed on the premise we're teaching students personal responsibility allows teachers and students to escape the demanding nature of learning. It creates nothing but regret and incompetence. And when did incompetence become our goal?

...and we can do redo's without losing our sanity while students learn personal responsibility and how to meet deadlines.



Which letter does not belong, and why?

Same Concept, Multiple Domains

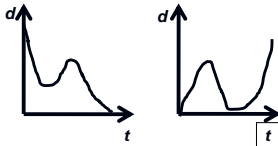
The Italian Renaissance: Symbolize curiosity, technological advancement, and cultural shifts through mindmaps, collages, graphic organizers, paintings, sculptures, comic strips, political cartoons, music videos, websites, computer screensavers, CD covers, or advertisements displayed in the city subway 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 we were focusing on a bull market or the economy during a recession?

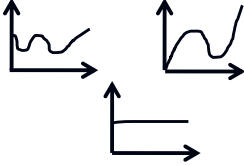
Creating and interpreting patterns of content, not just content itself, creates a marketable skill in today's students. A look at data as indicating "peaks and valleys" of growth over time, noticing a trend runs parallel to another, or that a new advertising campaign for dietary supplements merges four 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.



What does this depict?

owher

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."

Punctuate this one:

**That that is is that
that is not is not
is that it it is**

-- Daniel Keyes, *Flowers for Algernon*

*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.

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.

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.

Creating Background Where There is None

Before reading a book about a military campaign or a murder mystery with references to chess, play Chess with a student in front of the class, or teach them the basic rules, get enough boards, and ask the class to play.
In math, we might remind students of previous patterns as they learn new ones. Before teaching students factorization, we ask them to review what they know about prime numbers.
In English class, ask students, *"How is this story's protagonist moving in a different direction than the last story's protagonist?"*
In science, ask students, *"We've seen how photosynthesis reduces carbon dioxide to sugars and oxidizes water into oxygen, so what do you think the reverse of this process called, 'respiration,' does?"*

Moving Content into Long-term Memory

Students have to do both,
Access → Sense-Making
Process → Meaning-Making

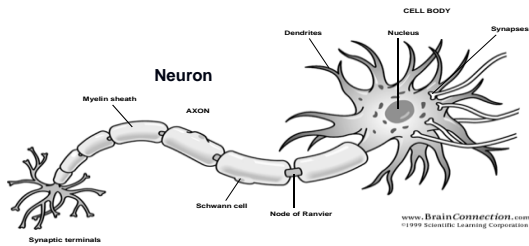
CP RUS AIB MLOL



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



Sleep

Melatonin production in young adolescents shifts by 3 to 5 hours, but runs for the same length of time.

Sleep deprivation often invokes the starvation response in the body.

Sleep helps us encode memories for long-term memory; lack of sleep lowers the brain's capacity to learn new things

(Dye, 2000, as cited in Sprenger)

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.



Cognitive Load Theory
IS compatible with
Project Based Learning
and Constructivism

"Cognitive load theory is based on a number of widely accepted theories about how human brains process and store information (Gerjets, Scheiter & Cierniak 2009, p. 44). These assumptions include: **that human memory can be divided into working memory and long-term memory; that information is stored in the long-term memory in the form of schemas; and that processing new information results in 'cognitive load' on working memory which can affect learning outcomes** (Anderson 1977; Atkinson & Shiffrin 1968; Baddeley 1983)."

"... Ultimately, the Cognitive Load Theory also suggests that **'knowing things' is necessary to think critically about those things**—or at least is most efficient when that is the case."

—www.teachthought.com/learning/cognitive-load-theory-important-thing-teacher-know/

See the original designation of it here:
Sweller, J., Cognitive load during problem solving: Effects on learning, *Cognitive Science*, 12, 257-285 (1988)

Mindful of Cognitive Load Theory, teachers:

- Limit the distractions (Load) to Working Memory – Avoid the split-attention effect: We put text explanations IN the diagram, not simply number the diagram and ask students to turn to another physical resource to read about each part. We focus on the standard directly, not weave in other elements unrelated to the standard that we are trying to teach students, such as teaching specific media and data gathering skills for a future, cross-curricular project while also teaching students about the Crusades, Muslim/Christian relations, and what happened during the Protestant Reformation.
- Reference George Miller's "7 +/-2" research about short-term memory data. In middle school, we focus most effectively on 3-5 elements for our framework.
- Ceaselessly focus with students on the basic knowledge and skills, but also helping them perceive connections, patterns, frameworks, schema, chunks - not leaving content to isolated facts to memorize and parrot back to the teacher.
- Incorporate clear, well explained exemplars of mathematic problem-solving, writing, coding, lab write-ups, music pieces, art pieces, etc. weekly, if not daily.

“Cognitive load theory supports explicit models of instruction, because such models tend to accord with how human brains learn most effectively (Kirschner, Sweller & Clark 2006). Explicit instruction involves teachers clearly showing students what to do and how to do it, rather than having students discover or construct information for themselves (see Centre for Education Statistics and Evaluation 2014, pp. 8-12).”

- www.teachthought.com/learning/cognitive-load-theory-definition-teachers/

Project Based Learning often involves multiple and interwoven skill and cognitive sets over an extended period of time, including elements not directly related to the standard being taught. These elements can include:

- Identifying and solving open-ended community problems in a way that has real and positive impact (authenticity)
- Creating questions and effective follow-up questions
- Identifying and obtaining helpful resources to solve the problem
- Creating a plan of action and committed to its long-term inquiry process
- Identifying and using strong student voice
- Making effective choices
- Revising thinking in light of new perspective or evidence
- Connecting academic standards to their personal interests
- Working with authentic working world research tools
- Designing long-term investigations/projects
- Giving and receiving helpful feedback, learning to critique others and one's own work
- Creating and presenting the results to the public (those not in the classroom) via oral presentations, demonstrations, graphics, digital formats, written formats, or via a combination of two or more of these. These presentations may not necessarily be to individuals of their own age group.

Imagine insisting that students grapple with complexity through authentic project-based learning and classic literature and essay-writing and 'rigorous' and highly-academic tasks—all celebrated in modern education circles—without realizing that you're overloading their short-term memory—that you're more or less making sure they actually 'learn' very little by design.

That instead of using the schema that they do have to create some new knowledge, piece by piece, helping them understand the utility of each new morsel of understanding as you go—instead of that, because you're hell-bent on 'rigor,' you're instead the architect of their struggle and confusion.

They spend the bulk of the learning you've planned trying to decode the assignment, extrapolating from your tone and body language what's most important for them to do to get your approval and a good grade while their brain ends up processing processing, going back and forth between short-term right now and long-term this is what I know to make sense of everything that's happening. Ugh.

- Terry Heick, February 4, 2019, www.teachthought.com/learning/cognitive-load-theory-important-thing-teacher-know/

Provide explicit instruction, limiting distractions from the standard, mindful of short-term memory's limited capacity (load) and how to develop helpful schema, and facilitate context/connection/meaning as we can.

Suggested Article:
 "Memorization Still Matters" at
www.rickwormell.com/articles

Facilitate experiences in which students integrate/apply learned content and skills in meaningful context as found in PBL experiences.

Provide ample Retrieval Practice:

"[W]hen information comes to mind easily and feels fluent, it's easy to forget. In other words, just because we learn something quickly and easily does not guarantee we'll remember it....Retrieval practice makes learning effortful and challenging. Because retrieving information requires mental effort, we often think we are doing poorly if we can't remember something. We may feel like progress is slow, but that's when our best learning takes place.... [R]ecalling an answer to a science question improves learning to a greater extent than looking up the answer in a textbook. And having to actually recall and write down an answer to a flashcard improves learning more than thinking that you know the answer and flipping the card over prematurely. Struggling to learn – through the act of "practicing" what you know and recalling information – is much more effective than [simply] re-reading..."

- www.retrievalpractice.org

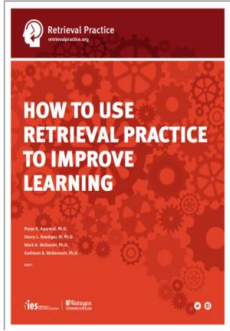
One element of Retrieval Practice: Interleaving

A	A	A	B	B	B	C	C	C	Massed (block) Practice Interleaved Practice
C	A	C	A	B	C	B	A	B	

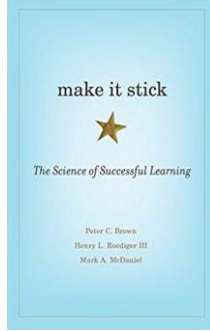
Limit massed, or, "block," style practice; mix it up.

"When practice problems are arranged so that consecutive problems cannot be solved by the same strategy, students are forced to choose a strategy on the basis of the problem itself. For example, when students complete four addition, four subtraction, and four division problems (e.g., AAAA BBBB CCCC), they can go through them without thinking about which strategy is appropriate. They don't even have to read the words. But when the math problems are interleaved (ACB BAC CAB), students have to choose and retrieve the appropriate strategy for each problem. Same exact problems – just simply rearranged! A critical key to interleaving: mix similar concepts to promote students' discrimination (like a fruit salad!)"

- www.retrievalpractice.org/library



Both of these are particularly helpful when adding retrieval practice, spacing, interleaving, and long-term learning strategies to our instructional practice.

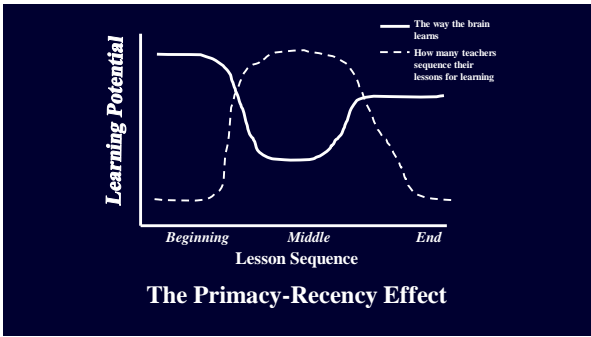


Definition:

Summarization is restating the essence of text or an experience in as few words as possible or in a new yet efficient, manner.

The Gettysburg Address

Four score and seven years ago our fathers brought forth on this continent, a new nation, conceived in Liberty, and dedicated to the proposition that all men are created equal. Now we are engaged in a great civil war, testing whether that nation, or any nation so conceived and so dedicated, can long endure. We are met on a great battle-field of that war. We have come to dedicate a portion of that field, as a final resting place for those who here gave their lives that that nation might live. It is altogether fitting and proper that we should do this. But in a larger sense, we can not dedicate -- we can not consecrate -- we can not hallow -- this ground. The brave men, living and dead, who struggled here, have consecrated it, far above our poor power to add or detract...



**Chunk N Chew
10:2**

Students can become overwhelmed if not given frequent opportunities to process and interact with information. Teachers need a variety of strategies to engage students after they have delivered the "chunk" of content and are ready for them to start "chewing" the new information.

Today I Will ... So That I Can..

Today I will...create a 3-D model illustrating the phases of mitosis.

So that I can...understand the role of cellular division (mitosis) in producing complex organisms.

I am successful when...I can describe and explain the phases of mitosis to someone and explain their importance.

Today I Will ... So That I Can..

Today I will...analyze the characters of *Brave New World* by creating character maps.

So that I can...connect key attributes of the novel's characters to the plot and theme of the book.

I am successful when...I can accurately describe character traits and how each character relates to others by using evidence from the text.

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*)... .

When we summarize, we:

Delete some elements

Keep some elements

Substitute for some elements.

“DKS”

Ask students to memorize these three actions.

TaRGeTS

(Based on Rules-Based Summaries, 1968)

- T - Trivia (Remove trivial material)
- R - Redundancies (Remove redundant information)
- G - Generalize (Replace specifics/lists with general terms and phrases)
- TS - Determine the Topic Sentence

Topic Sentence

TS = subject + author's claim about subject

Subject: Dogs

Claim: Make great pets

TS: “Dogs make great pets.”

Help with Paraphrasing

Build students' vocabulary and verbal dexterity. Post word banks. Use vocabulary immersion. Provide repeated experiences with varied sentence combinations and word play. Use repeated think-alouds of a paraphraser at work from both teacher and students. Provide ample opportunities to assess paraphrasings of original text or experience. Take a page from the active listening lessons -- "So what you're saying is..." Provide repeated experiences with encapsulation such as creating newspaper headlines. Play renaming and clue games such as Password, Taboo, and \$25,000 Pyramid.

One-Word Summaries

"The new government regulations for the meat-packing industry in the 1920's could be seen as an opportunity..."
"Picasso's work is actually an argument for...."
"NASA's battle with Rockwell industries over the warnings about frozen temperatures and the O-rings on the space shuttle were trench warfare..."

Basic Idea: Argue for or against the word as a good description for the topic.

3-2-1

- 3 - Identify three characteristics of Renaissance art that differed from art of the Middle Ages
- 2 - List two important scientific debates that occurred during the Renaissance
- 1 - Provide one good reason why "rebirth" is an appropriate term to describe the Renaissance

- 3 - List three applications for slope, y-intercept knowledge in the professional world
- 2 - Identify two skills students must have in order to determine slope and y-intercept from a set of points on a plane
- 1 - If (x_1, y_1) are the coordinates of a point W in a plane, and (x_2, y_2) are the coordinates of a different point Y, then the slope of line WY is what?

Unique Summarization Formats/Products

- A soap opera about valence among chemical elements
- A "Wanted: Dead or Alive" poster about Preposition Pete ("He was last seen in the OverHill'n'Dale Saloon, at the table, in the dark, under close scrutiny of other scalawags...")
- Compose a ballad about the cautious Massasoit tribe coming to dinner with Governor Bradford and his colony in 1621.
- Interpret the Internet for Amazonian inhabitants that have never lived with electricity, let alone a computer.
- Argue for and against Democracy as a healthy way to build a country – Provide at least two arguments for each position.
- Classify the Greek gods and goddesses according to three different criteria.
- Predict the limiting factors for this habitat twenty-five years from now.
- Retell a fairytale of your choosing with one of the following concepts as its central theme:
 - "Courage is not the absence of fear, but the judgment that something else is more important than that fear." – Ambrose Redmoon
 - "A setback is preparation for a comeback."
 - "The one who never makes mistakes takes his orders from one who does."

Unique Summarization Formats/Products

- A comic strip about the mantissa (the decimal-fraction part of a logarithm)
- A mysterious yet accurate archeological map concerning the quadratic formula
- A field guide to the asymptotes of a hyperbola (the diagonals of the rectangle formed by the lines $x = a$, $x = -a$, $y = b$ and $y = -b$ in the hyperbola: x^2 over a^2 minus y^2 over b^2)
- A coloring book about Amendments 1, 2, 3, 4, and 10 to the Constitution
- A rap song that expresses the order of Presidential succession
- A grocery list for Taiga biomes
- A mural that accurately expresses the "checks and balances" nature of our Federal government's three branches: judicial, legislative, and executive
- A sculpture or mobile that teaches observers about latitude and longitude
- A pop-up book on liquid and dry measures

Provide teachers, students, and the community with civil discourse tools to conduct candid, constructive, extended conversations about uncomfortable, yet vitally important topics, like:

- Race and racism
- Funding
- LGBTQA issues
- Classism/Poverty
- Religion
- Politics
- Equity

Teach Debate!
<https://speechanddebate.org/>
National Speech and Debate Association

From the Restorative Justice Initiative:

- We believe that all life is interconnected and that injustice anywhere is injustice everywhere.
- We believe that each of us is more than the worst thing we have ever done.
- We believe that justice is more likely to be achieved when the inquiry following a crime focuses on the resulting harm to human relationships rather than on the rules that have been broken.
- We believe in a justice system in which all people directly impacted by a crime or incident of harm are involved in the process of making things right.

- www.restorativejustice.nyc/mission-vision-organizational-values

From the Restorative Justice Initiative:

- We believe in supporting the needs of offenders and removing barriers to successful reentry while also encouraging acceptance of responsibility for harm caused and making appropriate amends and/or reparations.
- We believe that justice requires listening and responding to the needs of victims of crime and supporting victims on their healing journey.
- We believe that all victims of crime should have access to restorative processes upon request.
- We believe that effective restorative processes are non-coercive and that all participants must be given a meaningful choice to participate or not. We believe that children learn best when their social and emotional needs are met.

- www.restorativejustice.nyc/mission-vision-organizational-values/

Inquiry Method

1. Something arouses students' curiosity.
2. Students identify questions regarding topic. There is usually one main question with several sub-questions that help answer the main question. These questions are submitted to classmates for review.
3. Students determine the process of investigation into topic. Their proposal for how to conduct the investigation is submitted to classmates for review and revision as necessary.
4. Students conduct the investigation.
5. Students share their findings.

Socratic Seminar

Pre-Seminar:

- A. Shared experiences, chosen for richness of ideas, issues, ambiguity, "discussability"
- B. Students reflect on material
Group dynamics, ground rules, and courtesy are understood and accepted.

Seminar:

- A. Teacher asks a provocative question. Opening, Core, and Closure Questions
- B. Students respond to the provocative question and each other.
- C. Teacher offers core questions that help students interpret and to re-direct, also evaluates and tries to keep mouth shut.
- C. Closing – connect to the real world of the student

Post-Seminar

Writings, Summations, Artwork, Reflection, Critique, Analysis

Logical Fallacies

Originally from: members.aol.com/jim469897/skeptc.htm (Jim Morton)

- Ad Hominem (Argument To The Man) – Attacking the person instead of attacking his argument. For example, "Von Daniken's books about ancient astronauts are worthless because he is a convicted forger and embezzler." (Which is true, but that's not why they're worthless.) Or, attack the speaker's sincerity: "How can you argue for vegetarianism when you wear leather shoes?"
- Straw Man (Fallacy of Extension) – Attacking an exaggerated or caricatured version of your opponent's position. Example: "Senator Jones says that we should not fund the attack submarine program. I disagree entirely. I can't understand why he wants to leave us defenseless like that."
- Argument From Adverse Consequences – Saying an opponent must be wrong, because if he is right, then bad things would ensue. "My home in Florida is six inches above sea level. Therefore I am certain that global warming will not make the oceans rise by one foot."

- **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 1900'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."

Popcorn kernels pop at different rates, but when each one pops, it's accorded full status as a piece of popcorn, not something less than popcorn because it popped later than its fellow kernels.

Let's end the false assumption that students all learn at a uniform rate and manner.

"Compared with schools with low percentages of students experiencing poverty, schools with high percentages of students experiencing poverty are more likely to have:

- less access to school nurses and college counselors;
- more limited access to computers and the Internet;
- inadequate learning facilities such as science labs;
- more teacher vacancies and substitute teachers;
- more teachers unlicensed in their subject areas;
- less rigorous and student-centered curricula;
- inoperative or dirty student bathrooms;
- less access to preventive healthcare;
- serious teacher turnover problems;
- higher student-to-teacher ratios;
- insufficient classroom materials;
- less access to stable housing;
- fewer extracurricular programs;
- fewer experienced teachers;
- lower teacher salaries;
- larger class sizes; and
- less funding."

Before we assume students lack grit and claim openly or privately that this and personal character are the roots of their academic struggles, let's remember...

Paul Gorski, Associate Professor, Integrative Studies, George Mason University
May 16, 2018

Be careful – Grit and growth mindset programs and emphases can be racist, classist, and more. Check out, "Grit and Growth Mindset – Deficit Thinking?" (AMLE Magazine)

www.rickwormeli.com/articles

Equity of access to technology during and after school hours

Technology use based on pedagogy, cognitive science, and effective instructional design

Let's embrace the reality:

During the course of his or her career, every great teacher breaks rules, many of them political. Since most school policies are put in place to maintain order, yet learning is a disorderly enterprise, we are in daily conflict. We can't survive long in education when denying our rebel selves.

Differentiation

Differentiating instruction is doing what's fair for students. It's a collection of best practices strategically employed to maximize students' learning at every turn, including giving them the tools to handle anything that is undifferentiated. It requires us to do different things for different students some, or a lot, of the time. It's whatever works to advance the student if the regular classroom approach doesn't meet students' needs. It's highly effective teaching.
