



Sure-Footing in a Shaky World

Best Practices that Stand the Test of Time

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For more conversation:

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“We went to school. We were not taught how to think; we were taught to reproduce what past thinkers thought....Instead of being possibilities, we were taught as if we entered school as a graduated as a period.”

**taught to look for
to exclude them. It’s
question mark and**

-- Michael Michalko,
Creative Thinking,
2011, p. 3

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

Creativity is making connections between dissimilar things in such a way as to create something new.

It's often about recombining old ideas and things for new purposes or perspectives.

From Professor Alane Starko in her book, *Creativity in the Classroom*:

Gutenberg developed the idea of movable type by looking at the way coins were stamped.

Eli Whitney said he developed the idea for the cotton gin while watching a cat trying to catch a chicken through a fence.

Pasteur began to understand the mechanisms of infection by seeing similarities between infected wounds and fermenting grapes.

Einstein used moving trains to gain insight into relationships in time and space.

Combination and Re-Combination

- **Hall duty and Teacher Advisory**
- **Service Learning and Students in danger of dropping out**
- **Miniature Golf and lesson sequence**
- **Students' cafeteria behavior and architecture**
- **Unmotivated faculty and farming, astronomy, or marble tabletops.**
- **Parental involvement and medicine**

Grades are
communication.

**Writer and educator, Margaret
Wheatley, is correct:**

***"We can't be creative unless
we're willing to be confused."***

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...

**Change
your
verbs.**

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

Practice turning regular and advanced education objectives and tasks into even more complex objectives and tasks.

Be careful to change the nature of the content/task, not the difficulty or workload.

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 automaticity 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 safeguarding its citizens?”

William's Taxonomy

Fluency

Flexibility

Originality

Elaboration

Risk Taking

Complexity

Curiosity

Imagination

Frank Williams' Taxonomy of Creative Thinking

Fluency – We generate as many ideas and responses as we can

Example Task: Choose one of the simple machines we've studied (wheel and axle, screw, wedge, lever, pulley, and inclined plane), and list everything in your home that uses it to operate, then list as many items in your home as you can that use more than one simple machine in order to operate.

Flexibility – We categorize ideas, objects, and learning by thinking divergently about them

Example Task: Design a classification system for the items on your list.

Originality – We create clever and often unique responses to a prompt

Example Task: Define life and non-life.

Elaboration – We expand upon or stretch an idea or thing, building on previous thinking

Example: What inferences about future algae growth can you make, given the three graphs of data from our experiment?

Risk Taking – We take chances in our thinking, attempting tasks for which the outcome is unknown

Example: Write a position statement on whether or not genetic engineering of humans should be funded by the United States government.

Complexity – We create order from chaos, we explore the logic of a situation, we integrate additional variables or aspects of a situation, contemplate connections

Example: Analyze how two different students changed their lab methodology to prevent data contamination.

Curiosity – We pursue guesses, we wonder about varied elements, we question.

Example: What would you like to ask someone who has lived aboard the International Space Station for three months about living in zero-gravity?

Imagination – We visualize ideas and objects, we go beyond just what we have in front of us

Example: Imagine building an undersea colony for 500 citizens, most of whom are scientists, a kilometer below the ocean's surface. What factors would you have to consider when building and maintaining the colony and the happiness of its citizens?

Information Age is old school. We're in the High Concept Age, and we have the tech to pursue it:

- Twitter and other social media
- Daily newspapers downloaded for analysis
- Museum school partnerships and Virtual Tours
- QR codes attached to classroom activities
- Student-designed apps
- Khan Academy and similar on-line tutorials
- Graduation in four states now requires one course taken completely on-line
- Google Docs
- Google Glass/Eyes – wearables, implantables, augments

- MOOCS – Massive Open On-line Course
- Crowd-Sourcing
- MIT Open Courseware
- TED talks and ed.Ted.com
- Screencasts (ex. Camtasia Studio)
- Voicethread
- Moodle
- PBL's
- Prezi
- iMovie
- Edmodo

Practice

- **Repeated, but not
the same thing
over and over**
 - **Spaced Out**
 - **Interleaved**
 - **Increase
Complexity**

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

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

**Affirm effort and
perseverance, not
intelligence or capability.
Give feedback on
decisions made.**

Effective Protocol for Data Analysis
and Descriptive Feedback 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)*

**Remember, whoever does the editing,
does the learning!**

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 Smp1st trms	✓			
6	Reducing to Smp1st trms	✓			
7	Reciprocals	✓			
8	Reciprocals		✓	✓	
9	Reciprocals		✓	✓	

Seek Meaning-Making!

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.”

Meaningful Arrangement and Patterns are Everything

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

“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

Expertise increases engagement
and understanding. (Physics students example)

'Put another way:

*Chance favors
the prepared mind.*

-- Pasteur

**Yes, teach students
to memorize content.**

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

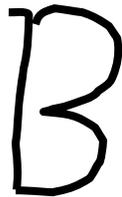
“A volcano is a vent in the Earth from which molten rock (magma) and gas erupt. The molten rock that erupts from the volcano (lava) forms a hill or mountain around the vent. Lava may flow out as viscous liquid, or it may explode from the vent as solid or liquid particles...”

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

***Which one leads to more learning
of 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?

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.

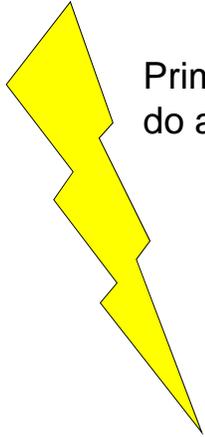
-- Dooling and Lachman (1971)
pp. 216-222

The Brain's Dilemma:
What Input to Keep, and What Input to Discard?



- Survival
- Familiarity/Context
- Priming
- Intensity
- Emotional Content
- Movement
- Novelty

-- Summarized from Pat Wolfe's *Brain Matters*, 2001



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.

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?”*

Important for all ages when moving content into long-term memory:

Students have to do both,

Access  Sense-Making

Process  Meaning-Making

“The Inner Net”
- David Bowden

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

A pencil sharpener

- Whittler of pulp
- Tool diminisher
- Mouth of a sawdust monster
- Eater of brain translators
- Cranking something to precision
- Writing re-energizer
- Scantron test enabler

Curtains

- Wall between fantasy and reality
- Denied secrets
- Anticipation
- Arbiter of suspense
- Making a house a home
- Vacuum cleaner antagonist
- Cat's "Jungle Gym"

Railroad

- Circulatory system of the country
- Enforcer of Manifest Destiny
- Iron monster
- Unforgiving mistress to a hobo
- Lifeline
- Economic renewal
- Relentless beast
- Mechanical blight
- Movie set
- A foreshadow of things to come
- A hearkening to the past

Statues (Body Sculpture)

**Students work in small groups
using every groupmember's body
to symbolically portray concepts
in frozen tableau.**

Where does the learning occur?

Vividness

- **“a lot” – Running to each wall to shout, “a” and “lot,” noting space between**
- **Comparing Constitutions – Former Soviet Union and the U.S. – names removed**
- **Real skeletons, not diagrams**
- **Simulations**
- **Writing Process described while sculpting with clay**

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.

Body Analogies

- Those things that protect are similar to the rib cage and cranium.
- The pancreas and stomach provide enzymes that break things down, the liver filters things, the peristalsis of the esophagus pushes things along in a wave-like muscle action.
- Skin's habit of regularly releasing old, used cells and replacing them with new cells from underneath keeps it healthy, flexible, and able to function.

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

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?

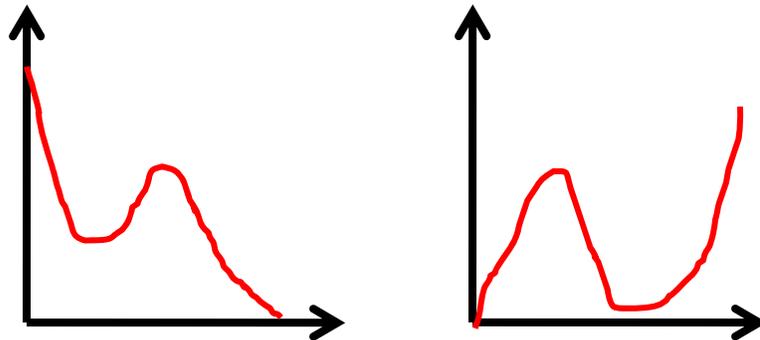
Common Analogous Relationships

- 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)

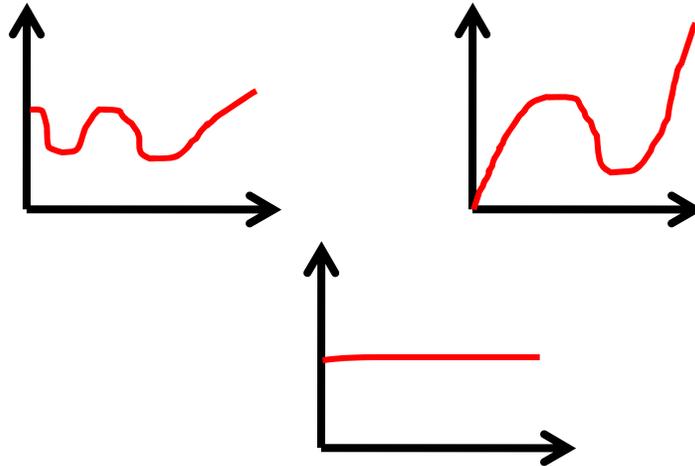
Creating and interpreting patterns of content, not just content itself, creates a marketable skill in today's students. A look at data as indicating "peaks and valleys" of growth over time, noticing a trend runs parallel to another, or that a new advertising campaign for dietary supplements merges four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

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?*

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

Components of Blood Content Matrix

	Red Cells	White Cells	Plasma	Platelets
Purpose	Carries O ₂ 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.

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...

Chronological Order

Definition and Key words: This involves putting facts, events, a concepts into sequence using time references to order them. Signal words include on (date), now, before, since, when, not long after, and gradually.

“Astronomy came a long way in the 1500s and 1600s. In 1531, Halley’s Comet appeared and caused great panic. Just twelve years later, however, Copernicus realized that the sun was the center of the solar system, not the Earth, and astronomy became a way to understand the natural world, not something to fear. In the early part of the next century, Galileo made the first observations with a new instrument – the telescope. A generation later, Sir Issac Newton invented the reflecting telescope, a close cousin to what we use today. Halley’s Comet returned in 1682 and it was treated as a scientific wonder, studied by Edmund Halley.”

Compare and Contrast

Defintion and Key words: Explains similarities and differences. Signal words include however, as well as, not only, but, while, unless, yet, on the other hand, either/or, although, similarly, and unlike.

“Middle school gives students more autonomy than elementary school. While students are asked to be responsible for their learning in both levels, middle school students have more pressure to follow through on assignments on their own, rather than rely on adults. In addition, narrative forms are used to teach most literacy skills in elementary school. On the other hand, expository writing is the way most information is given in middle school.”

Cause and Effect

Definition and Key words: Shows how something happens through the impact of something else. Signal words include because, therefore, as a result, so that, accordingly, thus, consequently, this led to, and nevertheless.

“Drug abusers often start in upper elementary school. They experiment with a parent’s beer and hard liquor and they enjoy the buzz they receive. They keep doing this and it starts taking more and more of the alcohol to get the same level of buzz. As a result, the child turns to other forms of stimulation including marijuana. Since these are the initial steps that usually lead to more hardcore drugs such as Angel Dust (PCP), heroin, and crack cocaine, marijuana and alcohol are known as “gateway drugs.” Because of their addictive nature, these gateway drugs lead many youngsters who use them to the world of hardcore drugs.”

Problem and Solution

Definition and Key words: Explains how a difficult situation, puzzle, or conflict develops, then what was done to solve it. Signal words are the same as Cause and Effect above.

“The carrying capacity of a habitat refers to the amount of plant and animal life its resources can hold. For example, if there are only 80 pounds of food available and there are animals that together need more than 80 pounds of food to survive, one or more animals will die – the habitat can’t “carry” them. Humans have reduced many habitats’ carrying capacity by imposing limiting factors that reduce its carrying capacity such as housing developments, road construction, dams, pollution, fires, and acid rain. So that they can maintain full carrying capacity in forest habitats, Congress has enacted legislation that protects endangered habitats from human development or impact. As a result, these areas have high carrying capacities and an abundance of plant and animal life.”

Proposition and Support

Definition and Key words: The author makes a general statement followed by two or more supporting details. Key words include: In addition, also, as well as, first, second, finally, in sum, in support of, therefore, in conclusion.

“There are several reasons that teachers should create prior knowledge in students before teaching important concepts. First, very little goes into long-term memory unless it’s attached to something already in storage. Second, new learning doesn’t have the meaning necessary for long-term retention unless the student can see the context in which it fits. Finally, the brain likes familiarity. It finds concepts with which it is familiar compelling. In sum, students learn better when the teacher helps students to create personal backgrounds with new topics prior to learning about them.

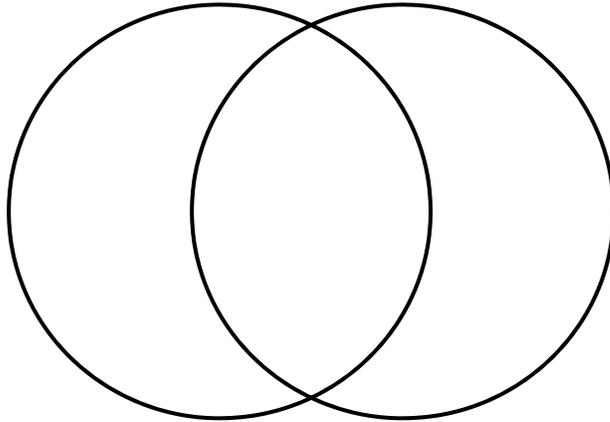
Enumeration

Definition and Key words: Focuses on listing facts, characteristics, or features. Signal words include to begin with, secondly, then, most important, in fact, for example, several, numerous, first, next finally, also, for instance, and in addition.

“The moon is our closest neighbor. It’s 250,000 miles away. It’s gravity is only 1/6 that of Earth. This means a boy weighing 120 pounds in Virginia would weigh only 20 pounds on the moon. In addition, there is no atmosphere on the moon. The footprints left by astronauts back in 1969 are still there, as crisply formed as they were on the day they were made. The lack of atmosphere also means there is no water on the moon, an important problem when traveling there.”

Text Structures

[Taking Notes with Compare/Contrast]



Cornell Note-Taking Format

Reduce

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

Record

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]

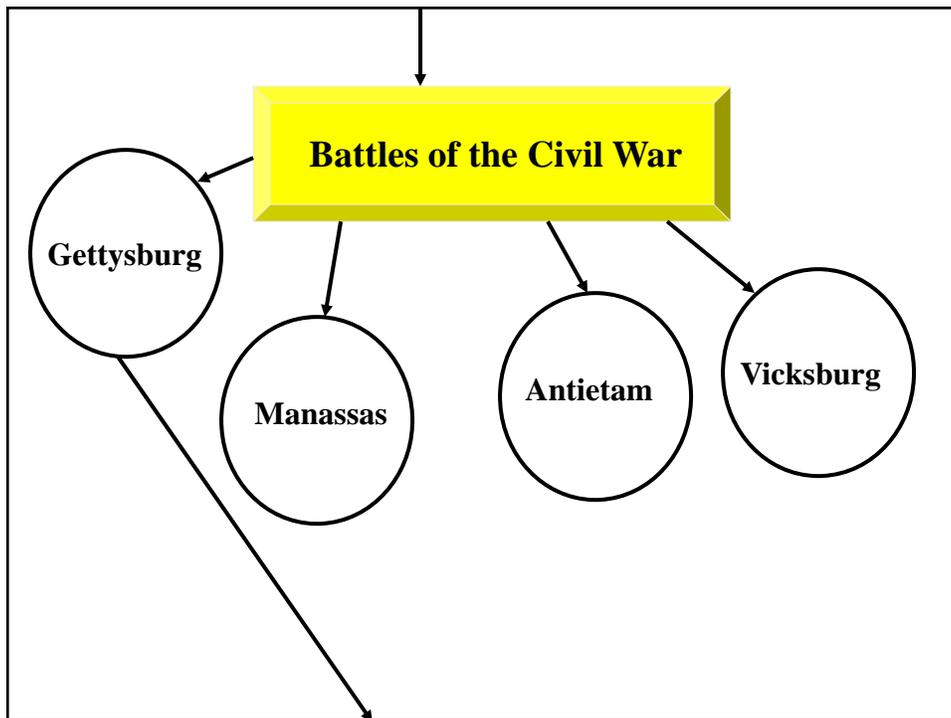
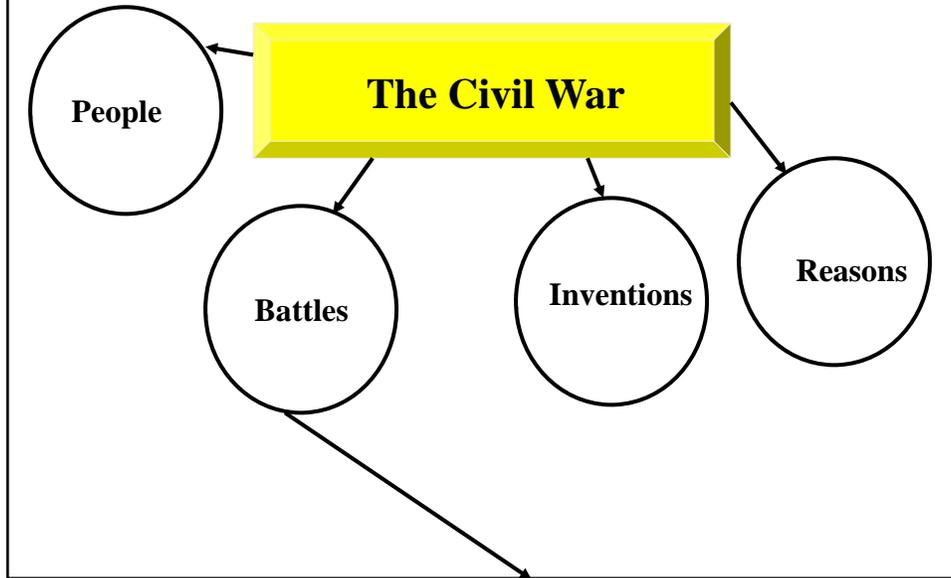
Something (*independent variable*)...

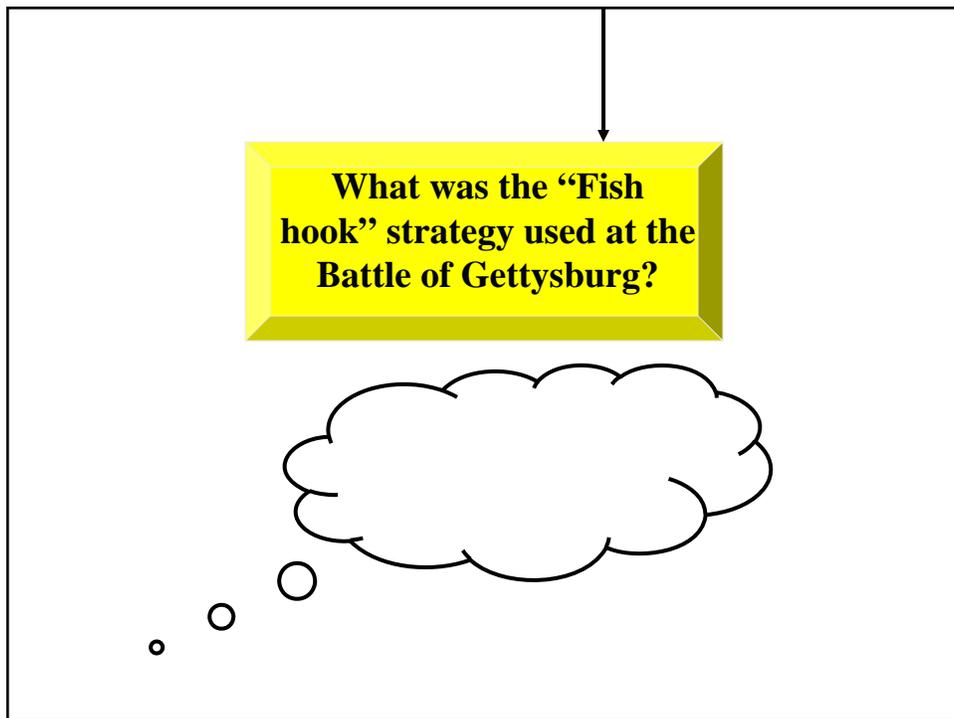
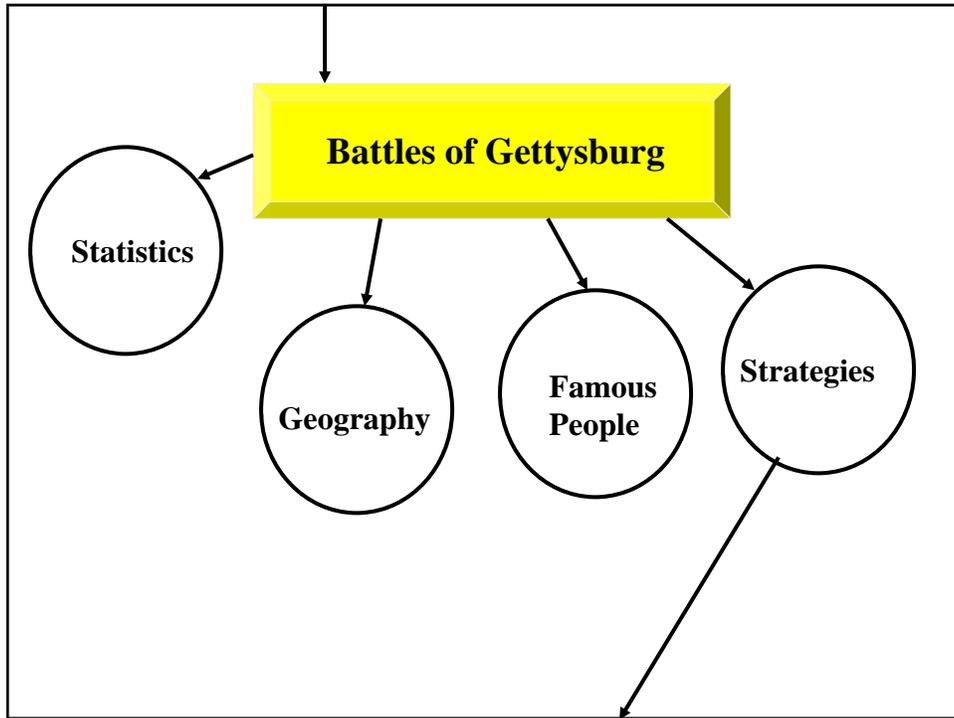
happened (*change in that independent variable*)...,

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

then (*conclusion*)... .

Narrowing the Topic





Students look for patterns

Add these numbers:

296, 302, 299, 320

Each is close to 300, so identify the relationship to 300:

$$-4, +2, -1, +20 = -5 + 22 = +17$$

$$(300 \times 4) + 17 = 1,217$$

Jamie's homework assignment requires her to write a short biography of five female Nobel Prize winners. Help her match each nobelist to her prize category, country of origin and the year in which she won her prize. Below are all categories and options used in this puzzle:

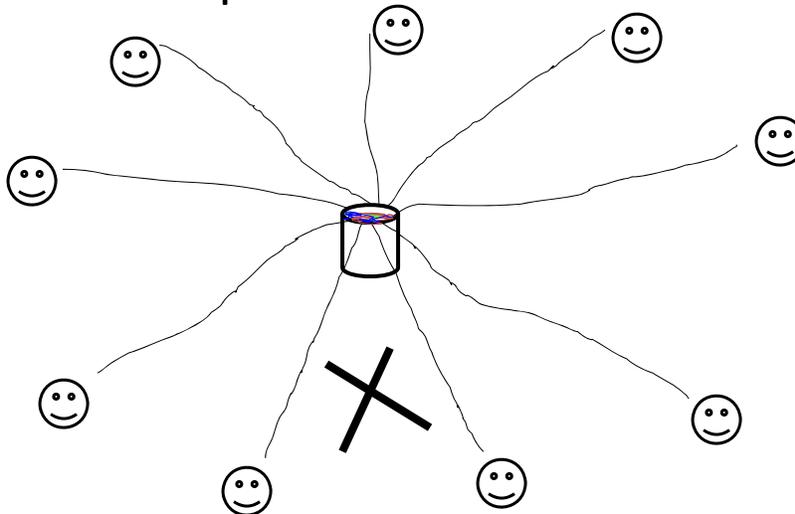
Years	Names	Categories	Countries
1968	Ada Alvarez	chemistry	Australia
1972	Fay Ferguson	economics	France
1976	Glenda Glenn	literature	Germany
1980	Hannah Hay	medicine	Poland
1984	Patsy Pope	physics	Russia

Downloaded February 2013 from www.logic-puzzles.org

Clues:

1. Fay Ferguson is from Australia.
2. The person from Australia didn't win the prize in literature.
3. The nobelist who won in 1968 didn't win the prize in chemistry.
4. Of the nobelist who won the prize in medicine and Ada Alvarez, one won in 1984 and the other won in 1972.
5. The winner from Poland won her prize 4 years after the nobelist from Australia.
6. Patsy Pope won her prize after the winner who won the prize in chemistry.
7. Neither Fay Ferguson nor the winner who won the prize in economics is the winner who won in 1984.
8. The nobelist from Germany won her prize 4 years after the winner from France.
9. Glenda Glenn isn't from France.
10. The person who won in 1976 didn't win the prize in literature.
11. The five nobelists are the nobelist from France, the winner who won in 1972, Hannah Hay, the winner who won in 1968 and the winner who won in 1980.

Ropes Course Games



Ropes Course Games

Electric Fence (Getting over triangle fence without touching)

Spider Web (Pass bodies through “webbing” without ringing the attached bells)

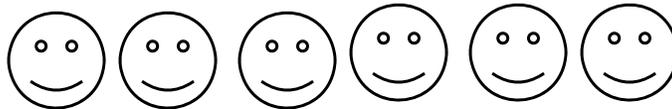
Group Balance (2'X2' platform on which everyone stands and sings a short song)

Nitro-glycerin Relocation (previous slide)

Trust Falls (circle style or from a chair)

Line-up

- Groups of students line up according to criteria. Each student holds an index card identifying what he or she is portraying.
- Students discuss everyone's position with one another -- posing questions, disagreeing, and explaining rationales.

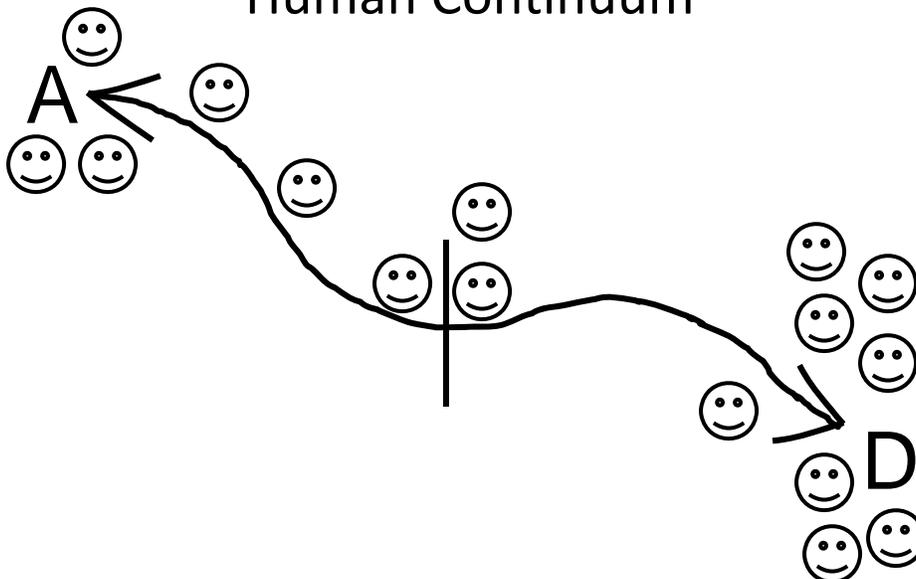


Line-up

Students can line-up according to:

chronology, sequences in math problems, components of an essay, equations, sentences, verb tense, scientific process/cycle, patterns: alternating, category/example, increasing/decreasing degree, chromatic scale, sequence of events, cause/effect, components of a larger topic, opposites, synonyms

Human Continuum



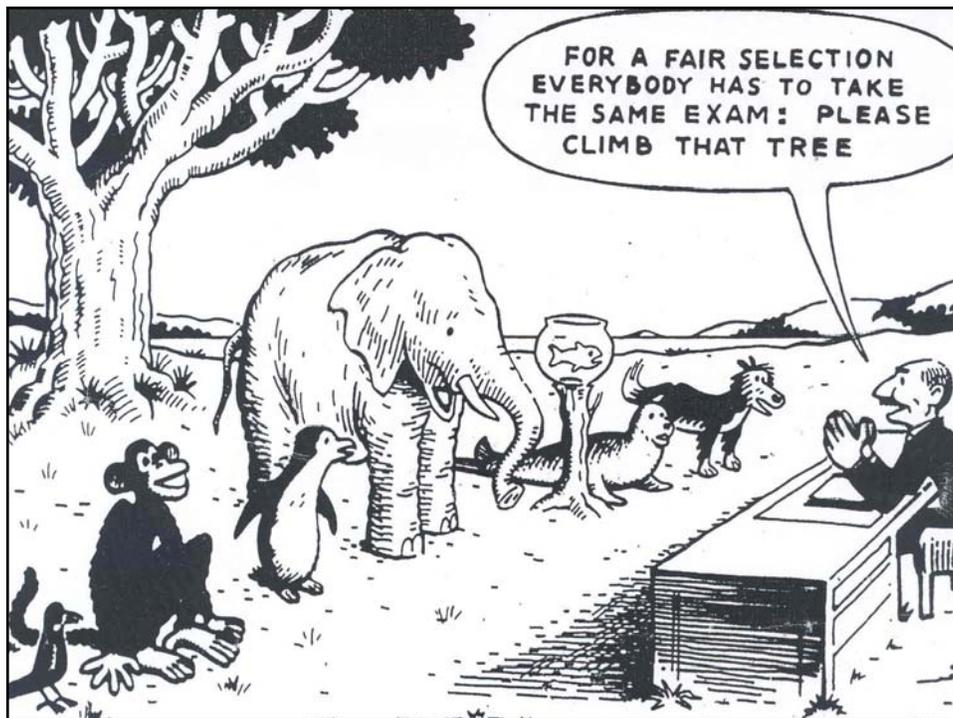
Human Continuum

Use a human continuum. Place a long strip of masking tape across the middle of the floor, with an "Agree" or "Yes" taped at one end, and "Disagree" or "No" at the other end. Put a notch in the middle for those unwilling to commit to either side. Read statements about the day's concepts aloud while students literally stand where they believe along the continuum. Be pushy – ask students to defend their positions.

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

Drop the one-size-fits-all adherence to the textbook or pacing guide. Textbooks, novels, Websites, and novels are resources, **not** the curriculum.



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**

Study Executive Function!

Late, Lost, and Unprepared

Joyce Cooper-Kohn, Laurie Dietzel

Smart but Scattered

Peg Dawson, Richard Guare

Smart but Scattered for Teens

Peg Dawson, Richard Guare, Colin Guare

Teams and individuals need clear vision for how to fail, even in multiple attempts, before succeeding. Be realistic: "Wow, this is taking longer than I thought it would," and constructive, "That's one thing I'll never forget the next time I do this!"

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

**Re-Do's &
Re-Takes with students
and their teachers:
Are They Okay?**

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

Thomas Edison

F.A.I.L.

First Atttempt in Learning

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.

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

Debate Format

1. Statement of the General Debate Topic and Why it's Important – 1 min.
2. Affirmative Position Opening Remarks – 3 min.
3. Negative Position Opening Remarks – 3 min.
4. Affirmative Position Arguments – 5 min.
5. Negative Position Arguments – 5 min.
6. Caucus – Students on both teams consider their arguments and rebuttals in light of what has been presented. – 3 min.
7. Affirmative Rebuttal and Questioning of the Negative's Case – 3 min.
8. Negative Rebuttal and Questioning of the Affirmative's Case – 3 min.
9. Closing Arguments Affirmative Position – 2 min.
10. Closing Arguments Negative Position – 2 min.

**Create moral
imperative.**