Sure-Footing in a Shaky World: Best Practices that Stand the Test of Time
10 Elements that Will Stand the Test of Time:

1. Cultivating Creativity
2. Practice and Feedback
3. Novelty, Surprise, Curveballs, Whoops, Unexpected
4. Teacher Professionalism and Expertise
5. Meaning-Making
6. Metaphors and Analogies
7. Structure
8. Differentiation
9. Re-do’s and Re-Takes
10. Moral Imperative
“We went to school. We were not taught how to think; we were taught to reproduce what past thinkers thought….Instead of being taught to look for possibilities, we were taught to exclude them. It’s as if we entered school as a question mark and graduated as a period.”
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-Combinination

• 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
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…
Imagin... Recommend…

Change your verbs.
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
• Interleavened
• Increase Complexity
"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 with 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
Affirm effort and perseverance, not intelligence or capability. Give feedback on decisions made, *NOT quality* of product or performance.
Two Ways to Begin Using Descriptive Feedback:

• “Point and Describe”
  (from *Teaching with Love & Logic*, Jim Fay, David Funk)

• “Goal, Status, and Plan for the Goal”

  1. Identify the objective/goal/standard/outcome
  2. Identify where the student is in relation to the goal (Status)
  3. Identify what needs to happen in order to close the gap
Effective Protocol for Data Analysis
and Descriptive 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)*
<table>
<thead>
<tr>
<th>Item</th>
<th>Topic or Proficiency</th>
<th>Right</th>
<th>Wrong</th>
<th>Simple Mistake?</th>
<th>Really Don’t Understand</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dividing fractions</td>
<td></td>
<td>✅</td>
<td></td>
<td>✅</td>
</tr>
<tr>
<td>2</td>
<td>Dividing Fractions</td>
<td></td>
<td>✅</td>
<td></td>
<td>✅</td>
</tr>
<tr>
<td>3</td>
<td>Multiplying Fractions</td>
<td></td>
<td>✅</td>
<td></td>
<td>✅</td>
</tr>
<tr>
<td>4</td>
<td>Multiplying fractions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Reducing to Smplst trms</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Reducing to Smplst trms</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Reciprocals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Reciprocals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Reciprocals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Remember, whoever does the editing, does the learning!
Novelty, Surprise, Curveballs, Whoops, and the Unexpected
Premise:

A teacher waiting for the school or district to provide professional development for him isn’t even treading water. We are responsible for our own professional development.
Our Own Professional Development

- Mentoring
- Professional Reading
- Reflective Learning Logs
- Listservs, on-line communities
- Instructional Roundtables
- Professional Learning Communities
- Faculty Portfolios
- Videotaping and Analysis
- Workshops and Conferences
- Web casts and Video-conferencing
- Action research
- National Board Certification
Great On-line Tutorials about Teaching and/or the Subjects We Teach

• www.teachingchannel.org
• www.schooltube.com
• www.teachertube.com
• www.khanacademy.org
• www.youtube.com
• Authors/Publishers often have videos (www.stenhouse.com/fiae)
Teacher Inservice Training

- NELMS speakers
- AMLE Speakers’ Cadre
- www.ascd.org
- www.sde.com
- www.leadandlearn.org
- www.nassp.org
- Specific subject professional organizations
- Authors and presenters
- www.aeispeakers.com
- Speaker’s bureaus
- “Wisdom Within” - experts in the building already
- Consider Webcasts, E-Seminars, or Videocasts
Subscribe

- RSS Feeds
- Blogs
- Magazines/journals
- Updates
- Smartbrief

Sample Smartbrief Topics:

- Stem Education
- Middle Level Teaching
- Special Education
- ASCD
- Global News
- Ed Tech
- Geography
- English and Literacy
- Social Studies
- Math
- Scientific Research
- Education Leadership
- Education Policy
This We Believe: Keys to Educating Young Adolescents (AMLE, 2010)

Essential Attributes for a Successful Middle Years Experience

- Developmentally Responsive
- Challenging
- Empowering
- Equitable
Curriculum is challenging, exploratory, integrative, and relevant. Educators use multiple learning and teaching approaches. Varied and ongoing assessments advance learning as well as measure it.

Characteristics of Successful Middle Level Schools

Curriculum, Instruction, and Assessment

Educators value young adolescents and are prepared to teach them. Students and teachers are engaged in active, purposeful learning.
Leadership and Organization

A shared vision developed by all stakeholders guides every decision. Leaders are committed to and knowledgeable about this age group, educational research, and best practices. Leaders demonstrate courage and collaboration. Ongoing professional development reflects best educational practices. Organizational structures foster purposeful learning and meaningful relationships.
Culture and Community

The school environment is inviting, safe, inclusive, and supportive of all.

Every student's academic and personal development is guided by an adult advocate.

Comprehensive guidance and support services meet the needs of young adolescents.

Health and wellness are supported in curricula, programs, policies.

The school actively involves families in the education of their children. The school includes community and business partners.
Great Resources for Developing Expertise on Young Adolescents

- www.NELMS.org
- Turning Points 2000
- This We Believe (AMLE)
- www.middleweb.com
- www.amle.org - Research, updates, conferences, institutes, cadre, magazines, journals
Also highly recommended:

- *AMLE Magazine* (AMLE)
- *Middle School Journal* (AMLE)
- *RMLE On-line* (AMLE)
- *Slices of Life: Managing Dilemmas in Middle Grades Teaching* (Mandzuk, Hasinoff)
- *Managing the Madness: A Practical Guide to Middle Grades Classrooms* (Berckemeyer)
Also highly recommended:

- *Teaching 10 to 14 Year-olds (Stevenson)*
- *Everyone's Invited! Interactive Strategies That Engage Young Adolescents (Spencer)*
- *Promoting Harmony: Young Adolescent Development & Classroom Practices 3rd Edition (Strahan, L'Esperance, Van Hoose)*
- *Meet Me in the Middle (Wormeli)*
- *An International Look at Educating Young Adolescents (Mertens, Anfara, Jr., Roney)*
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.”
Important for all ages when moving content into long-term memory:

Students have to do both,

Access          Sense-Making

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

-- Thomas Huxley, 1854
Yes, teach students to memorize content…
…Even in a world in which we can always look it up.
Journalistic vs. Encyclopedic Writing

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

-- National Geographic, November 2000, p. 54
“A volcano is a vent in the Earth from which molten rock (magma) and gas erupt. The molten rock that erupts from the volcano (lava) forms a hill or mountain around the vent. Lava may flowout as viscous liquid, or it may explode from the vent as solid or liquid particles...”

-- Global Encyclopedia, Vol. 19 T-U-V, p. 627
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.
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
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?”
We think primarily in physical terms. Over time we become adept at translating symbolic and abstract concepts into meaningful structures or experiences.
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
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    Friendship
Infinity      Family
Solving for a variable   Imperialism
Euphoria      Trust
Worry         Mercy
Obstructionist Judiciary Honor
Immigration   Homeostasis
Balance       Temporal Rifts
Economic Principles Religious fervor
Poetic License Semantics
Heuristics    Tautology
Embarrassment Knowledge
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
# Components of Blood Content Matrix

<table>
<thead>
<tr>
<th></th>
<th>Red Cells</th>
<th>White Cells</th>
<th>Plasma</th>
<th>Platelets</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose</strong></td>
<td>Carries O2 and nutrients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Amount</strong></td>
<td>5,000,000 per cc</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Size &amp; Shape</strong></td>
<td>Small, round, like Cheerios</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Nucleus ?</strong></td>
<td>No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Where formed</strong></td>
<td>Bone marrow, spleen</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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.
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...
Definition and Key words: This involves putting facts, events, and 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

**Definition 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.”
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.”
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. Its 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
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

[Fantasy]

Somebody (characters)...

wanted (plot-motivation)...

but (conflict)...

so (resolution)...

Something happened (change in that independent variable)…,

and (effect on the dependent variable)…,

then (conclusion)….
FOR A FAIR SELECTION EVERYBODY HAS TO TAKE THE SAME EXAM: PLEASE CLIMB THAT TREE
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
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 and Re-takes
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 Attempt 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.
Fair Isn’t Always Equal
Create moral imperative.
We close with a video mockumentary, I mean, documentary, of successful teaching.