The Young Adolescent Brain and the Impact on Teaching and Learning

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You will become familiar with . .

- the characteristics of the learning preferences and needs of the adolescent learner.
- five strategies and practices to help students acquire, process, and apply content and skills.
- ways to help students recognize and adjust strategies.
Students have changed and gone from . . .

To . . .

GÉNÉRATION

To . . .
What is that brain like?
The student’s brains have changed.
Their brains are being wired for a certain kind of learning.
1. Short attention spans and hate to be bored.  

2. Visually preferred DVD High Definition

3. Want immediate gratification “I want it now!” “Is it done yet?”

4. Choose to be interactive and hands-on

5. Love challenge and are curious

6. Want to succeed (win) using strategies, practice, and do-overs

What do you or your teachers do to adapt to the Generation Z?
<table>
<thead>
<tr>
<th><strong>Students . . .</strong></th>
<th><strong>What does this mean?</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. have short attention spans and hate to be bored.</td>
<td>• Use optimal learning time (7-10) minutes and then apply what they learn.</td>
</tr>
<tr>
<td>2. are visually preferred.</td>
<td>• Use graphic organizers and pictures.</td>
</tr>
<tr>
<td>3. want immediate gratification.</td>
<td>• Use short-cycle challenge and feedback.</td>
</tr>
<tr>
<td>4. choose to be interactive and hands-on.</td>
<td>• Create challenges that use multiple neuropathways. • Use cooperative learning.</td>
</tr>
<tr>
<td>5. love challenge and are curious.</td>
<td>• Be explicit about objectives and cause curiosity.</td>
</tr>
<tr>
<td>6. want to win using strategies, practice, and do-overs.</td>
<td>• Explicitly teach learning-to-learn strategies that work. • Use re-takes and re-dos.</td>
</tr>
</tbody>
</table>
Kids will play a video game, sport, or other activity an average of 100 hours to “get good at it.”

- They don’t . . .
  - get grades
  - get extra credit
  - win money
  - get public acclaim

- And they rarely play a game a second time without knowing/learning . . .
  1. Objectives/goals
  2. Strategies and skills
  3. Vocabulary
  4. How well they are doing
  5. What to do better next time
This is how they “get good” at games and activities.

- Challenge
- Feedback
- Reflect, Recognize/
  Celebrate Progress
- New Goal/
  New Strategy
- Practice New
  and/Improved
  Strategy
Teachers are expected to . . .

- Align curriculum and teach to rigorous standards
- Differentiate instruction
- Analyze and use data
- Collaborate in PLCs, PLTs, and ______
- Read all those emails and announcements.
- And, be very open minded and committed to the school’s teacher evaluation system.
You may say, **WAIT!**

I am an experienced teacher. I can handle these changes.
You might be an experienced educator if . . .

- You want to slap the next person who says, “Must be nice to have all your holidays and summers free.”
- Out in public you feel the urge to talk to strange children and correct their behavior.
- You encourage obnoxious parents to check into other schools or homeschooling.
You might be an experienced educator if . . .

- You had a hard time choosing your child’s name because there is NO name you could give a child that wouldn’t bring on high blood pressure the moment you heard it.
- Around February, your staff vote on having a Prozac dispenser in the lounge.
How are you feeling about the achievement of your students this year?

I am totally freaking out.

I’m worried. I need some . . .

I will survive . . .

It use to be easier . . .
POWER THINKING

10. I did!
9. I will.
8. I think I can.
7. I might.
6. I think I might.
5. What is it?
4. I wish I could.
3. I don’t know.
2. I can’t.
1. I won’t.

Marzano,
Tactics in
Thinking, 1989
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Student and teacher success require . . .
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  5. What to do better next time
The adolescent brain wants/needs to . . .

1. know and understand the objectives/learning goals and expectations.
2. know how to use strategies for acquiring, processing, and applying content and skills (storage and retrieval, reading, and summarizing).
3. get feedback about progress.
4. reflect about ways to improve.
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3. get feedback about progress.
4. reflect about ways to improve.
Putting the puzzle together is easier when you have the picture on the box before, during, and after learning new content.
Organize content vocabulary and concepts visually (graphic organizer) into logical chunks/categories.

<table>
<thead>
<tr>
<th>Populations</th>
<th>Ecological Relationships</th>
<th>Food Chains and Webs</th>
<th>Ecosystems</th>
</tr>
</thead>
<tbody>
<tr>
<td>• species</td>
<td>• exponential growth</td>
<td>• producer</td>
<td>• climate</td>
</tr>
<tr>
<td>• population</td>
<td>• boom and bust</td>
<td>• primary consumer</td>
<td>• weather</td>
</tr>
<tr>
<td>• community</td>
<td>• carrying capacity</td>
<td>• secondary consumer</td>
<td>• biotic factors</td>
</tr>
<tr>
<td>• ecosystem</td>
<td>• biomagnification</td>
<td>• decomposer</td>
<td>• abiotic factors</td>
</tr>
<tr>
<td>• biome</td>
<td>• extinction</td>
<td>• scavenger</td>
<td>• nutrients</td>
</tr>
<tr>
<td>• biosphere</td>
<td>• pollution</td>
<td>• energy flow</td>
<td>• matter</td>
</tr>
<tr>
<td></td>
<td>• commensalism</td>
<td>• energy pyramid</td>
<td>• cycles</td>
</tr>
<tr>
<td></td>
<td>• mutualism</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• competition</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• predation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Social Studies

<table>
<thead>
<tr>
<th>Migration</th>
<th>Hunting/Gathering</th>
<th>Farming/Domestication</th>
<th>Population Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>• migration • bands • role</td>
<td>• nomads • pre-history • division of labor</td>
<td>• agriculture • domesticate • livestock</td>
<td>• population • village • towns • start of cities • civilizations • beginning of social classes</td>
</tr>
</tbody>
</table>
# Romeo and Juliet Unit Overview

<table>
<thead>
<tr>
<th>Dramatic Terms</th>
<th>Plot/Setting</th>
<th>Characterization</th>
<th>Conflict/Goals</th>
<th>Subjects...Theme</th>
<th>Author's Techniques</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unit Vocabulary/Concepts/Topics</strong></td>
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</tr>
<tr>
<td>- Act/scene</td>
<td>- Exposition/Introduction</td>
<td>- Characterization</td>
<td>- Conflict vs. complication</td>
<td>- Fate</td>
<td>- Poetry, sonnets</td>
</tr>
<tr>
<td>- Aside, soliloquy, monologue, irony (dramatic/situational)</td>
<td>- Rising Action</td>
<td>- Dialogue</td>
<td>- Free will</td>
<td>- Allusion</td>
<td></td>
</tr>
<tr>
<td>- Pro/antagonist</td>
<td>- Climax</td>
<td>- Diction</td>
<td>- Love</td>
<td>- Irony (dramatic and situational)</td>
<td></td>
</tr>
<tr>
<td>- Tragic vs. pathetic</td>
<td>- Falling Action</td>
<td>- Behavior</td>
<td>- Feuds</td>
<td>- Motif</td>
<td></td>
</tr>
<tr>
<td>- Stage directions</td>
<td>- Denouement</td>
<td>- Emotions</td>
<td>- Expectations</td>
<td>- Hyperbole</td>
<td></td>
</tr>
<tr>
<td>- Set</td>
<td>- Verona &amp; Mantua, Italy</td>
<td>- Will</td>
<td>- Guidance</td>
<td>- Foreshadowing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 1500's</td>
<td></td>
<td>- Impulsivity</td>
<td>- Fig. language</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Premonitions</td>
<td>- Personification</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Double entendres</td>
<td></td>
</tr>
</tbody>
</table>
This is like the silverware drawer in your home. It is easy to store and retrieve.
The adolescent brain wants/needs to . . .

1. know and understand the objectives/learning goals and expectations.

2. know how to use strategies for acquiring, processing, and applying content and skills (storage and retrieval, reading, and summarizing).

3. get feedback about progress.

4. reflect about ways to improve.
Social Studies: Purpose—Learning Targets
I will be able to . . . / I can . . .

1. define and use unit vocabulary.
2. analyze and evaluate the causes and effects of World War I.
3. explain why the revolution occurred in Russia in March 1917.
4. summarize how communism changed the Soviet Union.
Science:
Purpose—Learning Targets
I will be able to . . . / I can . . .

1. define the vocabulary in this unit.
2. describe the energy roles of organisms in an ecosystem.
3. explain food chains and food webs.
4. create a food chain with a given set of animals & plants.
5. construct a food web with related food chains.
6. describe and illustrate the steps in the water cycle.
7. describe and illustrate the steps in the oxygen cycle.
8. compare the various biomes across the earth.
Math: Purpose—Learning Targets
I will be able to . . . / I can . . .

1. perform basic operations on integers (add, subtract, multiply, divide)
2. apply the order of operations (including the distributive property) to simplify expressions
3. solve equations with one variable involving multiple steps.
4. solve inequalities with one variable.
English:
Purpose—Learning Targets
I will be able to . . . / I can . . .

- paraphrase a short passage.
- mark a text effectively so that I can find material at a later time.
- introduce a quotation so that its context is clear.
- explain an author’s use of imagery to develop a theme.
- explain an author’s use of foils to develop a theme.
- explain an author’s use of generic conventions to develop a theme.
Kids will play a game an average of 100 hours to “get good” at it.

- They don’t . . .
  - get grades
  - get extra credit
  - win money
  - get public acclaim

- And they rarely play a game a second time without knowing/learning . . .
  1. Objectives/goals
  2. Strategies and skills
  3. Vocabulary
  4. How well they are doing
  5. What to do better next time
Students need to know . . .

**Identify the knowledge components of the unit of study/chapter.**

<table>
<thead>
<tr>
<th>Chord Properties</th>
<th>Tangent Properties</th>
<th>Arcs and Angles</th>
<th>Circumference</th>
</tr>
</thead>
<tbody>
<tr>
<td>• center</td>
<td>• tangent</td>
<td>• parallel lines</td>
<td>• circumference</td>
</tr>
<tr>
<td>• perpendicular</td>
<td>• point of tangency</td>
<td>• secant</td>
<td>• diameter</td>
</tr>
<tr>
<td>• bisector</td>
<td>• perpendicular</td>
<td>• inscribed angle</td>
<td>• radius</td>
</tr>
<tr>
<td>• equidistant</td>
<td>• radius</td>
<td>• central angle</td>
<td>• pi</td>
</tr>
<tr>
<td>• central angle</td>
<td>• tangent segments</td>
<td>• intercepted arc</td>
<td>• perimeter</td>
</tr>
<tr>
<td>• inscribed angle</td>
<td>• congruent</td>
<td>• congruent</td>
<td>• ratio</td>
</tr>
<tr>
<td>• radius</td>
<td>• externally tangent</td>
<td>• semicircle</td>
<td></td>
</tr>
<tr>
<td>• intercepted arc</td>
<td>• internally tangent</td>
<td>• right angle</td>
<td></td>
</tr>
<tr>
<td>• congruent</td>
<td></td>
<td>• cyclic quadrilateral</td>
<td></td>
</tr>
<tr>
<td>• chord</td>
<td></td>
<td>• supplementary</td>
<td></td>
</tr>
</tbody>
</table>

**Determine the learning targets objectives of the unit of study/chapter.**

1. **Define** and use unit vocabulary.
2. **Describe** properties of chords.
3. **Describe** properties of tangents.
4. **Compare** common tangents and tangent circles.
5. **Use** applications of tangents.
6. **Show** an arc, tangent, and chord in an original drawing.
7. **Describe** the relationship between the circumference of a circle and its diameter.
8. **Apply** the formula for circumference of a circle.

Add learning strategies and skills.
<table>
<thead>
<tr>
<th>My Level of Understanding</th>
<th>I can...</th>
</tr>
</thead>
</table>
| 😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊多年的
# The Brain and Successful Learning

<table>
<thead>
<tr>
<th>Neurotransmitter</th>
<th>Purpose and Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noradrenalin</td>
<td>Arousal, Energy, Drive, Excitement</td>
</tr>
<tr>
<td>Serotonin</td>
<td>Calming neurotransmitter, important to the maintenance of good mood</td>
</tr>
<tr>
<td>Acetylcholine</td>
<td>Focus, Memory, Feelings of pleasure</td>
</tr>
<tr>
<td>Dopamine</td>
<td>Pleasure, Reward, Good Feelings towards others</td>
</tr>
</tbody>
</table>
Ways to Help Students Understand and Commit to the Learning Targets/Objectives

1. Teacher states and displays learning goals
2. Students orally state the learning objectives
3. Pair-share new goals and recall previous goals
4. I will be able to/I can
5. Students generate and respond to questions
6. Use visual imagery and neural pathways
7. Use movement to represent a skill
8. Emphasize a word or phrase with speed, intensity, pitch or phrasing
9. Students are assigned learning goals to present.
10. Tag assessment items and homework tasks
Ways to get students to understand and commit to the objectives

<table>
<thead>
<tr>
<th>Advanced organizer</th>
<th>Role play</th>
<th>Draw</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skim</td>
<td>View a movie</td>
<td>Take a pre-test</td>
</tr>
<tr>
<td>Create and ask questions</td>
<td>Listen to a song</td>
<td>Connect to values</td>
</tr>
<tr>
<td></td>
<td>Envision a scenario</td>
<td>Debate/Create Controversy</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Predict</th>
<th>Brainstorm</th>
<th>Draw</th>
</tr>
</thead>
<tbody>
<tr>
<td>KWL (know, want to know, learned)</td>
<td>Debate</td>
<td>Take a pre-test</td>
</tr>
<tr>
<td>Act out</td>
<td>Visualize</td>
<td>Connect to values</td>
</tr>
<tr>
<td>Vote</td>
<td>Journal/free write</td>
<td>Debate</td>
</tr>
<tr>
<td>Tell a relevant story</td>
<td>Interview</td>
<td>Create Controversy</td>
</tr>
</tbody>
</table>
POWER THINKING

10. I did!
9. I will.
8. I think I can.
7. I might.
6. I think I might.
5. What is it?
4. I wish I could.
3. I don’t know.
2. I can’t.
1. I won’t.

Marzano, Tactics in Thinking, 1989
Successful learning requires . . .
Why do students fail to succeed and underachieve.

1. Lack of skills
2. Lack of confidence
3. Lack of motivation
4. Lack of perseverance/determination
5. Lack of respect for the culture of school/education
6. Lack of vision for the role school plays in career preparation or lifestyle
7. Lack of connection to positive relationships with teachers and/or peers
Scaffolding Skills and Content
The adolescent brain wants/needs to . . .

1. know and understand the objectives/learning goals and expectations.
2. know how to use strategies for acquiring, processing, and applying content and skills (storage and retrieval, reading, and summarizing).
3. get feedback about progress.
4. reflect about ways to improve.
Kids will play a video game, sport, or other recreational activity an average of 100 hours to “get good“ at it.

- They don’t . . .
  - get grades
  - get extra credit
  - win money
  - get public acclaim

- And they rarely play a game a second time without knowing/learning . . .
  1. Objectives/goals
  2. Strategies and skills
  3. Vocabulary
  4. How well they are doing
  5. What to do better next time
Think about pizza for the next 15 seconds.
Diagram of a Concept.

- Mental Pictures
- Linguistic Information
- Physical Sensations
- Emotions
How do you address the need for skills to . . .

- remember/retain knowledge?
Select items to be remembered and understood.

- species
- population
- community
- ecosystem
- biome
- biosphere
- exponential growth
- boom and bust
- carrying capacity

- biomagnification
- extinction
- pollution
- commensalism
- mutualism
- competition
- predation
Organize content vocabulary and concepts visually (graphic organizer) into logical chunks/categories.

<table>
<thead>
<tr>
<th>Populations</th>
<th>Ecological Relationships</th>
<th>Food Chains and Webs</th>
<th>Ecosystems</th>
</tr>
</thead>
<tbody>
<tr>
<td>• species</td>
<td>• exponential growth</td>
<td>• producer</td>
<td>• climate</td>
</tr>
<tr>
<td>• population</td>
<td>• boom and bust</td>
<td>• primary consumer</td>
<td>• weather</td>
</tr>
<tr>
<td>• community</td>
<td>• carrying capacity</td>
<td>• secondary consumer</td>
<td>• biotic factors</td>
</tr>
<tr>
<td>• ecosystem</td>
<td>• biomagnification</td>
<td>• decomposer</td>
<td>• abiotic factors</td>
</tr>
<tr>
<td>• biome</td>
<td>• extinction</td>
<td>• scavenger</td>
<td>• nutrients</td>
</tr>
<tr>
<td>• biosphere</td>
<td>• pollution</td>
<td>• energy flow</td>
<td>• matter</td>
</tr>
<tr>
<td></td>
<td>• commensalism</td>
<td>• energy pyramid</td>
<td>• cycles</td>
</tr>
<tr>
<td></td>
<td>• mutualism</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• competition</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• predation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
This is like the silverware drawer in your home. It is easy to store and retrieve.
Take notes using the three-column notetaking system including:

- Helps students document words, definitions, and memory cues in an organized way.
- Provides an organized format for drill and practice.
- Gives credibility to saving foundation knowledge.
- Teaches and models effective notetaking.

The Three-Column Format

<table>
<thead>
<tr>
<th>Word</th>
<th>Definition</th>
<th>Memory Cue</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Word</td>
<td>Explanation</td>
<td>Memory Cue</td>
</tr>
<tr>
<td>----------</td>
<td>----------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>nefarious</td>
<td>utterly immoral or wicked</td>
<td></td>
</tr>
<tr>
<td>umbrella</td>
<td>umbrella</td>
<td></td>
</tr>
</tbody>
</table>
See if you can remember these items.

<table>
<thead>
<tr>
<th>Number</th>
<th>Item</th>
<th>Number</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>one</td>
<td>bun</td>
<td>six</td>
<td>sticks</td>
</tr>
<tr>
<td>two</td>
<td>shoe</td>
<td>seven</td>
<td>heaven</td>
</tr>
<tr>
<td>three</td>
<td>tree</td>
<td>eight</td>
<td>gate</td>
</tr>
<tr>
<td>four</td>
<td>door</td>
<td>nine</td>
<td>line</td>
</tr>
<tr>
<td>five</td>
<td>hive</td>
<td>ten</td>
<td>hen</td>
</tr>
</tbody>
</table>
Can you remember?

<table>
<thead>
<tr>
<th>one</th>
<th>six</th>
</tr>
</thead>
<tbody>
<tr>
<td>two</td>
<td>seven</td>
</tr>
<tr>
<td>three</td>
<td>eight</td>
</tr>
<tr>
<td>four</td>
<td>nine</td>
</tr>
<tr>
<td>five</td>
<td>ten</td>
</tr>
</tbody>
</table>
See if you can remember these items.

<table>
<thead>
<tr>
<th>Number</th>
<th>Word 1</th>
<th>Number</th>
<th>Word 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>one</td>
<td>bun</td>
<td>six</td>
<td>sticks</td>
</tr>
<tr>
<td>two</td>
<td>shoe</td>
<td>seven</td>
<td>heaven</td>
</tr>
<tr>
<td>three</td>
<td>tree</td>
<td>eight</td>
<td>gate</td>
</tr>
<tr>
<td>four</td>
<td>door</td>
<td>nine</td>
<td>line</td>
</tr>
<tr>
<td>five</td>
<td>hive</td>
<td>ten</td>
<td>hen</td>
</tr>
</tbody>
</table>
You will remember when . . .

- Visual images
- Auditory images
- Movement images
- Tactile images
- Smell and taste images
- Emotional images
<table>
<thead>
<tr>
<th>Word</th>
<th>Definition</th>
<th>Memory Cue</th>
</tr>
</thead>
<tbody>
<tr>
<td>crease</td>
<td>The end point before the goal</td>
<td>[Image of a crease in a field]</td>
</tr>
</tbody>
</table>
Here’s how to get students to remember concept words and their meanings.

1. Select and teach approximately 5-7 words each day.

2. Students go home with their three column format and study the words for approximately 8-15 minutes.

3. Students pair up and test each other for 1-2 minutes each.

4. Ask the students to talk about their progress and to share memory cues.
Continue the process of teaching effective memory strategies.

5. Students go home and review the previous words and learn 5-7 new words.

6. Students pair up and test each other for 1-2 minutes each.
Review portions of the list frequently for 8-15 minutes on several times

| Practice 8-15 minutes and test yourself. | Practice 8-15 minutes and test yourself. | Practice 8-15 minutes and test yourself. | Practice 8-15 minutes and test yourself. | Practice 15+ minutes and test yourself. Work on trouble words. |
What will happen?

- You can prove to students that strategy and effort are better indicators for success than intelligence. Everybody can be “smart” if they use smart strategies.
- You will accelerate concept mastery and vocabulary development.
- You will provide a feeling of self-efficacy (I can do it attitude).
POWER THINKING

10. I did!
9. I will.
8. I think I can.
7. I might.
6. I think I might.
5. What is it?
4. I wish I could.
3. I don’t know.
2. I can’t.
1. I won’t.

Marzano,
Tactics in
Thinking, 1989
Scaffolding Skills and Content
The adolescent brain wants/needs to . . .

1. know and understand the objectives/learning goals and expectations.
2. know how to use strategies for acquiring, processing, and applying content and skills (storage and retrieval, reading, and summarizing).
3. get feedback about progress.
4. reflect about ways to improve.
Making Reading/Thinking Skill Connections with Content

1. Main/Central Idea
2. Significant Details/Evidence
3. Sequential/Order Relationships
4. Comparison Relationships
5. Cause and Effect Relationships
6. Knowledge of vocabulary/key terms
7. Generalizations and Conclusions
8. Problem-Solution Relationships
9. Multi-step Instructions/Directions
10. Author’s Purpose, Techniques, Claims, Views, and Arguments
11. Knowledge of Maps, Charts, and Graphs
12. Literary Analysis
13. Information from Researching
Remember as many words as you can.
You have 20 seconds.

<table>
<thead>
<tr>
<th>black</th>
<th>brown</th>
</tr>
</thead>
<tbody>
<tr>
<td>cinnamon</td>
<td>gloves</td>
</tr>
<tr>
<td>canary</td>
<td>parrot</td>
</tr>
<tr>
<td>sweater</td>
<td>shirt</td>
</tr>
<tr>
<td>dove</td>
<td>green</td>
</tr>
<tr>
<td>garlic</td>
<td>pepper</td>
</tr>
</tbody>
</table>
## How did you do?

<table>
<thead>
<tr>
<th>black</th>
<th>brown</th>
</tr>
</thead>
<tbody>
<tr>
<td>cinnamon</td>
<td>gloves</td>
</tr>
<tr>
<td>canary</td>
<td>parrot</td>
</tr>
<tr>
<td>sweater</td>
<td>shirt</td>
</tr>
<tr>
<td>dove</td>
<td>green</td>
</tr>
<tr>
<td>garlic</td>
<td>pepper</td>
</tr>
</tbody>
</table>
Remember as many words as you can. You have 20 seconds.

vanilla  horse
chocolate  camel
strawberry  elephant

yellow  desk
red  table
green  chair
Three Important Questions

1. Did it seem like the time I gave you to study was longer for the second list?
2. Did you have more confidence in your performance on the second list?
3. Did you think the second list was easier when you first saw it?
<table>
<thead>
<tr>
<th>vanilla</th>
<th>horse</th>
</tr>
</thead>
<tbody>
<tr>
<td>chocolate</td>
<td>camel</td>
</tr>
<tr>
<td>strawberry</td>
<td>elephant</td>
</tr>
<tr>
<td>yellow</td>
<td>desk</td>
</tr>
<tr>
<td>red</td>
<td>table</td>
</tr>
<tr>
<td>green</td>
<td>chair</td>
</tr>
</tbody>
</table>
Grouping and Patterning

Lesson:
- Students can increase their comprehension and recall when they group information and identify patterns.
Most people remember the right side better than the left side in a timed test.

<table>
<thead>
<tr>
<th>black</th>
<th>brown</th>
</tr>
</thead>
<tbody>
<tr>
<td>cinnamon</td>
<td>gloves</td>
</tr>
<tr>
<td>canary</td>
<td>parrot</td>
</tr>
<tr>
<td>sweater</td>
<td>shirt</td>
</tr>
<tr>
<td>dove</td>
<td>green</td>
</tr>
<tr>
<td>garlic</td>
<td>pepper</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>vanilla</th>
<th>chocolate</th>
</tr>
</thead>
<tbody>
<tr>
<td>strawberry</td>
<td>camel</td>
</tr>
<tr>
<td>yellow</td>
<td>desk</td>
</tr>
<tr>
<td>red</td>
<td>table</td>
</tr>
<tr>
<td>green</td>
<td>chair</td>
</tr>
</tbody>
</table>
This is like the silverware drawer in your home.
A graphic organizer is a tool used to construct meaning and provide evidence of learning.

1. Main Idea Identification and Summary
2. Significant Detail
3. Sequential/Order Relationships
4. Comparative Relationships
5. Cause-Effect Relationships
6. Problem-solution relationships
7. Meanings of Words
8. Generalizations/Drawing Conclusions
9. Author’s Point of View and Purpose
10. Interpreting Instructions
11. Using Maps, Charts, and Graphs
12. Literary Analysis

and

Content Area Learning
<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Compare</td>
<td>$\frac{495}{6}$</td>
</tr>
<tr>
<td>2.</td>
<td>Divide</td>
<td>$6 \div 89$</td>
</tr>
<tr>
<td>3.</td>
<td>Multiply</td>
<td>$8 \times 89$</td>
</tr>
<tr>
<td>4.</td>
<td>Subtract</td>
<td>$89 - 48$</td>
</tr>
<tr>
<td>5.</td>
<td>Compare</td>
<td>$48 \div 1$</td>
</tr>
<tr>
<td>6.</td>
<td>Bring Down</td>
<td>$15$</td>
</tr>
</tbody>
</table>

Optional:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.</td>
<td>Optional</td>
<td>$82 \div 6$</td>
</tr>
<tr>
<td>8.</td>
<td>Multiply</td>
<td>$82 \times 6$</td>
</tr>
<tr>
<td>9.</td>
<td>Subtract</td>
<td>$495 - 48$</td>
</tr>
</tbody>
</table>

Optional:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.</td>
<td>Remainder</td>
<td>$15 \div 12$</td>
</tr>
<tr>
<td>11.</td>
<td>Final</td>
<td>$82 \div 3$</td>
</tr>
<tr>
<td>12.</td>
<td>Check</td>
<td>$82 \div 6$</td>
</tr>
</tbody>
</table>

Divisor: $6$

Remainder: $492$

Dividend: $495$
POWER THINKING

10. I did!
9. I will.
8. I think I can.
7. I might.
6. I think I might.
5. What is it?
4. I wish I could.
3. I don’t know.
2. I can’t.
1. I won’t.

Marzano,
Tactics in
Thinking, 1989
Reading for Information and Reading Literature

1. Main Idea
2. Significant Details
3. Sequential/Order Relationships
4. Comparison Relationships
5. Cause and Effect Relationships
6. Understanding and Using Words
7. Generalizations and Drawing Conclusions
8. Problem-Solution Relationships
9. Interpreting Instructions
10. Author’s Purposes, Techniques, and Devices
11. Use Maps, Charts, and Graphs
12. Literary Analysis
Train the Brain
The adolescent brain loves to use skills to win.
Reading, observing, & listening to information to identify, understand, communicate, and use . . .

1. Main/Central Idea
2. Significant Details/Evidence
3. Sequential/Order Relationships
4. Comparison Relationships
5. Cause and Effect Relationships
6. Knowledge of vocabulary/key terms
7. Generalizations and Conclusions
8. Problem-Solution Relationships
9. Multi-step Instructions/Directions
10. Author’s Purpose, Techniques, Claims, Views, and Arguments
11. Knowledge of Maps, Charts, and Graphs
12. Literary Analysis
13. Information from Researching
Select a standard and related skill.

<table>
<thead>
<tr>
<th>Select a matching graphic organizer</th>
<th>Select a summary template and purpose</th>
<th>Select question prompts</th>
<th>Learn how to use a matching hand signal</th>
</tr>
</thead>
</table>

1. **Graphic Organizer**
   - **Story Board**

2. **Summary Template**
   - A number of steps have to be followed to
     - ____________.
     - First, ____________.
     - Then, ____________.
     - Next, ____________.
     - Next, ____________.
     - After that ____________.
     - Finally, ____________.

3. **Questions**
   - 1. Trace the development of . . .
   - 2. Sequence the events leading up to
   - 3. What do you do first when you . . . Next
   - 4. List the steps involved in . . .
   - 5. What steps did ___ take to solve reach her goal.
   - 6. The next likely event would be (predict) . . .
   - 7. After doing _____, the character's next decision was to ____________.
   - 8. What steps did _______ take to achieve his/her goal in the story?
   - 9. The last two steps in the process were . . .

4. **Hand Signal/Movement**
   - Say put things in order with one hand pounding on the open palm of the other hand while moving both hands from left to right.
5. EXPLICIT TEACHING and Guided Practice

1. I do
2. We do
3. I Do
4. We do
5. I do
6. You do
7. Closure
8. The next day
I will be able to . . . / I can . . .

- identify and summarize the main idea and details.
- identify central themes about the history of the world.
<table>
<thead>
<tr>
<th>Main Idea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detail</td>
</tr>
<tr>
<td>Detail</td>
</tr>
<tr>
<td>Detail</td>
</tr>
</tbody>
</table>
One main idea of the History of the World video is that *humankind has been innovative/inventive*. One example of that idea is when *the floppy disk was invented*. Another example of innovation/inventiveness was ________. In addition, innovation and inventiveness was illustrated when __________. Finally, innovation and inventiveness was shown when ____________.
Start Small! Three to Five-Sentence Summaries
<table>
<thead>
<tr>
<th>Main Idea</th>
<th>Detail</th>
<th>Detail</th>
<th>Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Main/Central Idea and Details

One main idea of the History of the World video is that **humankind has been innovative/inventive**. One example of that idea is when **the floppy disk was invented**. Another example of innovation/inventiveness was _______. In addition, innovation and inventiveness was illustrated when ____________. Finally, innovation and inventiveness was shown when ____________.
Kids will play a video game an average of 100 hours to “get good at it.”

- They don’t . . .
  - get grades
  - get extra credit
  - win money
  - get public acclaim

And they rarely play a game a second time without knowing/learning . . .

1. Objectives/goals
2. Strategies and skills
3. Vocabulary
4. How well they are doing
5. What to do better next time
The main idea of this passage is ________________________.

One fact or example that supports this main idea is _____________________.

Another fact or example that supports this main point is _________________.

In addition, ________________________.

Finally, _______________________________ illustrates that (main idea) _________________________.

Main Idea/Significant Detail Summary Frame
Instruction

English Language Arts and Content Area Literacy

Math

Technology

English Language Learners
<table>
<thead>
<tr>
<th>Reading Skills</th>
<th>Graphic Organizers</th>
<th>Summary Templates</th>
<th>Questions/Prompts</th>
<th>Hand Signals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Main/Central Idea</td>
<td>• spider map</td>
<td>• main idea paragraph and two-sentence summary</td>
<td>• main/central idea</td>
<td>• Hold a fist (main idea) and dangle and wiggle fingers (details).</td>
</tr>
<tr>
<td></td>
<td>• network tree map</td>
<td>• MEL-Con</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• cluster map</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• bubble map</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Significant Details/Evidence</td>
<td>• spider map</td>
<td>• topic sentence evidence/detail</td>
<td>• significant details/evidence</td>
<td>• Dangle and wiggle fingers (details)</td>
</tr>
<tr>
<td></td>
<td>• network tree map</td>
<td>• MEL-Con</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• cluster map</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• bubble map</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• w’s chart</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Sequential/Order Relationships</td>
<td>• cycle map</td>
<td>• sequence paragraph</td>
<td>• sequence/ order</td>
<td>• Say put things in order with one hand pounding on the open palm of the other hand while moving both hands from left to right.</td>
</tr>
<tr>
<td></td>
<td>• flow map</td>
<td>• chronological summary</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• storyboard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• continuum/timeline</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Graphic Organizers

Spider Map

Network Tree

Cluster Map

Bubble Map
Summary and Constructed-Response Templates

Main Idea/Details Summary
Two-Sentence Summary
Paragraph
MEL-Con

Questions/ Prompts

1. The main point of the article is . . .
2. Summarize what you read.
3. The main theme of the story is . . .
4. List the facts regarding . . .
5. The text is about . . .
6. The main idea is about . . .
7. The story/article mainly tells . . .
8. Which of the following best expresses the main idea?
9. On the basis of information in the passage, we can determine that . . .
10. What would be the best title for this passage?
11. Which statement best expresses the central idea of this passage?
12. The main idea expressed in this passage is . . .
Hand Signals for Focusing on the Skills & Strategies

Hold a fist (main idea) and dangle and wiggle fingers (details).
The adolescent brain wants/needs to . . .

1. know and understand the objectives/learning goals and expectations.
2. know how to use strategies for acquiring, processing, and applying content and skills (storage and retrieval, reading, and summarizing).
3. get feedback about progress.
4. reflect about ways to improve.
<table>
<thead>
<tr>
<th>Closed-Ended Selected Response</th>
<th>Open-Ended Constructed Response</th>
<th>Products</th>
<th>Performances</th>
<th>Process-Focused</th>
<th>Student Self-Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>• multiple-choice</td>
<td>• fill in the blank</td>
<td>• essay</td>
<td>• oral presentation</td>
<td>• oral questioning</td>
<td>• reflection prompts</td>
</tr>
<tr>
<td>• true-false</td>
<td>• short answer sentence(s)</td>
<td>• research paper</td>
<td>• questioning</td>
<td>• observation</td>
<td>• logs</td>
</tr>
<tr>
<td>• matching</td>
<td>• paragraphs</td>
<td>• lab report</td>
<td>• “kid watching”</td>
<td>• interview</td>
<td>• interviews</td>
</tr>
<tr>
<td></td>
<td>• show your work</td>
<td>• story/play</td>
<td>• demonstration</td>
<td>• conference</td>
<td>• inventories</td>
</tr>
<tr>
<td></td>
<td>• visual representation</td>
<td>• poem</td>
<td>• athletic competition</td>
<td>• process description</td>
<td>• discussion</td>
</tr>
<tr>
<td></td>
<td>• web</td>
<td>• portfolio</td>
<td>• science lab</td>
<td>• “think aloud”</td>
<td></td>
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<tr>
<td></td>
<td>• concept map</td>
<td>• art exhibit</td>
<td>• demonstration</td>
<td>• learning log</td>
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<td></td>
<td>• flow chart</td>
<td>• science project</td>
<td>• reading</td>
<td></td>
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<td></td>
<td>• graph/table</td>
<td>• model</td>
<td>• enactment</td>
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<td></td>
<td>• matrix</td>
<td>• video/</td>
<td>• debate</td>
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<td></td>
<td>• illustration</td>
<td>• audiotape</td>
<td>• musical recital</td>
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<td>• spreadsheet</td>
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</table>

**Portfolio**
Students talk to us in their responses.

- What are these students saying to us?
Where was Hadrian’s Wall built?

Around Hadrian’s garden
What did Mahatma Gandhi and Genghis Khan have in common?

Unusual names
What is a nitrate?

Much cheaper than a day rate.
What happens during puberty to a boy?

He says goodbye to his childhood enters adulthood.
What is the highest frequency noise that a human can register?

Mariah Carey.
The race of people known as Malays come from which country?

Malaria
Name six animals which live specifically in the Arctic.

Two polar bears

Three four seals
Where was the American Declaration of Independence signed?

At the bottom.
Name one of the early Romans’ greatest achievements.

Learning to speak Latin.
What is the meaning of the word ‘varicose’?
What is a fibula?

A little lie
Steve is driving his car. He is travelling at 60 feet/second and the speed limit is 40 mph. Is Steve speeding?

He could find out by checking his speedometer.
MATH PROBLEM.
John has 32 candy bars. He eats 28. What does he have now?

Diabetes.
John has diabetes.
DEAR ALGEBRA,
PLEASE STOP ASKING US TO FIND YOUR X.
SHE'S NEVER COMING BACK, AND DON'T ASK Y.
3. Find x.

Here it is.
But wait! You haven’t earned any points yet.

- Let’s test your skills and knowledge.

[Image of test questions]
Main Idea/Concept:

- hammer
- screwdriver
- hand drill
- chisel
- saw
Main Idea /Concept:

- Washington
- Lincoln
- Roosevelt
- Eisenhower
- Madison
Main Idea /Concept:

- bed
- chair
- sofa
- desk
- dining table
Main Idea /Concept:

- Rose
- Sylvia
- Harriet
- Pennie
- Caryl
Main Idea /Concept:

- schematic association
- metacognitive assimilation
- synaptic neuropathic patterning
- dendrite pruning
- cerebral dissonance
Main Idea /Concept:

- violin
- harp
- clarinet
- banjo
- guitar
Main Idea /Concept:

- schematic association
- metacognitive assimilation
- synaptic neuropathic patterning
- dendrite pruning
- cerebral dissonance
Main Idea / Concept:

- Pontiac
- Oldsmobile
- Hummer
- Yugo
- Plymouth
Use a motivating cycle of assessment and feedback.

### Shortened-Cycle Assessment

| Teach, assess, and provide corrective or enrichments | Teach, assess, and provide corrective or enrichments | Teach, assess, and provide corrective or enrichments | Teach, assess, and provide corrective or enrichments | Evaluate (Summative Test) |

### Long-Cycle Assessment

| Teach | Teach | Teach | Teach | Evaluate (Summative Test) |
John Hattie-reviewed 7,827 studies on learning and instruction

- Conclusion . . . “The most powerful single innovation that enhances achievement is feedback. The simplest prescription for improving education must be dollops of feedback.”

- Conclusion: Providing students with specific information about their standing in terms of particular objectives increased their achievement by 37 percentile points.
Choose two Formative Assessments (see website)

| 1. Tests          | 9. Student self-assessment       | 21. Idea Spinner (e.g., predict, explain, summarize, evaluate) |
| 2. Quizzes        | 10. Survey students              | 22. Inside-Outside Quiz Circle                                      |
| 4. Exit tickets/card | 12. Misconception check        | 24. One-word Summary                                               |
| 5. Full participation question and answer | 13. Student conference | 25. One Sentence Summary                                           |
| 6. Short writes (e.g., summaries, responses to question prompts) | 14. 3-minute pause | 26. Ticket to Leave                                                |
| 7. Graphic organizers/web/concept map | 15. Observation | 27. Think-Pair-Share/ Turn to Your Partner                          |
|                   | 17. Journal entry                | 29. Show and tell                                                  |
|                   | 18. Choral response              | 30. Model it                                                       |
|                   | 19. A-B-C Relate Summaries       |                                                             |
|                   | 20. Debriefing                   |                                                             |
Marzano,
Tactics in
Thinking, 1989
ALL students can improve skills and develop strategies with . . .

- Challenge
  - Feedback
    - Reflect, Recognize/Celebrate Progress
      - New Goal/New Strategy
        - Practice New and/Improved Strategy
          - Challenge
The adolescent brain wants/needs to . . .

1. know and understand the objectives/learning goals and expectations.
2. know how to use strategies for acquiring, processing, and applying content and skills (storage and retrieval, reading, and summarizing).
3. get feedback about progress.
4. reflect about ways to improve.
ALL students can improve skills and develop strategies with . . .

Challenge

Practice New and/Improved Strategy

New Goal/New Strategy

Feedback

Reflect, Recognize/Celebrate Progress
Students can self-assess/reflect for higher achievement.

1. selecting strategies.
2. monitoring task performance.
3. establishing improvement goals and adjustments to your strategies.
Metacognition

Lesson:

- Students can increase their performance when they think about and adjust their strategies during the learning process.
## Learner/Performance Objectives

<table>
<thead>
<tr>
<th>My Level of Understanding</th>
<th>I can…</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Define and use unit vocabulary.</td>
</tr>
<tr>
<td></td>
<td>2. Recognize and analyze conditional statements.</td>
</tr>
<tr>
<td></td>
<td>3. Write the inverse, converse and contrapositive of a conditional statement.</td>
</tr>
<tr>
<td></td>
<td>4. Recognize and rewrite bi-conditional statements.</td>
</tr>
<tr>
<td></td>
<td>5. Use symbolic notation to represent logical statements.</td>
</tr>
<tr>
<td></td>
<td>6. Determine whether a logical statement is valid.</td>
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<tr>
<td></td>
<td>7. Form conclusions by applying the laws of logic.</td>
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<tr>
<td></td>
<td>8. Use properties of algebra to solve equations.</td>
</tr>
<tr>
<td></td>
<td>9. Use properties of length and measure to justify segment and angle relationships.</td>
</tr>
</tbody>
</table>
Tracking Progress and Determining What Worked and Didn’t Work

- Strategies that helped
- Strategies that didn’t help
- What caused changes?
1. What did you accomplish?
2. What strategies, steps, or practices did you successfully apply?
3. What do you need to abandon or change?
4. What’s your plan?
5. What assistance do you need?
Prompts to Increase Student Reflection and Goal Setting

- I learned/relearned . . .
- I am concerned/worried about . . .
- One of my improvement goals is to . . .
- In order to use the information, skills, strategies, I need ________.
- I am optimistic about ________.
- "The next assignment or test, I'm going to use to ________
- Head, Foot, Heart Strategy
  - Head--An idea I had . . .
  - A feeling I experienced . . .
  - An action I will take. . .
Prompts to Increase Student Reflection and Goal Setting

- I hope to accomplish ___________.
- I should quit doing _____ in order to ______.
- I will need to learn how to _______________ to accomplish/improve ________________.
- The teacher will need to _______________ to help me improve ________________.
- I need the following resources to help me reach my improvement goal(s).
- I need the other students in the class to _____ to help me accomplish my improvement goal(s).
- In order to evaluate my progress toward my improvement goals, I need to _____________.


10. I did!
9. I will.
8. I think I can.
7. I might.
6. I think I might.
5. What is it?
4. I wish I could.
3. I don’t know.
2. I can’t.
1. I won’t.

Marzano, Tactics in Thinking, 1989
Kids will play a video game, sport, or other activity an average of 100 hours to “get good” at it.

- They don’t . . .
  - get grades
  - get extra credit
  - win money
  - get public acclaim

- And they rarely play a game a second time without knowing/learning . . .
  1. Objectives/goals
  2. Strategies and skills
  3. Vocabulary
  4. How well they are doing
  5. What to do better next time
Staying Optimistic and Hopeful While on the Common Core Journey

- Set your goal to be . . .
The Young Adolescent Brain and the Impact on Teaching and Learning

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