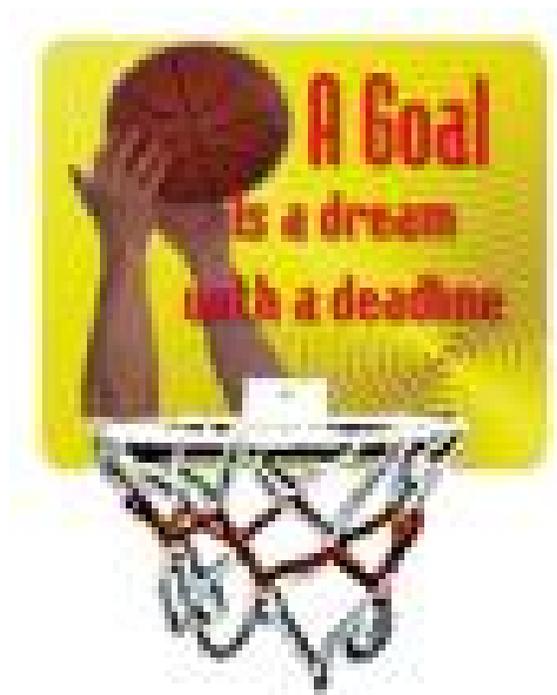


Learning and Succeeding in a Caring Environment



"Education is the most powerful weapon
which you can use to change the world."

NELSON MANDELA

Prepared for the Dedicated Instructional Team
Of Appomattox County Public Schools

Dan Mulligan
August 2005

References

Research the Forms the Framework for this Workshop

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Leadership Capacity for Lasting School Improvement by Linda Lambert

The Results Fieldbook: Practical Strategies from Dramatically Improved Schools by James Schmoker

Using Data to Shape Classroom Practice by Richard DuFour

What Works in Schools: Translating Research into Action by Robert Marzano

"What we need to do is learn to work in the system, by which I mean that everybody, every team, every platform, every division, every component is there not for individual competitive profit or recognition, but for contribution to the system as a whole on a win-win basis."

~W. Edwards Deming

Differentiated Instructional Strategies

Ideas for Centers and Projects Grouped by Multiple Intelligences

Verbal/Linguistic

Prepare a report
Write a play or essay
Create a poem or recitation
Listen to an audiotape on ...
Interview
Label a diagram
Give directions for ...

Bodily/Kinesthetic

Create a role-play
Construct a model
Develop a mime
Create a tableau for ...
Manipulate materials
Work through a simulation
Create actions for ...

Musical/Rhythmic

Compose a rap song or rhyme
Create a jingle to teach others
Listen to musical selections
Write a poem
Select music or poems for
a purpose

Interpersonal

Work with partner/group
Discuss and come to conclusions
Solve a problem together
Survey or interview others
Dialogue about a topic
Use cooperative groups

Naturalist

Discover or experiment
Categorize materials or ideas
Look for ideas from nature
Adapt materials to a new look
Connect ideas to nature
Examine materials
to make generalizations

Logical/Mathematical

Create a pattern
Describe a sequence or process
Develop a rationale
Analyze a situation
Critically assess ...
Classify, rank, or compare ...
Interpret evidence ...

Differentiated Instructional Strategies

Ideas for Centers and Projects

Grouped by Multiple Intelligences

Visual/Spatial

Draw a picture
Create a mural or display
Illustrate an event
Make a diagram
Create a cartoon
Paint or design poster
Design a graphic
Use color to ...

Intrapersonal

Think about and plan
Write in a journal
Review or visualize a way
to do something
Make a connection with past
information or experiences
Metacognitive moments

Suggestions for Using the Eight Multiple Intelligences

<p style="text-align: center;">Musical/Rhythmic</p> <p>Sing it Create a beat Rap it Make a cheer Create a jingle Hum it Identify sounds React to sounds Listen to sounds Connect to music Write a poem</p>	<p style="text-align: center;">Verbal/Linguistic</p> <p>Read it Spell it Write it Listen to it Tell it Recall it Use "you" words Apply it Chunk information Say it Use mnemonics</p>	<p style="text-align: center;">Logical/Mathematical</p> <p>Make a pattern Chart it Sequence it Create a mnemonic Analyze it Think abstractly Think critically Use numbers Prove it Interpret the data Use the statistics</p>
<p style="text-align: center;">Visual/Spatial</p> <p>Mind maps Graphic organizers Video Color code Highlight Shape a word Interpret a graphic Read a chart Study illustrations Visualize it Make a chart Create a poster</p>		<p style="text-align: center;">Body/Kinesthetic</p> <p>Role play Walkabout Dance Lip sync Skits/charades/mimes Construction Math manipulatives Sign language Sports Activity centers Body language</p>
<p style="text-align: center;">Intrapersonal</p> <p>Metacognition Use self-talk Work independently Solve in your own way Understand self Journal it Rehearse it Use prior knowledge Connect it Have ownership</p>	<p style="text-align: center;">Interpersonal</p> <p>Think-Pair-Share Jigsaw Cooperative grouping Drama Debates Class meetings Role play Meeting of minds Peer counseling Tutors/buddies Giving feedback Shared Journals</p>	<p style="text-align: center;">Naturalist</p> <p>Label it Categorize it Identify it Form a hypothesis Do an experiment Adapt it Construct it Classify it Investigate it Discern patterns</p>

□

Instructional Strategies
and
Research-based Structures
to
Focus Student Learning

What Works In Schools

Guaranteed and Viable Curriculum

Challenging Goals and Effective Feedback

Parent and Community Involvement

Safe and Orderly Environment

Collegiality and Professionalism

Instructional Strategies

Classroom Management

Classroom Curriculum Design

Home Environment

Learning Intelligence/ Background Knowledge

Motivation

Instructional Strategies & Definitions

Setting Objectives & Providing Feedback

Helping students to understand the direction for learning, to establish personal goals, and to provide feedback relative to how they are progressing on their goals.

Questions, Cues, & Advance Organizers

Helping students retrieve what they know about a topic using questions that elicit inferences, cues, or hints about what is to come.

Identifying Similarities & Differences

Engaging students in activities that help them examine similarities and differences among ideas, issues, events. Etc. by engaging in mental processes such as comparing, classifying, creating metaphors, and creating analogies.

Cooperative Learning

Using grouping strategies to help students in their learning.

Nonlinguistic Representations

Helping students represent and elaborate on knowledge in an imagery form using mental pictures, physical models, graphic organizers, etc.

Note taking & Summarizing

Helping students to distill and/or synthesize information accurately and concisely.

Reinforcing Effort & Providing Recognition

Teaching students about the relationship between effort and achievement and recognizing students for the progress they are making.

Homework & Practice

Providing students with opportunities to deepen their understanding of content and their proficiency and skills.

Generating & Testing Hypotheses

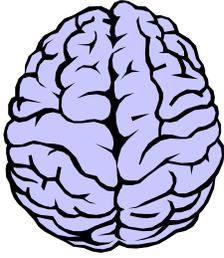
Engaging students in activities that ask them to apply knowledge by generating and testing a hypothesis, such as problem solving, decision-making, experimental inquiry, systems analysis, investigation, projects, etc.

Strategies	Ave. Effect Size (ES)	Percent ile Gain
1. Identify similarities and differences	1.61	45
2. Summarizing and note taking	1.00	34
3. Reinforcing effort and providing recognition	.80	29
4. Homework and practice	.77	28
5. Nonlinguistic Representations	.75	27
6. Cooperative Learning	.73	27
7. Setting objectives and providing feedback	.61	23
8. Generating and testing hypotheses	.61	23
9. Questions, cues, and advance organizers	.59	22

Give One Get One

1. Compare two obviously dissimilar things or concepts.
2. Write down your ideas.
3. Circulate around the room. Share your idea with someone and collect an idea from him or her.
4. Go to a different person and repeat the process. Give an idea and get an idea.
5. You may *not* collect more than *one* idea from any one person.
6. If you find a person who has the same idea that you have, come up with at least one *new* idea together.
7. You have 90 seconds to collect 6 new ideas.
8. Have fun. Be creative. Be respectful of others ideas.





QUESTIONING FOR QUALITY THINKING

Knowledge—Identification and recall of information

Who, what, when, where, how _____?

Describe _____.

Comprehension—Organization and selection of facts and ideas

Retell _____ in your own words.

What is the main idea of _____?

Application—Use of facts, rules, principles

How is _____ an example of _____?

How is _____ related to _____?

Why is _____ significant?

Analysis—Separation of a whole into component parts

What are the parts of features of _____?

Classify _____ according to _____.

Outline/diagram/web _____.

How does _____ compare/contrast with _____?

What evidence can you list for _____?

Synthesis—Combination of ideas to form a new whole

What would you predict/infer from _____?

What ideas can you add to _____?

How would you create/design a new _____?

What might happen if you combined _____ with _____?

What solutions would you suggest for _____?

Evaluation—Development of opinions, judgments, or decisions

Do you agree _____?

What do you think about _____?

What is the most important _____?

Prioritize _____?

How would you decide about _____?

What criteria would you use to assess _____?

Question Starters and Classroom Activities

Differentiated According to Bloom's Taxonomy

Question Starters	Potential Activities
Level 1: Knowledge (Recall)	
<ol style="list-style-type: none"> 1. What is the definition for ...? 2. What happened after ...? 3. Recall the facts. 4. What were the characteristics of ...? 5. Which is true or false? 6. How many ...? 7. Who was the ...? 8. Tell in your own words. 	<ol style="list-style-type: none"> 1. Describe the ... 2. Make a time line of events 3. Make a facts chart 4. Write a list of ...steps in...facts about 5. List all the people in the story 6. Make a chart showing 7. Recite a poem
Level 2: Comprehension	
<ol style="list-style-type: none"> 1. Why are these ideas similar? 2. In your own words retell the story of... 3. What do you think could happen? 4. How are these ideas different? 5. Explain what happened after? 6. What are some examples? 7. Can you provide a definition of ...? 8. Who was the key character? 	<ol style="list-style-type: none"> 1. Cut out/draw pictures to show event. 2. Illustrate the main idea. 3. Make a cartoon strip showing a sequence of events. 4. Write and perform a play based on... 5. Compare this ___ with ___ 6. Construct a model of ... 7. Write a news report. 8. Prepare a flow chart to show...
Level 3: Application (applying without understanding is NOT effective)	
<ol style="list-style-type: none"> 1. What is another instance of ...? 2. Demonstrate the way to ... 3. Which one is most like ...? 4. What questions would you ask? 5. Which factors would you change? 6. Could this have happened in ...? 7. How would you organize these ideas? 	<ol style="list-style-type: none"> 1. Construct a model to demonstrate using it. 2. Make a display to illustrate one event. 3. Make a collection about ... 4. Design a relief map to include relevant information about an event. 5. Scan a collection of photographs to illustrate ... 6. Create a mural to depict ...

Differentiated According to Bloom's Taxonomy

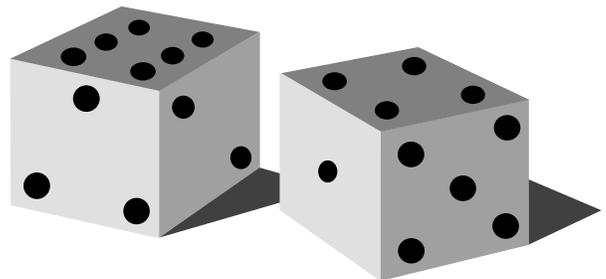
Question Starters	Potential Activities
Level 4: Analysis	
<ol style="list-style-type: none"> 1. What are the component parts of ...? 2. What steps are important in the process of ...? 3. If ... then ... 4. What other conclusions can you reach about ... that have been mentioned? 5. The difference between the fact and the hypothesis is... 6. The solution would be to ... 7. What is the relationship between ... and ...? 	<ol style="list-style-type: none"> 1. Design a questionnaire about ... 2. Conduct an investigation to produce ... 3. Make a flow chart to show ... 4. Construct a graph to show ... 5. Put on a play about ... 6. Review ... in terms of identified criteria. 7. Prepare a report about the area of study.
Level 5: Synthesis	
<ol style="list-style-type: none"> 1. Can you design a ...? 2. Why not compose a song about ...? 3. Why don't you devise your own way to ...? 4. Can you create new and unusual uses for ...? 5. Can you develop a proposal for ...? 6. How would you deal with ...? 7. Invent a scheme that would... 	<ol style="list-style-type: none"> 1. Create a model that shows your new ideas. 2. Devise an original plan to experiment for ... 3. Finish the incomplete ... 4. Make a hypothesis about ... 5. Change ... so that it will ... 6. Propose a method to ... 7. Prescribe a way to ... 8. Give the book a new title.
Level 6: Evaluation	
<ol style="list-style-type: none"> 1. In your opinion ... 2. Appraise the chances of ... 3. Grade or rank the ... 4. What do you think should be the outcome? 5. What solution do you favor and why? 6. Which systems are best? Worst? 7. Rate the relative value of these ideas to ... 8. Which is the better bargain? 	<ol style="list-style-type: none"> 1. Prepare a list of criteria you would use to judge a ... Indicate priority ratings you would give. 2. Conduct a debate about an issue. 3. Prepare an annotated bibliography ... 4. Form a discussion panel on ... 5. Prepare a case to present your opinions about ... 6. List some common assumptions about ...Rationalize your reactions.

Cubing

Topic: _____

1. Describe it: _____
What does it look like?
2. Compare it: _____
What is it similar to or different from?
3. Associate it: _____
What does it make you think of?
4. Analyze it: _____
How is it made or what is it composed of?
5. Apply it: _____
What can you do with it? How is it used?
6. Argue for or against it: _____
Take a stand and list reasons for supporting it.

Spend only 5 or 10 minutes on
each side of the cube.



THEN / NOW COMPARISON

Name: _____

Date: _____

Title/Topic _____

THEN

NOW

THEN	NOW

**COMPARING ME TO
A CHARACTER IN A BOOK**

Name: _____ **Date:** _____

Character

Me

1. _____

2. _____

3. _____

1. _____

2. _____

3. _____

COMPARE - AND - CONTRAST CHART

Name: _____ Date: _____

Characteristics	Items Being Compared	

Conclusions

Open Compare and Contrast Chart

Thing to compare:

Thing to compare:

HOW ALIKE?

HOW DIFFERENT?

With regard to:

Conclusions:

Take Note!!

Active Reading

Name: _____

Subject: _____

Date: _____

Period/Bell: _____

Prereading information	Pre and During Reading Information	After Reading Summarize and Synthesize What was read
<p>In this column list:</p> <ul style="list-style-type: none"> • Chapter title • Headers • Subheaders • Words to know • Categories • Questions to answer • Main ideas from the paragraphs 	<p>In this column ask:</p> <p>Questions about:</p> <ul style="list-style-type: none"> • The chapter's focus • Issues or concerns • What you have read already • What you think it will say • Possible areas of misunderstanding • How the page is set up 	<p>In this column you should</p> <ul style="list-style-type: none"> • Summarize-each paragraphs/sections main idea • Answer you own questions from the previous column • Study the questions at the chapter or sections end • Make inferences as to the meaning, importance and implications of what you read
<p>If reading fiction ask:</p> <ul style="list-style-type: none"> • What happened? • Who is involved? • Where are they? • What's the problem? • What is the cause? 	<p>If reading fiction ask:</p> <ul style="list-style-type: none"> • What will happen next? • Why will that happen next? • What does the main character want more than anything else? • What's the problem? • What caused that to happen? 	<p>If reading fiction ask:</p> <ul style="list-style-type: none"> • How and why did the character change? • What does the author want us to feel or think? • What are the implications of the events?

STRATEGIES TO EXTEND STUDENT THINKING

- Remember wait time
- Provide at least three seconds of thinking time after a question and after a response
- Utilize "think-pair-share"
- Allow individual thinking time, discussion with a partner, and then open up the class discussion
- Ask "follow-ups" (Why? Do you agree? Can you elaborate?)
- Tell me more. Can you give an example?
- Withhold judgment
- Respond to student answers in a nonevaluative fashion
- Ask for summary (to promote active listening) "Could you please summarize John's point?"
- Survey the class "How many people agree with the author's point of view?" ("thumbs up, thumbs down")
- Allow for student calling "Richard, will you please call on someone else to respond?"
- Play devil's advocate
- Require students to defend their reasoning against different points of view
- Ask students to "unpack their thinking"
- "Describe how you arrived at your answer." ("think aloud")
- Call on students randomly. Not just those with raised hands
- Student questioning. Let the students develop their own questions.
- Cue student responses. "There is not a single correct answer for this question. I want you to consider alternatives."



Who Am I?

Directions:

The object of the strategy is to use strategic questioning to determine the solution to a problem.

1. Choose an index card without looking at it.
2. Turn to the person next to you and tape the index card to that person's back with the information facing out. Everyone in the room should be able to see the information except the person who is "wearing" the card.
3. Create a hypothesis about the information on your back. Circulate the room asking questions to formulate additional theories
4. Ask thoughtful questions and listen carefully to the questions that others are asking you.
5. Do not ask more than two questions of any one person.
6. When you believe that you have accurately determined the information contained on the index card return to your seat. Hint: The person asking the fewest and most thoughtful questions is most likely to be the first to return to his seat.
7. Good Luck!
8. Have fun!

Student Self-Assessment

The goal is for students to assess their own progress. Of course, they need our help. We can help by providing opportunities and time for reflection after assignments are completed. In our rush to get things completed, we often forget this very important step. We can help by providing clear and meaningful assessment criteria against which students can judge and evaluate the work they do.

Time for Reflection

A few simple questions can serve as a guide and a springboard for reflection and self-assessment:

- What was I trying to accomplish?
- How did I go about completing the assignment and solving problems I had along the way (process)?
- What did I do well (strengths)?
- What did I have difficulty with (weaknesses)?
- What have I learned/what would I do differently?

The self-assessment/reflection is a memo; it's a note chatting about the assignment. It is the most important part of any assignment.

Meaningful reflection takes practice. This is as true for students as it is for teachers. You can best support your students in their efforts at self-assessment by providing regular, uninterrupted time for students to think about their progress. At first, you may need to guide their reflection with questions such as these:

- What did I learn today?
- What did I do well?
- What am I confused about?
- What do I need help with?
- What do I want to know more about?
- What am I going to work on next?

As students participate in the self-assessment process, they will have many opportunities to collect pieces of their writing and react to things they have read. Individual student conferences can help guide these periods of self-reflection and reinforce the idea that collecting and evaluating work are important steps in self-assessment.

Effort and Achievement Rubrics

Scale: 4=excellent; 3=good; 2=needs improvement; 1=unacceptable	
Effort Rubric	Achievement Rubric
4	4
I worked on the task until it was completed. I pushed myself to continue working on the task even when difficulties arose or a solution was not immediately evident. I viewed difficulties that arose as opportunities to strengthen my understanding.	I exceeded the objectives of the task or the lesson.
3	3
I worked on the task until it was completed. I pushed myself to continue working on the task even though difficulties arose or a solution was not immediately evident.	I met the objectives of the task or the lesson.
2	2
I put some effort into the task, but I stopped working when difficulties arose.	I met a few of the objectives of the task or lesson, but did not meet others.
1	1
I put very little effort into the task.	I did not meet the objectives of the task or lesson.

14 Behaviors Teachers Use that Increase Student Achievement

The teacher...

1. calls on everyone in the room equitably.
2. provides individual help.
3. gives "wait time".
4. asks questions to give students a clue to the answer.
5. ask questions that require more thought.
6. tells students whether their answers are right or wrong.
7. gives specific praise.
8. gives reasons for praise.
9. listens.
10. accepts feelings of students.
11. gets within arm's reach of each student each day.
12. is courteous to students.
13. shows personal interest in students.
14. does not call attention to every negative behavior.



Standards of Learning Lesson Plan Blueprint

Based on *Classroom Instruction That Works* Research

Subject: _____

Duration: _____

SOL: (underline the verbs)

Related SOL:

Essential Knowledge and Skills:

Materials needed:

Vocabulary:

Assessment/Expected Outcomes: (As a result of this lesson what will students be able to do/demonstrate..? What will be accepted as evidence? Assessments should match the level of thinking of the objective (the verbs)).

- | | |
|--|---|
| <input type="checkbox"/> Student self-assessment | <input type="checkbox"/> Short written response |
| <input type="checkbox"/> Performance tasks | <input type="checkbox"/> Teacher observation |
| <input type="checkbox"/> Oral reports | <input type="checkbox"/> Demonstration |
| <input type="checkbox"/> Essays | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Forced choice | |

Procedures/Lesson Overview (Specify the steps of the lesson presentation)

NOTE: Include *at least one* kinesthetic activity in your lesson plan.

Beginning: (Activate prior knowledge. Provide background information. How will students be hooked?)

- Set objectives
- Provide feedback
- Questions, cues & advance organizers
- Cooperative Learning
- Identify similarities and differences

During: (What strategies and activities will be used to support the teaching objectives? How will students receive feedback on their understanding and progress?)

- Nonlinguistic representations
- Summarizing and note taking
- Questions, cues, advance organizers
- Cooperative learning
- Identify similarities and differences

End: (Tie new knowledge to existing knowledge and future knowledge. Reflect. Evaluate.)

- Reinforce effort
- Provide recognition
- Evaluate

Guidelines for Effective Praise

Effective Praise...

1. Is delivered contingently.
2. Specifies the particular accomplishment.
3. Shows spontaneity, variety, and other signs of credibility; suggests clear attention to students' accomplishments
4. Rewards attainment of specified performance criteria.
5. Provides information to students about their competence or the value of their accomplishments.
6. Orients students toward better appreciation of their own task-related behavior and thinking about problem solving.
7. Uses students' own prior accomplishments as the context for describing present accomplishments.
8. Is given in recognition of noteworthy effort or success at difficult (for *this* student) tasks.
9. Attributes success to effort and ability, implying that similar successes can be expected in the future.
10. Fosters endogenous attributions (students believe that they expend effort on a task because they enjoy the task and/or want to develop task-relevant skills.
11. Focuses students' attention on their own task-relevant behavior.
12. Fosters appreciation of, and desirable attributions about, task-relevant behavior after the process is completed.

Ineffective Praise...

1. Is delivered randomly or unsystematically.
2. Is restricted to global positive reactions.
3. Shows a bland uniformity that suggests a conditional response made with minimal attention.
4. Rewards mere participation, without consideration of performance, processes, or outcomes.
5. Provides no information at all or gives students no information about their status.
6. Orients students toward comparing themselves with others and thinking about competing.
7. Uses accomplishments of peers as context.
8. Is given without regard to effort expended or the meaning of the accomplishment.
9. Attributes success to ability alone or to external factors such as luck or low task difficulty.
10. Fosters exogenous attributions (students believe that they expend effort on the task for external reasons-to please the teacher, win a competition or for a reward).
11. Focuses students' attention on the teacher as and external authority that is manipulating them.
12. Intrudes into the ongoing process, distracting attention from task-relevant behavior.

Specific Types of Knowledge

and the *Classroom Instructional that Works* Strategies

Four Types of Knowledge:

1. Vocabulary terms

1. Encounter words more than once
2. Nonlinguistic representation

2. Details

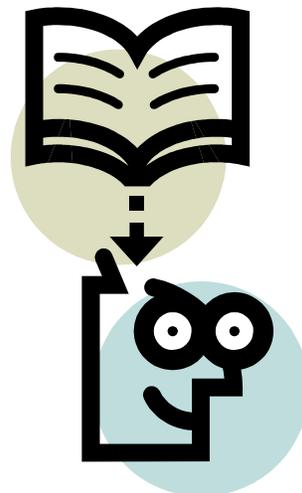
- Person, place, living/nonliving thing, event
- Multiple exposures
- Dramatic enactment

3. Organizing ideas

- Generalizations and principles
- Use in a variety of situations

4. Skills and Processes

- Learn to a level of automaticity
- Practice parts of a process in context



Five-Step Process for Teaching Vocabulary

1. Present students with a brief explanation or description of the new term or phrase.
2. Present students with a nonlinguistic representation of the new term or phrase.
3. Ask students to generate their own explanations or descriptions of the term or phrase.
4. Ask students to create their own nonlinguistic representation of the term or phrase.
5. Periodically ask students to review the accuracy of their explanations and representations.

Note: Direct vocabulary instruction improves students' achievement. The instruction should be a highly student-centered, constructivist activity. According to brain research, students can understand at most 7 to 9 words at a time. Associating an image with a vocabulary term is one of the most effective methods to learn a new word.

Vocabulary term	Description	Nonlinguistic Representation

Learning Vocabulary

Imagine you are a student and your teacher gives you the following five words to record in your vocabulary notebook. For each term, write an explanation and create a nonlinguistic representation, then answer the questions that follow.

Vocabulary term	Description	Nonlinguistic Representation
Citizenship		
Erosion		
Compass		
Olympics		
Gravity		

Do you think creating a nonlinguistic representation would be helpful for remembering a vocabulary term? Why or why not?

Learning Vocabulary

Imagine you are a student and your teacher gives you the following five words to record in your vocabulary notebook. For each term, write an explanation and create a nonlinguistic representation, then answer the questions that follow.

Vocabulary term	Description	Nonlinguistic Representation
Globe		
Congress		
Computer		
Negative Numbers		
Vegetarian		

Do you think creating a nonlinguistic representation would be helpful for remembering a vocabulary term? Why or why not?

Learning Details

Imagine you are a teacher who is planning to teach the following details to students. For each detail, describe a story you might present to students to help them understand the detail or a type of enactment students might engage in to make the detail come alive for them.

Detail 1: The Electoral College has electors for each state who cast votes for the president and vice president of the United States after the general election.

Story or Enactment:

Detail 2: When water freezes, it becomes solid. The molecules in a liquid are loosely packed and move about easily. The molecules in a solid are packed tightly, and movement is limited to vibration.

Story or Enactment:

Detail 3: Speeding is the number one cause of crashes in Virginia. This includes both driving above the posted speed and driving too fast for conditions. Increased speed leads to more severe collision and longer braking distances, and shortens the time a driver has to react. Studies have shown that young drivers are more likely to drive at higher speeds than older drivers.

Story or Enactment:

Detail 4: A fraction is a way of representing part of a whole (as in a region/area model or a measurement model) or part of a group (as in a set model). A fraction is used to name a part of one thing or a part of a collection of things.

Story or Enactment:

Detail 5: In art, the principles of design are used to express ideas and create images. The design principles include proportion, rhythm, balance, emphasis, variety, and unity.

Story or Enactment:

Organizing Ideas

Generalizations are statements for which we can provide examples because they apply to many different situations.

For example, Mathematical functions describe how changes in one quantity or variable result in changes in another. ($y = mx + b$, $c = \sqrt{a^2 + b^2}$)

Big Idea:

"My Newfoundlander dog, Bear, is a good watchdog" is a fact.

"Newfoundlanders are good watchdogs" is a generalization.

Generalizations describe the characteristics of classes of persons, places, living and nonliving things, events, and abstractions.

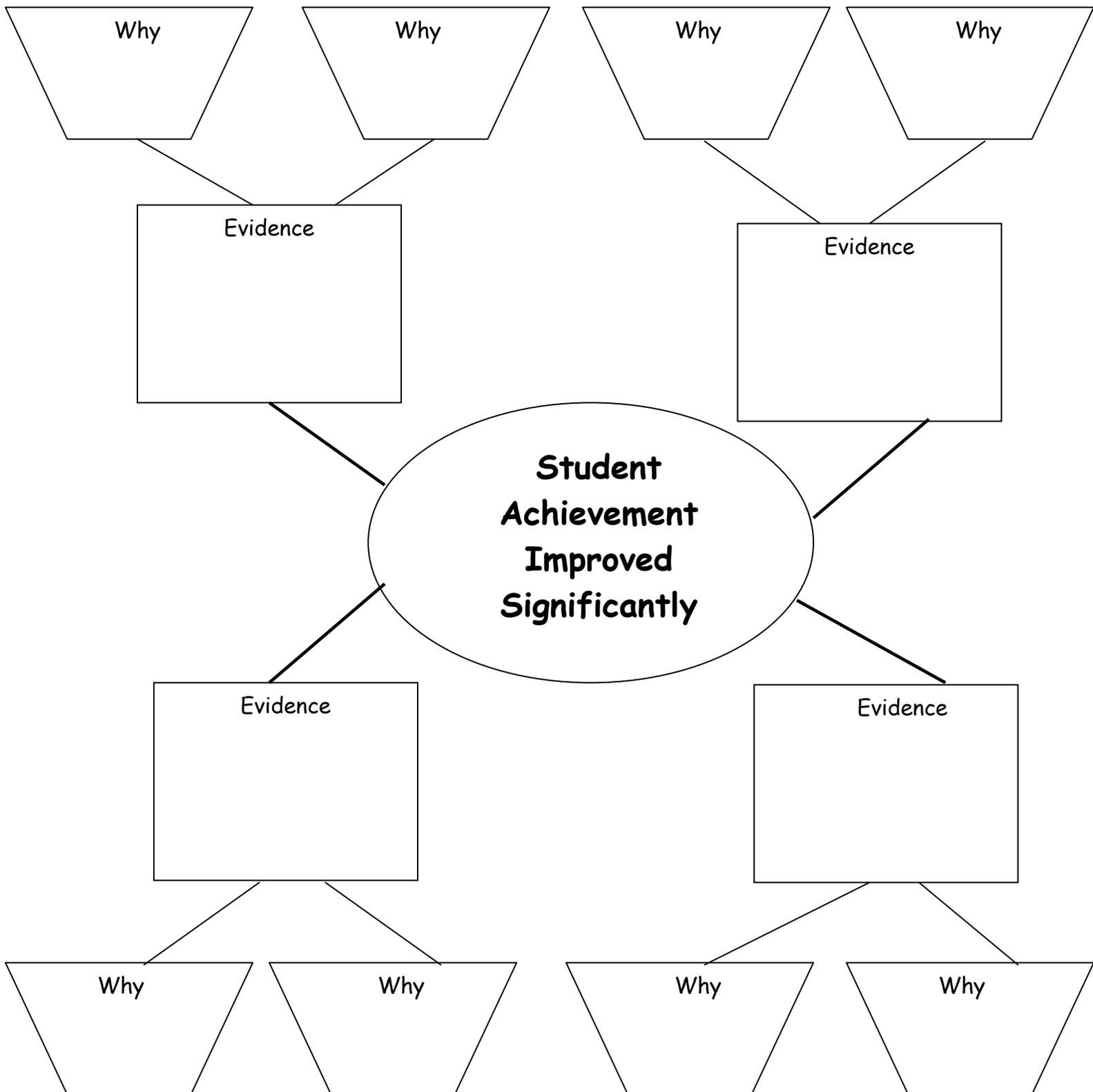
Principles are specific types of generalizations that articulate rules or relationships that apply to a number of specific situations. (Water seeks its lowest level)

Two types of principles:

- Cause-and-effect Principles (specific human behavior causes pollution) generally causal relationships.
 - Understanding a cause and effect principle involves:
 - Understanding the sequence of events that occur
 - Understanding the elements involved
 - Understanding the type and strength of relationships between and among those elements.
- Correlational Principles (increased cell phone use while driving increases the chance of an accident) not necessarily causal in nature, but in which a change in one factor is associated with a change in another factor.

Strategies to assist students in organizing ideas include using a graphic organizer and clarifying common student misconceptions. (Generalization: During a recession, unemployment rises and production declines. Possible misconception: If the unemployment rate rises ...we are in a recession.)

Process/Cause-Effect Pattern Organizer



Word Categorization Activity

Definition
(in own words)

Essential
Characteristics
(what makes it distinct)

Word

Examples
(from own life)

Nonexamples
(from own life)

