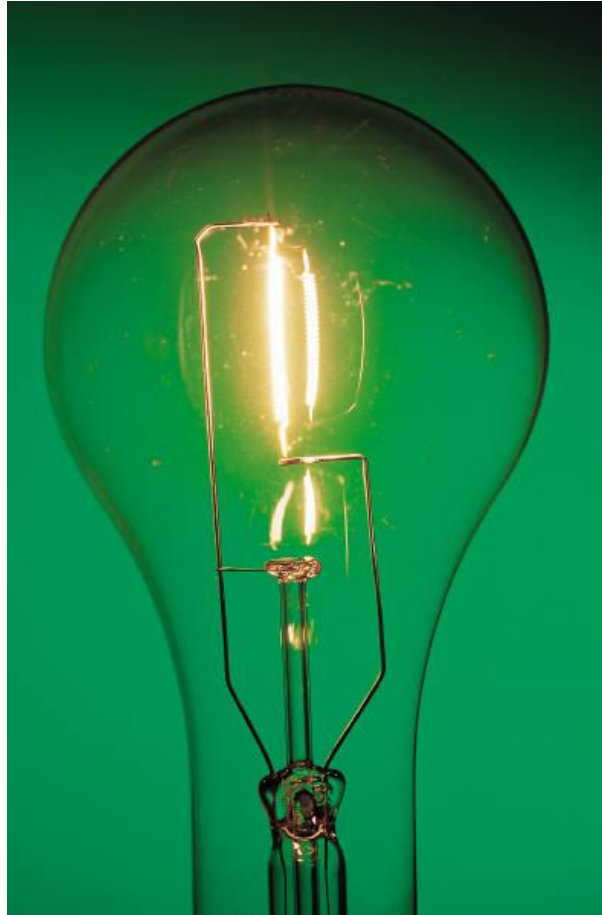


Creative and Critical Thinking Activities

To Do At Home



Activities adapted from materials
created by the FCPS AAP Office

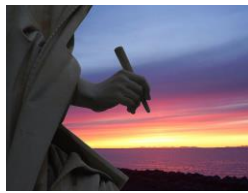
Modified from work done by Molly Hammel (McClain), AART
Vienna ES

What does “creative and critical thinking” mean?



- Critical and creative thinking are interrelated processes essential to **problem solving**.
- Creative thinking involves **constructing something original**.
- Critical thinking involves **logic and reasoning skills**.
- As we solve problems, we **navigate between both thinking patterns** across all disciplines.

Why teach creative and critical thinking?



- Creative problem solving is an **essential skill** for successful global citizens in the 21st century.
- Higher order thinking skills help students **construct meaningful understandings** of the curriculum.
- Students need **explicit instruction and exposure** to thinking strategies in context in order to be able to apply them.
- These strategies are **engaging** for children!

The Nine Critical & Creative Thinking Strategies



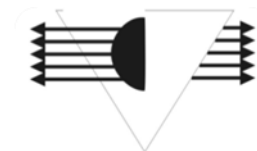
ANALOGIES

ANALOGIES



QUESTIONING

QUESTIONING



POINT OF VIEW

POINT OF VIEW



ENCAPSULATION

ENCAPSULATION



MINDMAPPING

MINDMAPPING



FLUENCY,
ORIGINALITY,
FLEXIBILITY &
ELABORATION

FLUENCY,
ORIGINALITY,
FLEXIBILITY &
ELABORATION



VISUALIZATION

VISUALIZATION



DECISIONS
&
OUTCOMES

DECISIONS
&
OUTCOMES



PLUS,
MINUS,
INTERESTING

PLUS,
MINUS,
INTERESTING

Based on the work of Dr. Richard Paul and Dr. Edward De Bono

FIRST QUARTER: Encapsulation, Questioning & Mindmapping

September



QUESTIONING is actively clarifying, exploring, challenging, and assessing the understanding of ideas.

Questioning is the probing and inquisitive nature that leads to deeper understanding. Thinking without questioning is like drinking without swallowing. It both propels students into investigations and acts as a regulator of information. Active learners are always questioning. Students who take responsibility for asking their own questions become more productive and engaged in their learning processes. Metacognition, or thinking about thinking, involves questioning our individual learning processes. Such questioning helps us solve problems by developing, implementing, and evaluating plans of action.

Questioning can be a powerful learning strategy that really gets kids minds going. Consider asking them questions from “Bloom’s Taxonomy” about the text they are reading.

Another idea would be to have your child come up with questions of their own about their reading to ask a parent, friend, or even themselves. “Blooms Taxonomy” can be a great tool for this. As you can see with the table below, questions require more critical thinking the farther you go down.

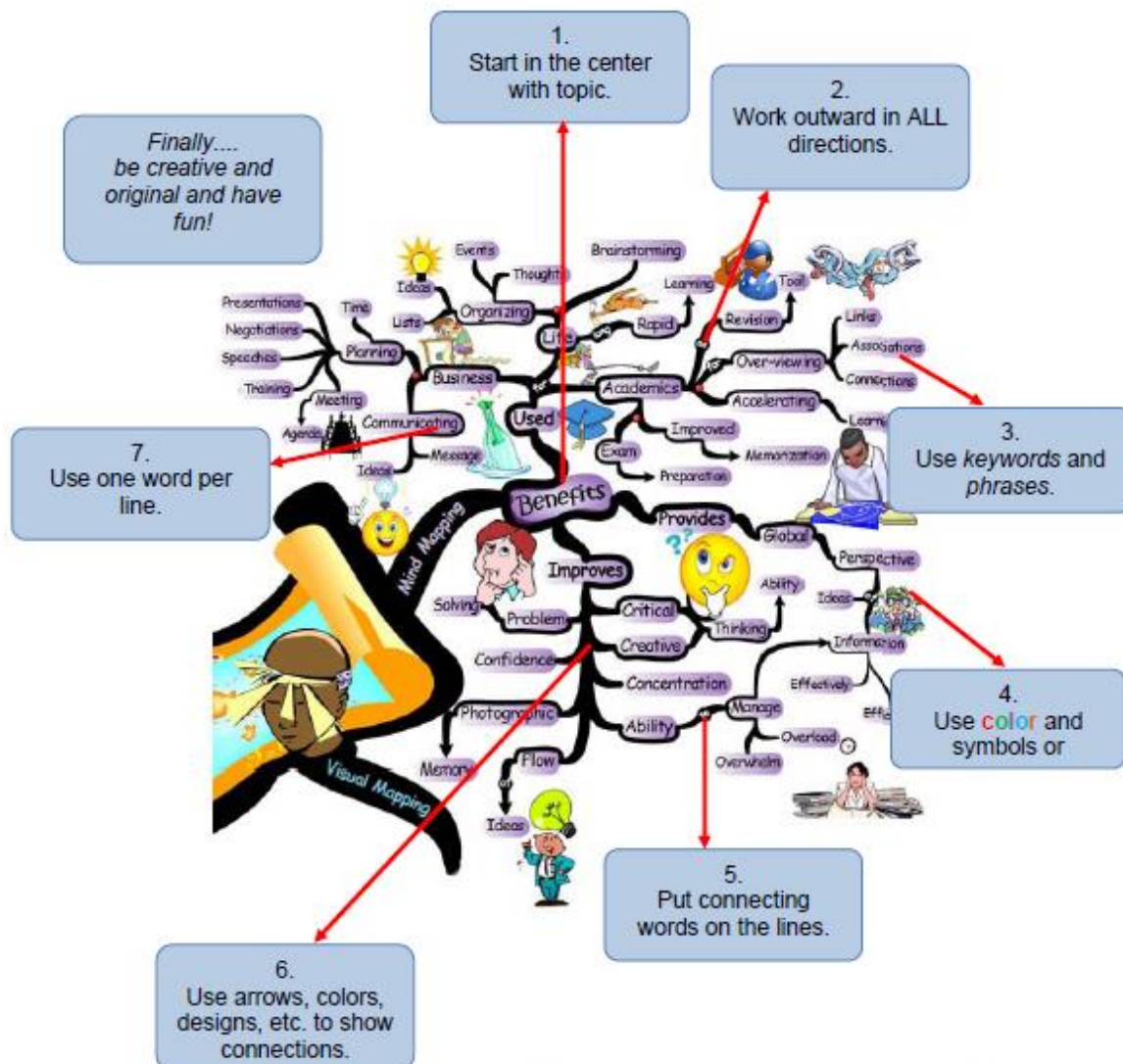
<i>Bloom’s Taxonomy</i>	<i>Thinking Prompts for Quality Questions</i>
Level I: Remembering	What is...? Where is...? How is...? Can you list three...?
Level II: Understanding	How would you compare...? Contrast...? What is the main idea of...? Which statements support...? How would you summarize...?
Level III: Applying	How would you use...? What examples can you find to...? How would you show your understanding of...? What would result if...?
Level IV: Analyzing	Why do you think...? What inference can you make...? What conclusions can you draw...? How would you categorize...?
Level V: Evaluating	What is your opinion of...? How could you determine...? Why was it better that...? Do you agree with the actions...? With the outcome...?
Level VI: Creating	How would you improve...? What would happen if...? Can you invent...? How would you adapt _____ to create different...?



MINDMAPPING is recording information with supporting ideas and examples branching out from the main idea.

Mindmapping both helps make visual representation of ideas around a central idea as well as provides a canvas for organizing ideas and representing connections. It is a method of visual note taking that helps students organize information in unique and personal ways. It helps them retain, remember, and recall information. It also allows students to see the whole picture and make connections among related ideas without interruption. As students begin to work with more information in the content areas, this is a key skill which is especially important for visual learners and students who enjoy making connections among ideas.

Mindmapping Guidelines

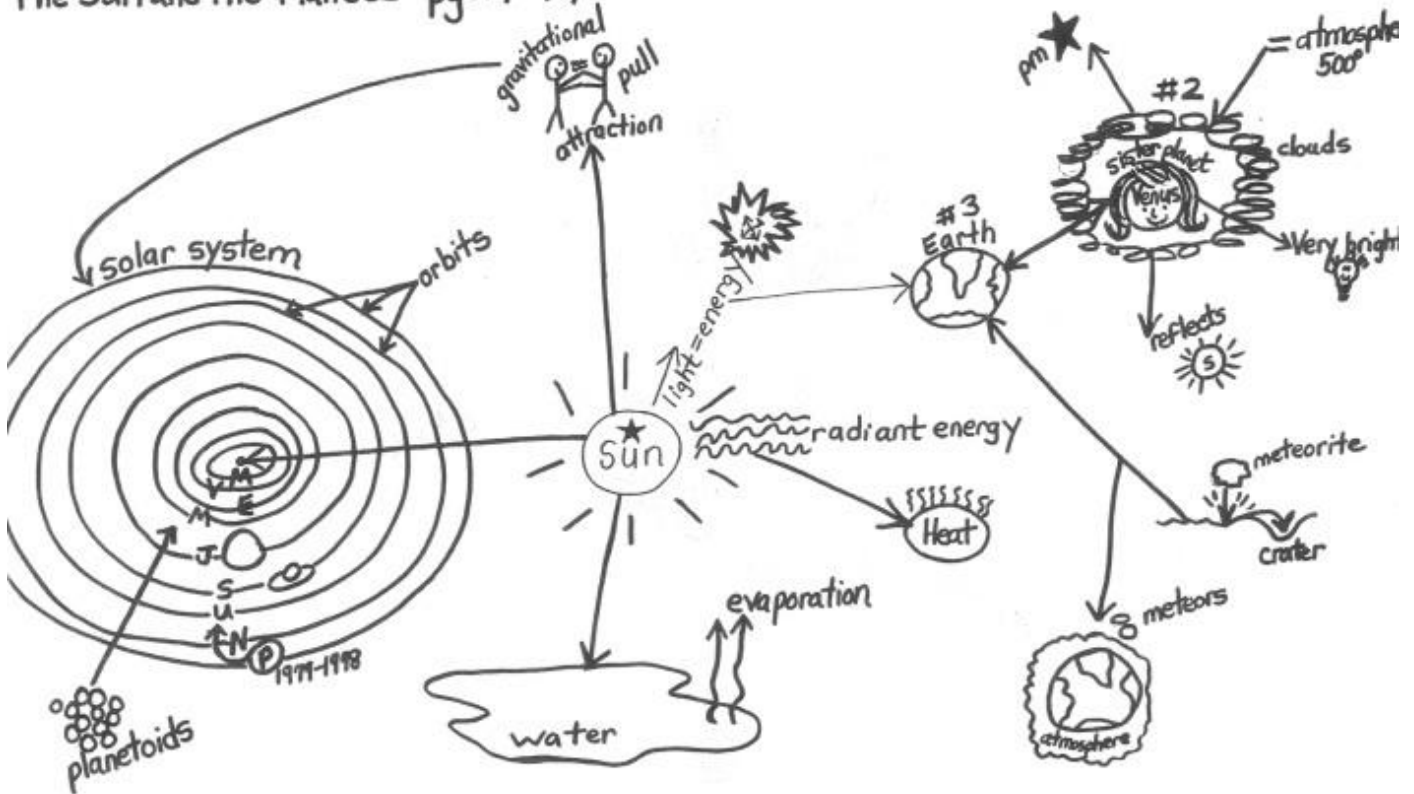


Steps form *The Brain Book* by Peter Russell reprint in *Seven Ways of Knowing* by David Lazear. Also based on *Mapping Inner Space: Learning and Teaching Visual Mind Mapping* by Nancy Margulies, Nusa Maal.

MINDMAPPING (continued)

Mindmapping is a lot of fun. You and your child can write a word or draw a circle in the middle of a page. Next, draw lines and new circles to ideas and words or pictures that connect to the original word. For example, maybe your child is interested in space. Together you could create a mind map of all that you know about space and then add things that you want to investigate.

The Sun and the Planets pgs. 7-27



by: Mrs. Lawrence

SECOND QUARTER: Encapsulation, Point of View & Visualization

November



ENCAPSULATION *is stating ideas in precise and concise form.*

In a day and age of sound bytes and quick moving information, encapsulation requires students to **synthesize** information and nuances to get to the heart of the matter and **capture the essence** of an idea, object or activity and then communicate their thoughts clearly. It is not a summary and does not involve simply stating the main idea or restating information or opinions. Encapsulation is a critical thinking strategy which helps students **organize** their thoughts and focus on the main idea and key words.

Encapsulating a Period of Time

One way to work on encapsulation with your child is to help them think about time capsules, and to think about a word, image, or object that encapsulates a period of time, whether it be a day, week, month, season, year, decade, etc. For example, when students returned from summer break, I asked them what words or images encapsulate their summers.

“How would you encapsulate _____?”

Encapsulating an Academic Topic, Text, Unit, etc.

A variation on the idea above is to encapsulate an academic topic, text, unit, etc. For example, you might ask a fourth grader how he or she would encapsulate the Declaration of Independence. Or, you might ask a first grader what words or images they might use to encapsulate natural resources.

“How would you encapsulate this _____?”

License Plate Activity

Vanity license plates are an example of encapsulating an idea with letters and symbols – try creating your own with your child!



December



POINT OF VIEW *is analyzing how different people might look at the same idea or situation.*

One of life's biggest challenges is accepting that there are numerous points of view and rarely one right way to view the world. Exploring alternative points of view is critical to understanding history and problem solving in the present and future. It helps broaden students' thinking and demonstrates that an idea should be examined from many points of view before an opinion is formed. It provides experiences for open-ended receptive thinking and empathizing with the opinions of others that helps make sense of our complex and multicultural world.

Cubing Strategy

Each side of the cube will provide a writing prompt that addresses one aspect of the topic. The six sides are:

1. **Describe**- Students will describe the topic as thoroughly as possible in words, including as many details as they can think of.
2. **Compare**- Students will compare and contrast the topic to something else, finding similarities and differences.
3. **Associate**- Using free association, students will list things that this topic brings to mind.
4. **Analyze**- Students will break the topic down into its component parts and materials, or analyze it in terms of causes, effects, or relationships.
5. **Apply**- Students will think of some of the ways this topic is used or what its affect has been in the world or everyday life.
6. **Argue for or against**- Students will come up with positive and negative attributes of the topic, and defend their argument.

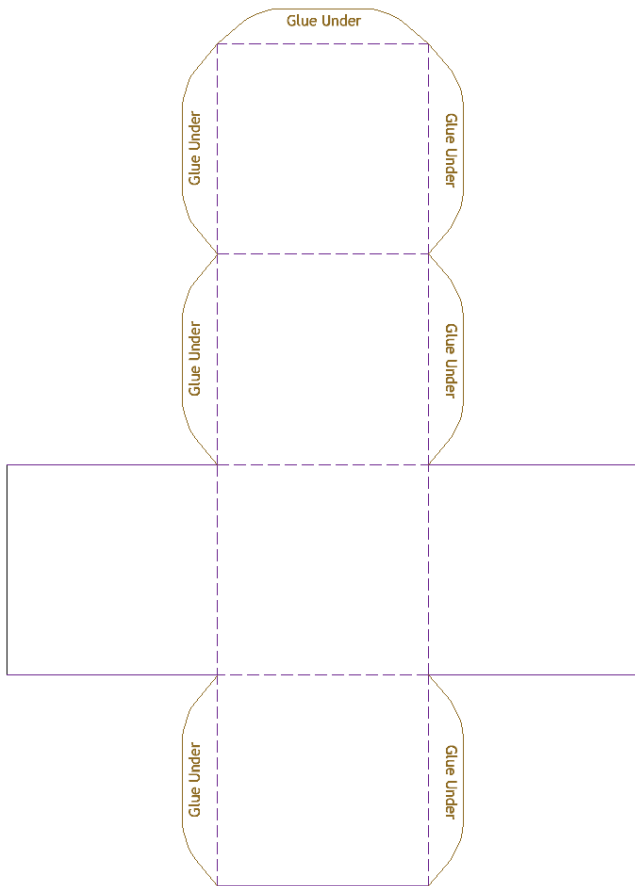
This technique can be used for virtually any topic. It works for all types of science topics such as biomes, endangered species, elements, planets, earthquakes, or volcanoes. Social studies topics including ancient Greece or Rome, the Civil War, the Underground Railroad, and the Gold Rush, as well as states, countries, continents or famous people can all be explored by cubing. In addition, cubing can be used to investigate various aspects of a work of fiction, such as characters, plot and setting.

Math Cubing Example:

- **Describe** how you would solve _____.
- **Analyze** how this problem helps us use mathematical thinking in problem solving.
- **Compare** this problem to another problem.
- **Demonstrate** how a expert in the field could apply this kind of problem to his or her work or life.
- **Change** one or more number (signs, etc.) in the problem. Give a rule for what that change does.
- **Create** an interesting and challenging word problem. Show how to solve it.

- Adapted from C.A. Tomlinson

You can find cube templates like the one below on the internet by searching for “cube template.”



January



VISUALIZATION *is consciously forming mental images of something that is not actually present.*

Visualization opens up student thinking by using sensory information to stimulate the imagination. Research studies have shown that visualization greatly increases the level and depth of comprehension of both spoken and written words. Visualization can be a powerful strategy for helping students set goals, picture the steps that need to be taken, consider alternatives, and visualize a plan to achieve their goals. It can take students to places not yet seen in order to: see from another's point of view, rehearse steps in goal setting and decision making, and reflect on past situations.

Goal-setting

Visualization is often a useful strategy when people are setting goals and planning out what steps will help them to achieve these goals. You could help your child to set goals, and then help them to visualize steps that they will take to achieve them. It may be even more effective if they visualize the steps and then draw the steps on paper, to be posted in your home. Next, help them set a time in which they want to achieve the goal, and help them to monitor it.

Reading

When your child is reading a book, encourage him or her to visualize what he or she is reading, perhaps every few pages, or perhaps after finishing a chapter. It is useful to go beyond just asking him/her to picture what is happening; ask your child to pretend he or she is actually in the story. Ask: what do you see? Hear? Smell? Taste? Touch? What are you thinking about what is going on around you?

Social Studies/Science

You could use a slight variation on the strategy described above with reading; when learning about a historical individual or event, ask your child to visualize it, and question him/her as described above.

Math

When working on a math problem, it is very helpful to visualize. Ask your child to visualize the problem, and sketch a picture of it. Encourage them to show all important details in the sketch.

THIRD QUARTER: Decisions & Outcomes, and Analogies

February



DECISIONS & OUTCOMES *is understanding that choosing from alternatives affects events which follow.*

Understanding cause and effect relationships helps students recognize the importance of examining the outcomes of multiple decision options before embarking on a course of action. The concept of examining outcomes is relevant for all students as they learn to consider both short-term and long-range consequences in the decision making process.

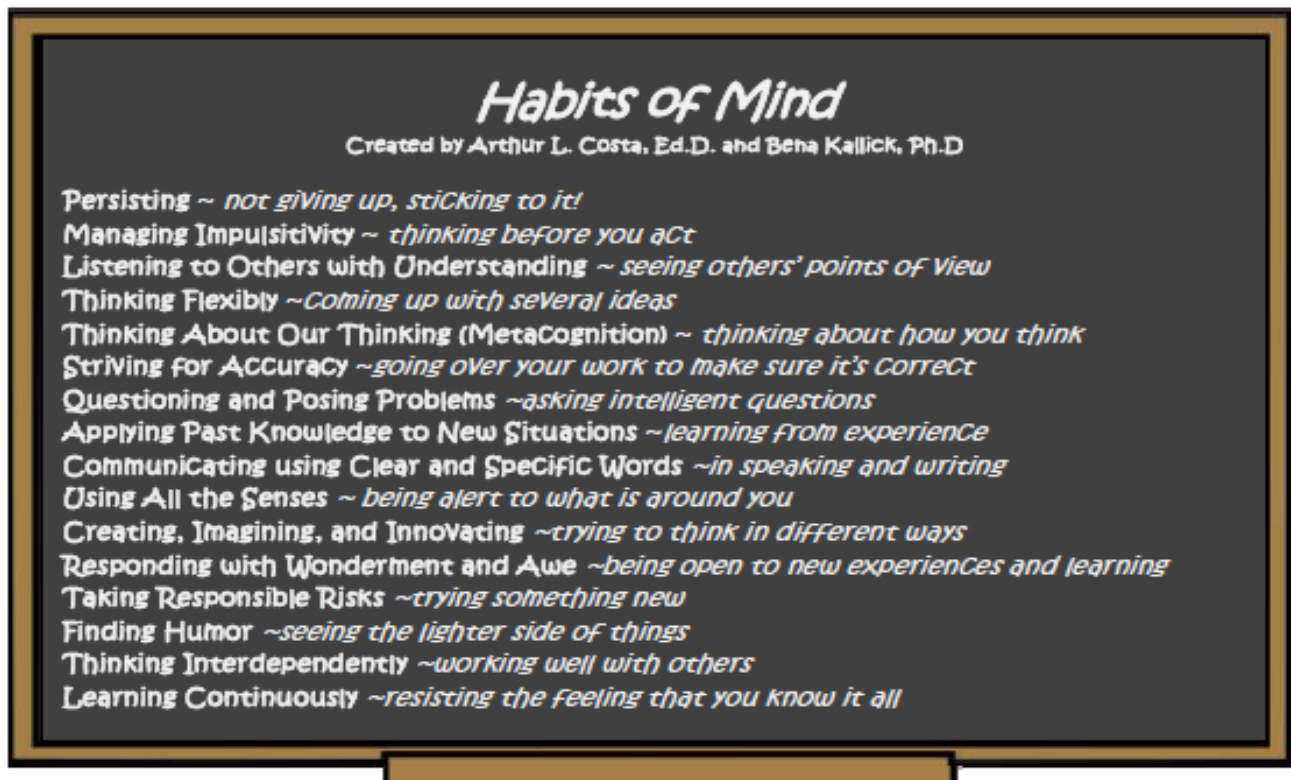
Buying Things

Your child may want to make a purchase. This would be a great time to consider the short term consequences (the purchase may use up all of their savings, they may have to forego other purchases for awhile, etc.) and long-term consequences (it could be less expensive if they wait, a newer, improved model may come on the market, it may be impulse buying and later they may regret spending the money.) These are important considerations for children to think about that will carry on into adult life.

This strategy also works well for decisions about what sport to play, whether or not they do their homework, and many others as they realize that all decisions have outcomes that must be considered.

The Habits of Mind & Decision-Making

Below are the “Habits of Mind.” It is helpful to talk about and refer to them as you and your child make decisions. Talk about which of them you use to make various decisions and how it is helpful.



March



ANALOGIES mean comparing two items in order to perceive similarities.

Analogies are a powerful teaching and learning tool because they build upon the brain's natural inclination to draw connections and comparisons as we learn new material. A facility for working with analogies gives students a structure for generating creative ideas, seeing complex relationships, and making unusual comparisons. They stimulate the imagination and lead students to deeper understandings by connecting things that do not always appear connected.

Science

A seed is like a sculpture because...
Which constellation is like your best friend?
Which is more like a book – a cloud or a rainbow?
How are your friendships like an electrical circuit?
How is a snowstorm like the Internet?
Which is lighter – a wish or a cloud?
Words are like gardens because...
What would you describe as a “calm explosion?”
How is photosynthesis like a river?
The life cycle of _____ is like a book because...

Mathematics

How is multiplication like tap dancing?
How is solving a word problem like taking a bath?
Fractions are like scrambled eggs because...
How are decimals like the explorations in the New World?
Which geometric shape is most like you? Explain.
Which feels more heavy, long division or finding common factors?
Finding number patterns is like _____ because _____.
What math activity is most like a mountain?
What math activity is most like a web page?
The process of division is like a food web because...

Social Studies

How is a government like a blueprint?
How is a colony like a new pair of shoes?
The Internet is like a printing press because...
Free expression is like a garden because...
When are you most like a city?
The writing of the Declaration of Independence was like the building up of a thunderstorm because...
General Lee is most like what animal?
Dr. Martin Luther King, Jr. is like the space shuttle because...
Dancing is like writing history because...
Beethoven is like Van Gogh because...
What is an example of a “disjointed connection?”
What were the unlimited boundaries of the colonies?

FOURTH QUARTER: Plus, Minus & Interesting and Fluency, Originality, Flexibility & Elaboration

April



PLUS, MINUS, INTERESTING (PMI) *is framing the consideration of positive, negative, and interesting aspects of an idea into one picture.*

The Plus, Minus, Interesting (PMI) is a critical thinking strategy that encourages students to develop the habit of looking beyond the polarity of “yes or no,” “wrong or right,” “my answer or your answer.” The goal of PMI is to develop independent thinkers who consider a range of ideas and/or possibilities and see beyond the obvious. The “interesting” category can also include questions.

You can involve your child in various decision making using a Plus, Minus, and Interesting chart. Decisions on where to go out to eat, what to do during the day, or what will happen if chores are not completed.

Step 1: Identify Stakeholders. Who will be impacted by the decision? Think of as many people as possible.

Step 2: Identify various possibilities of the decision that may be positive, negative, or interesting.

Step 3: Consider all viewpoints and make a final decision.

Variations: Consider making a Plus, Minus, and Interesting chart for different stakeholders.

<u>PLUS</u>	<u>MINUS</u>	<u>INTERESTING</u>

May



FLUENCY, ORIGINALITY, FLEXIBILITY & ELABORATION (FOFE) *is the production of many ideas, the expression of new ideas, and the recombination of ideas.*

We know that often the best ideas and solutions are not the first ones that came to mind. FOFE provides opportunities for students to generate many ideas and think in unusual ways without fear of judgment. Students who practice FOFE are more able to make inventive or creative connections between ideas. The process of suspending judgment is important to brainstorming and maintaining an open mind. Fluency and flexibility open up the thinking of students to consider many possibilities, and originality and elaboration stretch the uniqueness of their thinking.

Rally Robin

The purpose of this activity is to generate a list as quickly as possible.

Step 1: Choose a category that can result in a list (animals, sports teams, states, beach supplies).

Step 2: Person A states one item they can think of.
Person B states another item they can think of.
This continues until someone repeats an item on the list or cannot think of another one.

Variations:

- Create the list before doing the Rally Robin individually
- Write down the items on the list then try to create categories for the items in the list (no other category)
- Play with more than one person

This is a great strategy to use with your children to generate ideas for a family trip, a way to spend the weekend, the best pet for the family, creative solutions to problems that arise and other situations that lend themselves to multiple ideas for consideration.