



ThinkingFoundation

www.thinkingfoundation.org

www.thinkingfoundation.org



NUA's

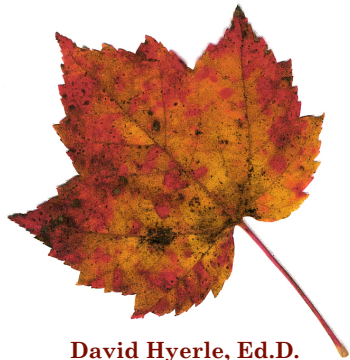
Teaching for Intelligence:
Believe to Achieve

CONFERENCE

November 3 to 5, 2006

Minneapolis, Minnesota—Minneapolis Marriott City Center

www.thinkingfoundation.org



David Hyerle, Ed.D.

www.thinkingfoundation.org



"No, I don't want to change you, Darryl. But, sure, it would be great if you were completely different."

www.thinkingoutloud.com



COCHRAN!

www.thinkingoutloud.com

90% of all information
that comes to our brain is **visual**

40% of all nerve fibers connected to
the brain are linked to the **retina**

36,000 *visual messages per hour*
may be registered by the **eyes**

www.thinkingoutloud.com



Schematic Side View of Cortex Shows Tree-Like Branching of Neural Networks

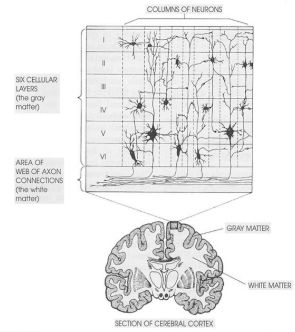


Illustration by Lydia KEELEK

Source: Schoenfeld, R. (1995). *A Celebration of Neurons: An Educator's Guide to the Human Brain* (p. 46). Alexandria, VA: Association for Supervision and Curriculum Development.



How the brain works.

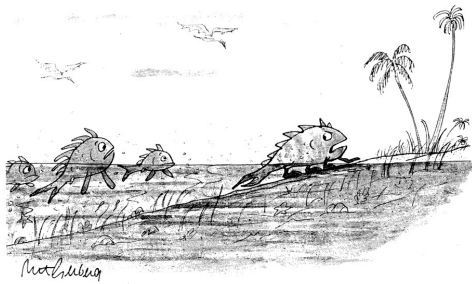
Written or spoken messages are necessarily *linear* sequences of concepts and propositions. In contrast, knowledge is stored in our minds in a kind of *hierarchical* or holographic structure.

When we generate written or spoken sentences, we must transform information from a hierarchical to a linear structure.

Conversely, when we read or hear messages, we must transfer linear sequences into a hierarchical structure in order to assimilate them into our minds.

Novak and Gowin
Learning How to Learn, 1984

www.writingworkshop.org



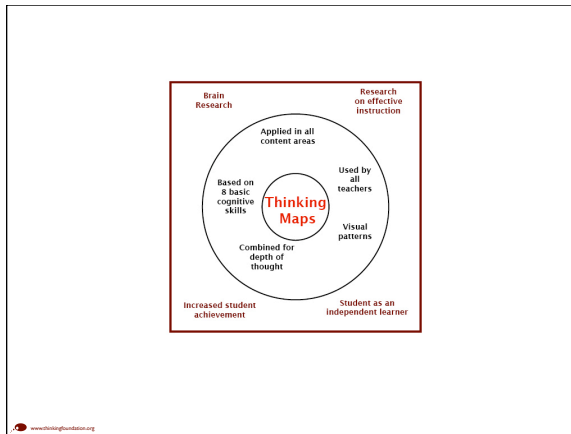
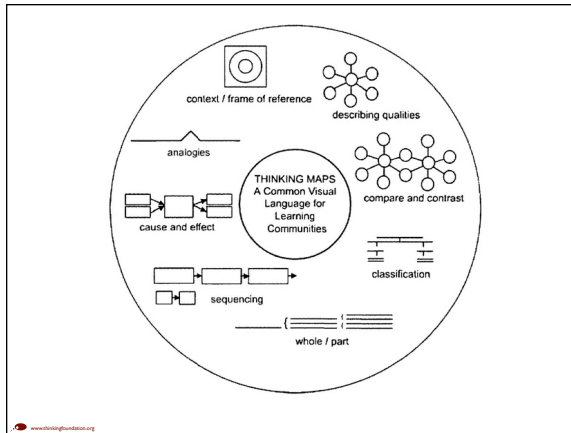
"Because I've already said all I can say in this particular medium."

www.writingworkshop.org



Cognitive Dissonance
between how the brain works
and how students think
and show what and how
they know content and concepts
through a Wall of Text.

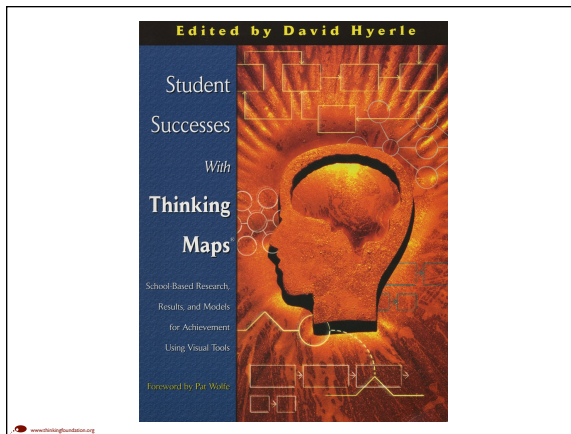
www.writingworkshop.org



Neuroscientists tell us that the brain organizes information in networks and maps. What better way to teach students to think about ideas and organize and express their ideas than to use the very same method that the brain uses.

Thinking Maps® is what the brain does.

Pat Wolfe
from *Student Successes With Thinking Maps Forward*



Questions from Texts, Teachers and Tests	Thinking Processes	Thinking Maps as Tools
How are you defining this thing or idea? What is the context? What is your frame of reference?	DEFINING IN CONTEXT	Circle Map
How are you describing this thing? Which adjectives would best describe this thing?	DESCRIBING QUALITIES	Bubble Map
What are the similar and different qualities of these things? Which qualities do you value most? Why?	COMPARING and CONTRASTING	Double Bubble Map
What are the main ideas, supporting ideas, and details in this information?	CLASSIFYING	Tree Map
What are the component parts and subparts of this whole physical object?	PART-WHOLE	Brace Map
What happened? What is the sequence of events? What are the substages?	SEQUENCING	Flow Map
What are the causes and effects of this event? What might happen next?	CAUSE and EFFECT	Multi-Flow Map
What is the analogy being used? What is the guiding metaphor?	SEEING ANALOGIES	Bridge Map

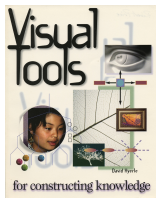
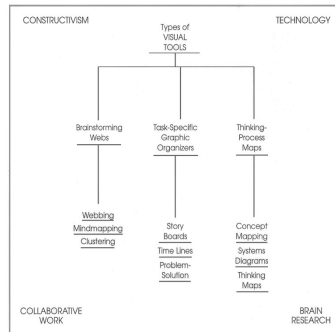


Regardless of the label, graphic organizers can help readers focus on concepts and how they are related to other concepts. Graphic organizers help students read to learn from informational text in the content areas, such as science and social studies textbooks and trade books. Used with informational text, graphic organizers can help students see how concepts fit common text structures. Graphic organizers are also used with narrative text, or stories, as story maps. Graphic organizers can:

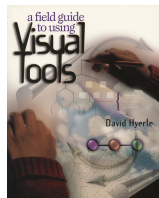
- help students focus on text structure as they read;
- provide students with tools they can use to examine and visually represent relationships in a text; and
- help students write well-organized summaries of a text.



Are all graphic organizers the same?
Are there different types?
What happens when there are too many?



Hyerle, 1996

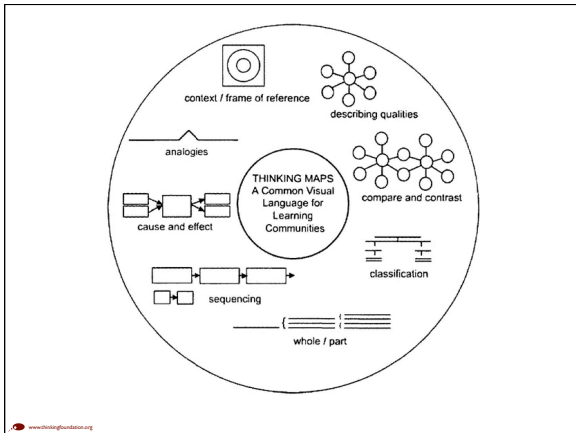
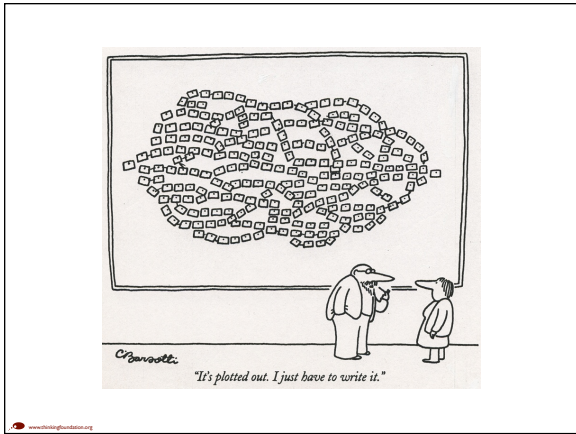


Hyerle, 2000

Visual Tools Research

A.S.C.D.

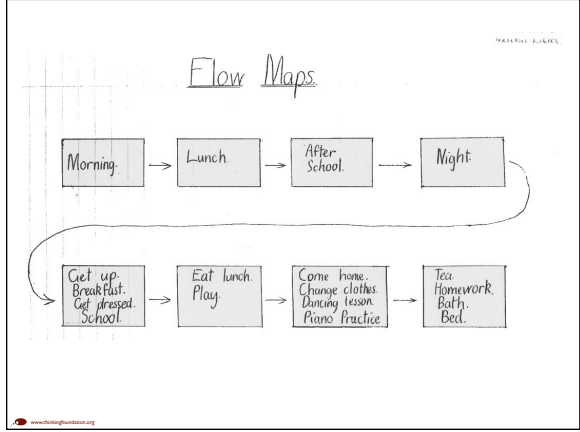
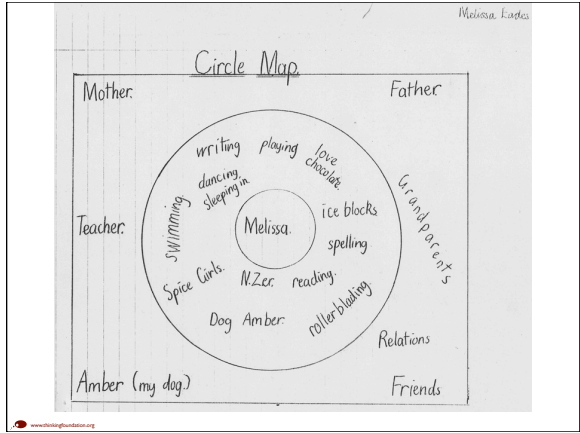
Association for Supervision and Curriculum Development

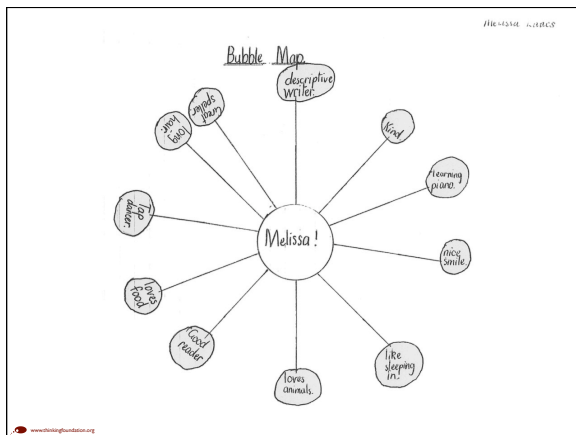
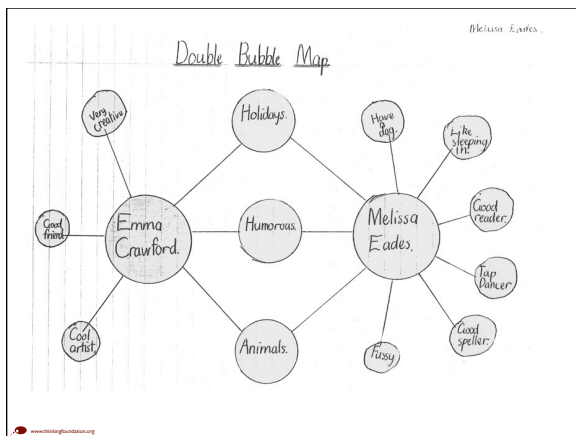
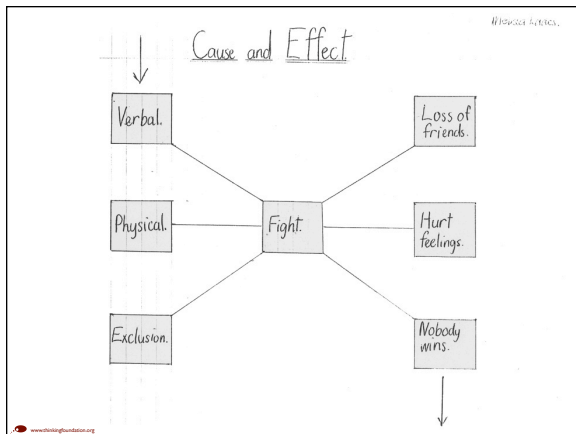


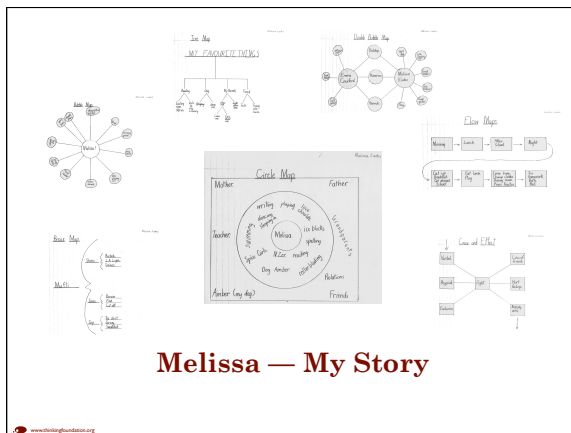
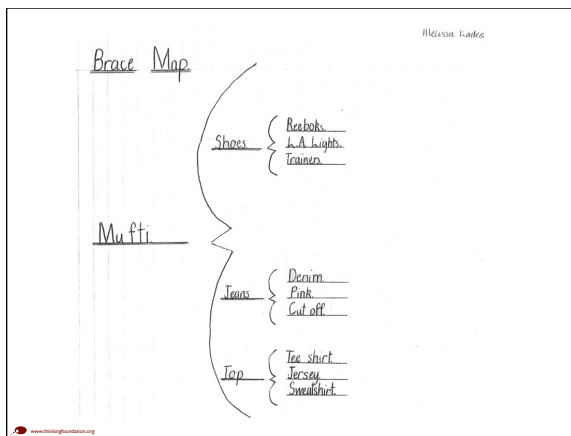
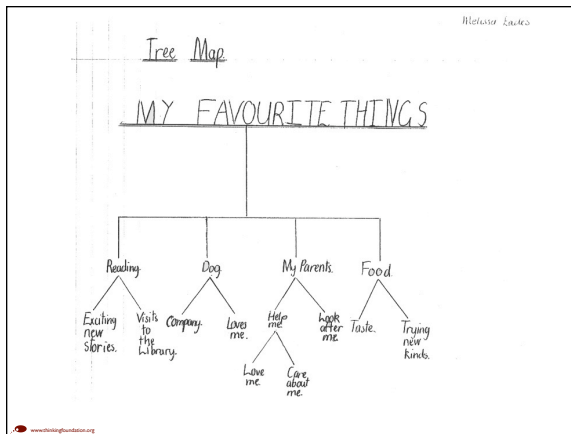
Thinking Maps

TOOLS FOR LEARNING

David Hyerle, Ed.D. INNOVATIVE LEARNING GROUP

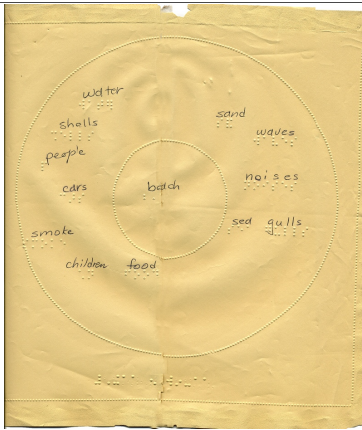








Sara Fanelli, My Map Book



My Trip to the Beach
by David Rirena



One summer day I went to the beach. My Mom took me to the edge of the beach. I heard seagulls and the water splashing. The children were playing in the sand.

I touched some shells and felt the sand on my feet. The shells were hard and the sand was wet.

I smelled the salty air and tasted the salty water.

I liked the trip to the beach. I wish I could go again.

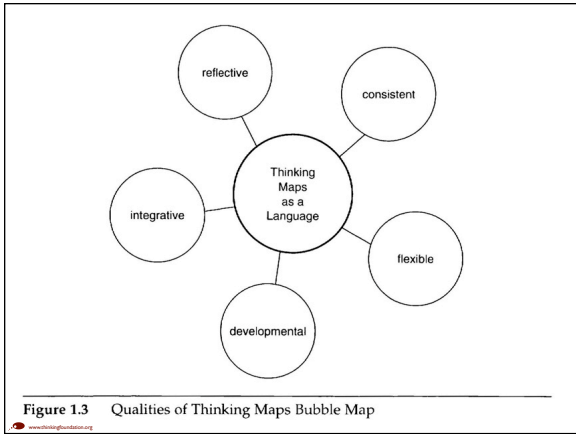
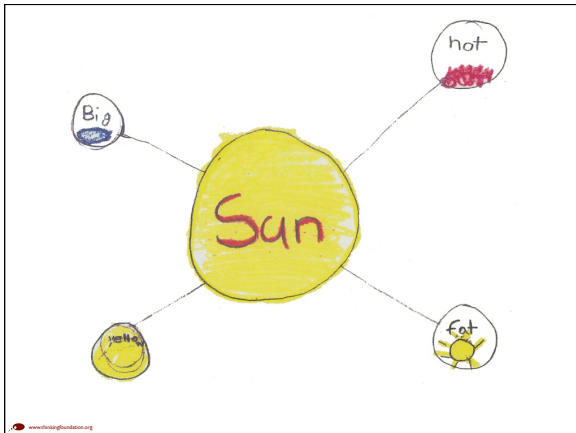
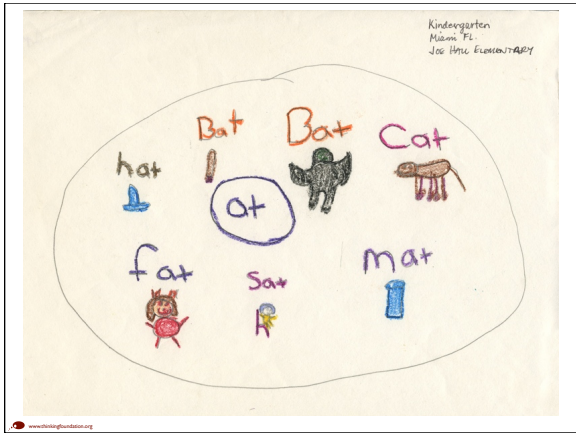
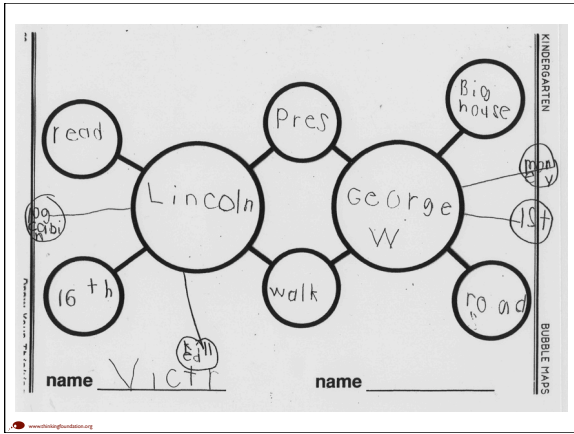
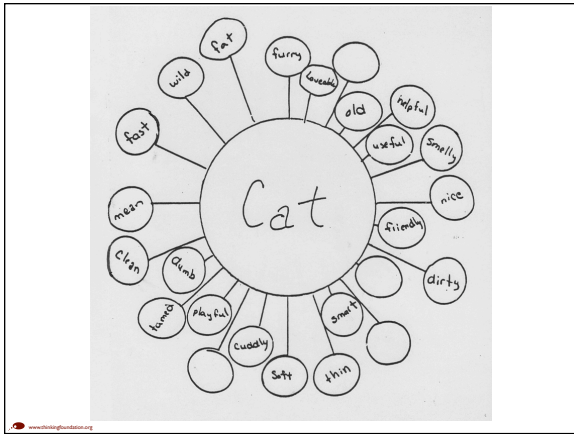
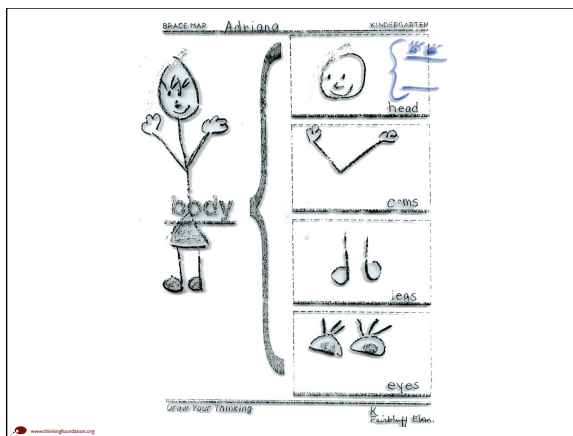
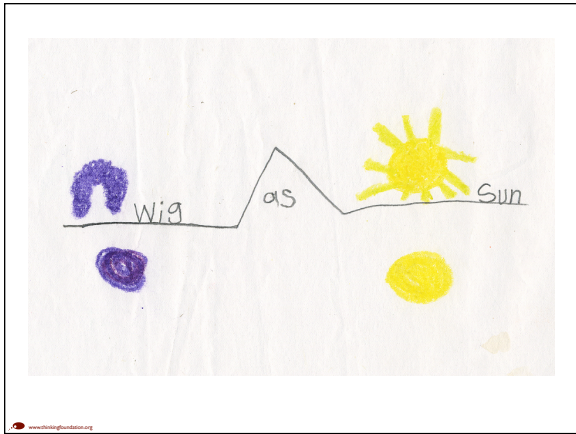


Figure 1.3 Qualities of Thinking Maps Bubble Map





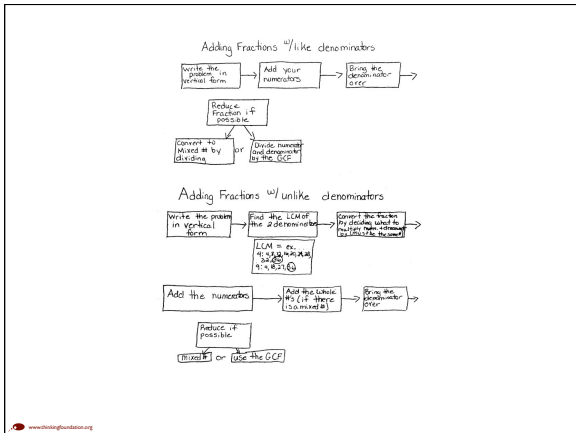


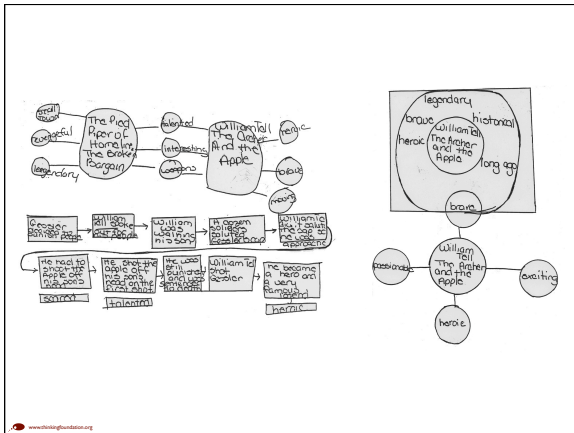
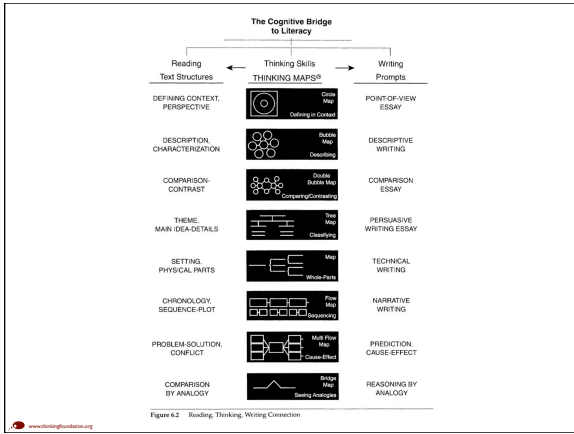
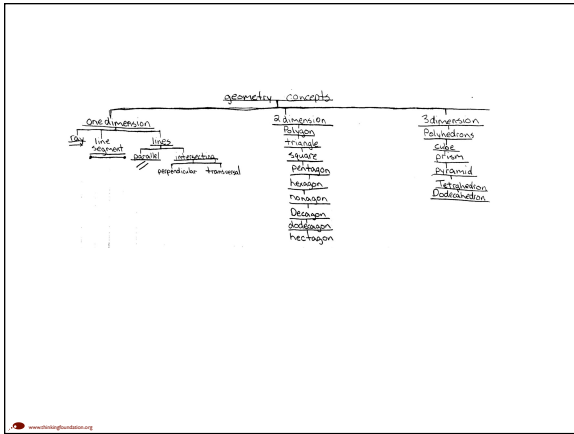


APPLYING THE RESEARCH ON INSTRUCTION: AN IDEA WHOSE TIME HAS COME

FIGURE 1.3
Categories of Instructional Strategies That Affect Student Achievement

Category	Ave. Effect Size (ES)	Percentile Gain	No. of ESs	Standard Deviation (SD)
Identifying similarities and differences	1.61	45	31	.31
Summarizing and note taking	1.00	34	179	.50
Reinforcing effort and providing recognition	.80	29	21	.35
Homework and practice	.77	28	134	.36
Nonlinguistic representations	.75	27	246	.40
Cooperative learning	.73	27	122	.40
Setting objectives and providing feedback	.61	23	408	.28
Generating and testing hypotheses	.61	23	63	.79
Questions, cues, and advance organizers	.59	22	1,251	.26



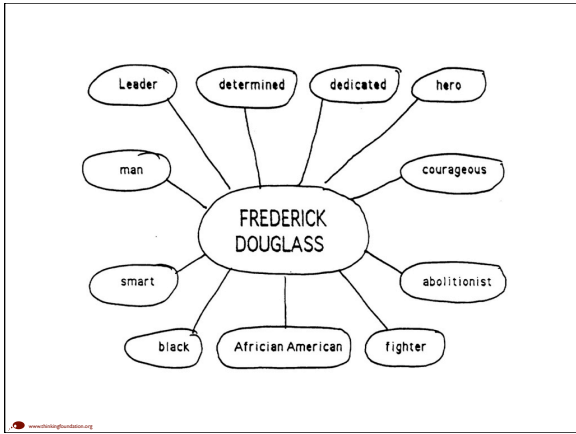


THINKING BACK ON: Matter Name: Lucas Nelson
 Teacher: Mr. Backet
 Date: _____

In the space below, use thinking maps to show what you have learned about the topic you have been studying:

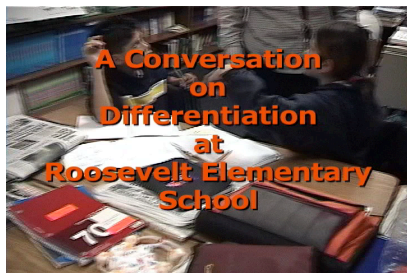
The thinking map for 'Matter' includes the following components:

- Atom:** A central circle labeled 'Atom' with branches for 'protons', 'neutrons', and 'electrons'. A larger circle labeled 'nucleus' contains 'protons' and 'neutrons'.
- States of Matter:** A central circle labeled 'Matter' with branches for 'solid', 'liquid', 'gas', and 'plasma'.
- Properties:** A central circle labeled 'Matter' with branches for 'mass', 'volume', 'density', and 'temperature'.
- Examples:** A central circle labeled 'Matter' with branches for 'wood', 'metal', 'water', and 'air'.
- Diagram:** A diagram of a cube with a smaller cube inside it, representing a solid object.



FREDERICK DOUGLASS' LIFE

OBSTACLES HE HAD TO OVERCOME	MAJOR ACCOMPLISHMENTS	THINGS THAT FREDERICK DID TO END SLAVERY
1. slavery	1. escaped to freedom	1. made speeches
2. never seeing his mom when he was little	2. learned to read and write	2. wrote books
3. never knowing his father	3. wrote articles and books	3. helped get people to fight against the south in the Civil War
4. being beaten and whipped	4. American consul to Paris	4. talked to people
5. having a law that makes him not able to learn to read and write		
6. not having enough clothes to wear or enough food		
7. being hunted by the slave catchers after he escaped		



SUNDAY Press-Telegram
 www.press-telegram.com

Elementary maps triumph

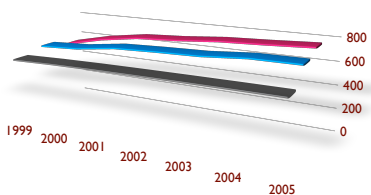
Education: L.B. school on verge of failure shapes up and wins.
 By Kevin Butler

LONG BEACH — One year ago her tenure as principal at Theodore Roosevelt Elementary, Stefania Eskandari had a score that was just one point away from being sent to state takeover. It had to be fixed, that she decided as she arrived, and she did it.

"We are outperforming, given my demographics," she says. "And students then write each trait that they brainstorm, such as..."

Reyna Turbeez, Jericho Williams and Tony Gonzalez, from left, 4th-graders at Theodore Roosevelt Elementary School in Long Beach, work together on a "thinking map" to compare and contrast characters in a book they are reading. (Bobby Martin / Press-Telegram)

A First Language for Thinking in a Multicultural School



- Annual increase expected by the state for Roosevelt's API base scores
- California state median base scores for all California schools
- Roosevelt Elementary's API base scores



Roosevelt Elementary School

Year Round School

Number of K-5 Classes: 55

Total Enrollment: ~ 1,150 students

Free Lunch: 100%

ELL Students: ~ 85%

Demographics:

Hispanic: 82%

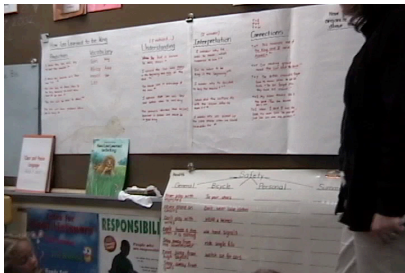
African-American: 9%

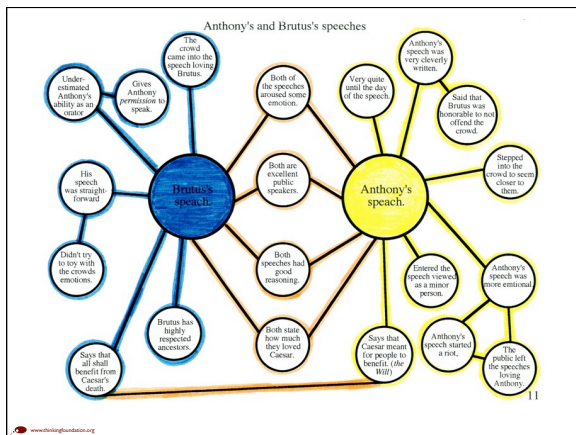
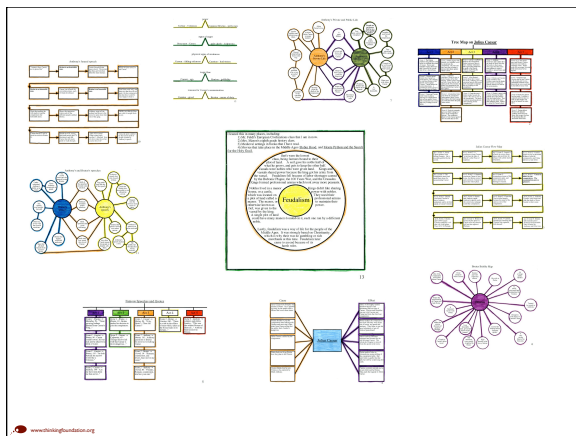
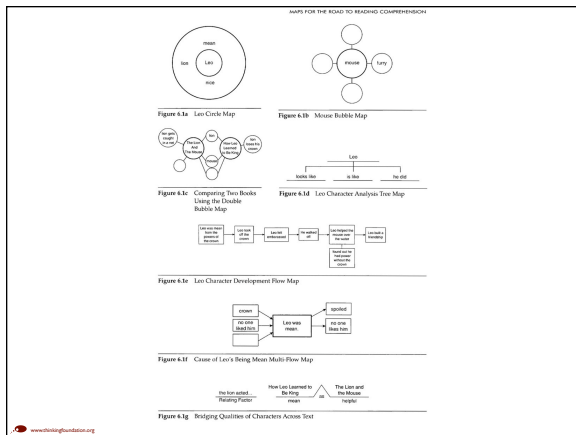
Asian: 6%

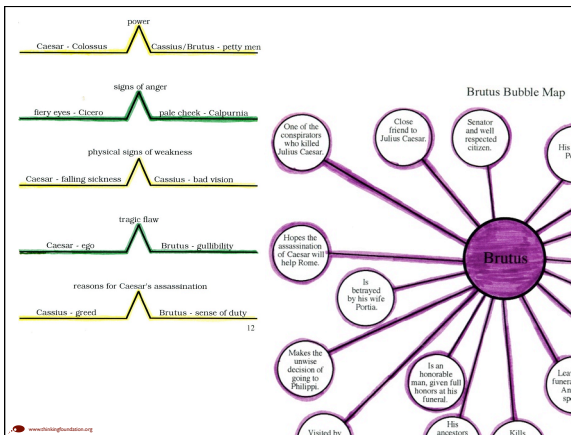
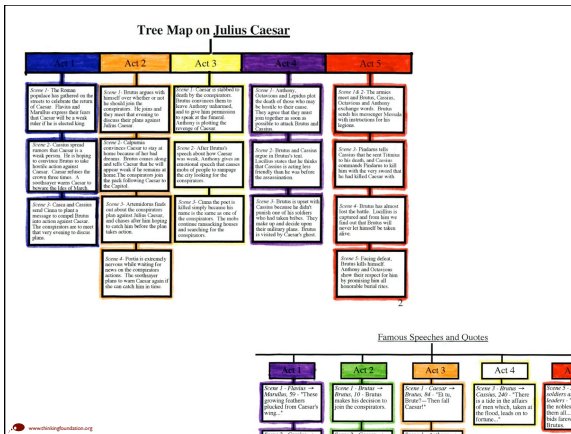
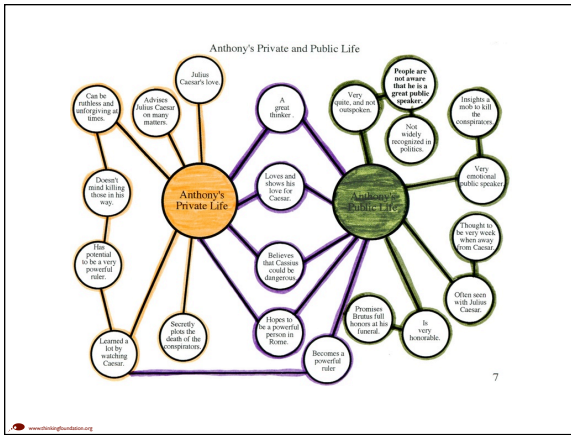
Other: 3%

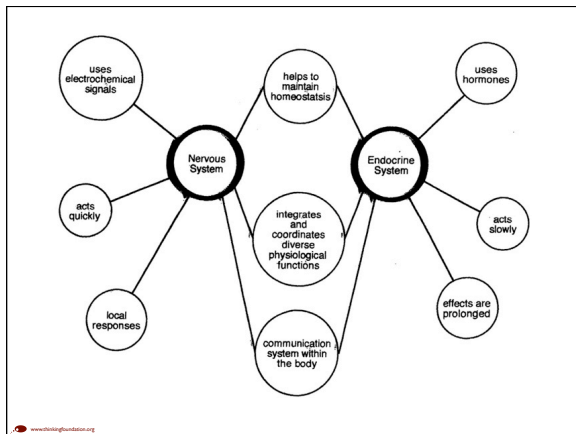
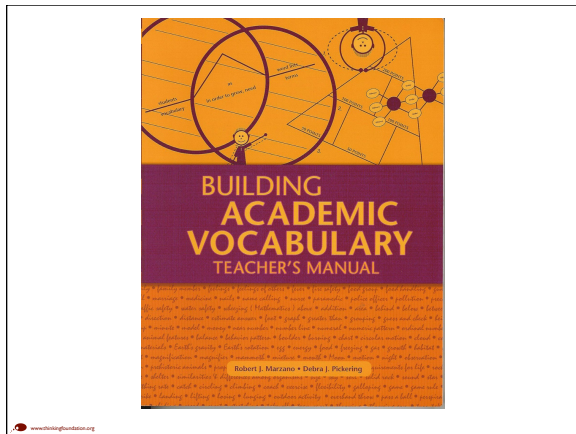
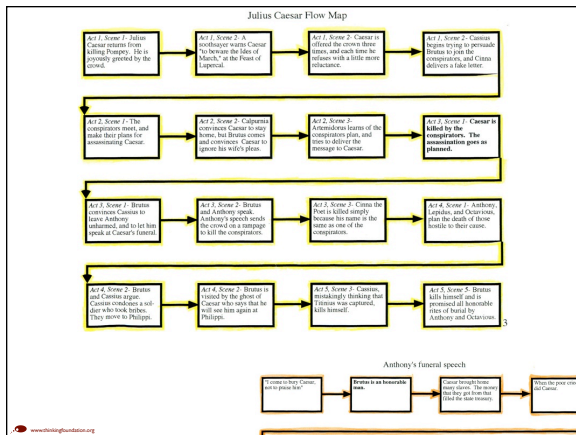


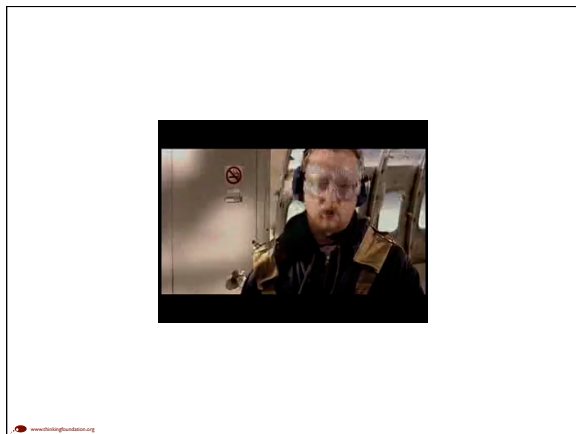
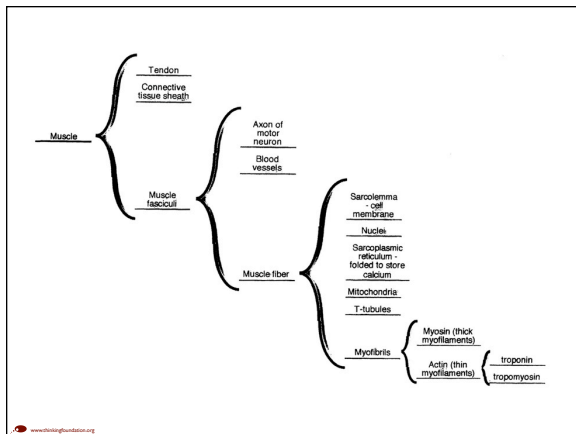
**How can adults influence
how children and youth
organize their thinking?**











The word organization is a product of how we think and how we act; [it] cannot change in a fundamental way unless we can change our basic patterns of thinking and interacting.

Peter Senge
The Learning Organization Made Plain
October 1991

www.thinkinghendon.org

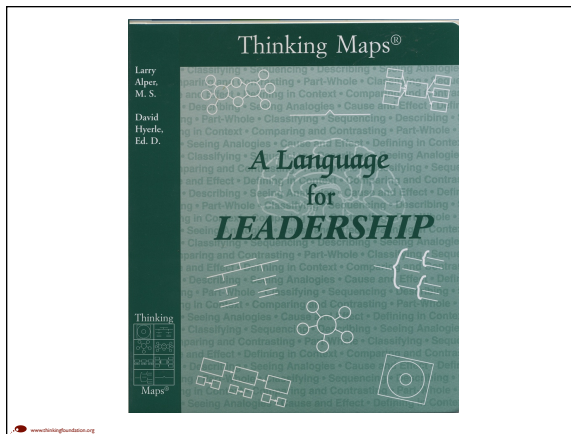


www.thinkinghendon.org

“We need a map,
we need a tree map,
we need to break
the plan down.”


Marcie Roberts
Norman Howard School Principal

www.thinkinghendon.org



“Modeling that tool for the board members has been phenomenal... and we are doing a training with the board members so can be proficient with the maps.”

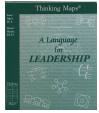
Marcie Roberts
Norman Howard School Principal



Leading and Learning

Purpose: using Thinking Maps as a common visual language in your learning organization for

- Applying** and improving thinking processes
- Communicating** ideas and points of view
- Generating** sustainable solutions and
- Assessing** progress over time.



Section 1
Introducing a New Language for Learning

Section 2
Learning a New Language

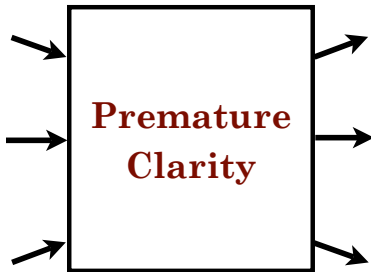
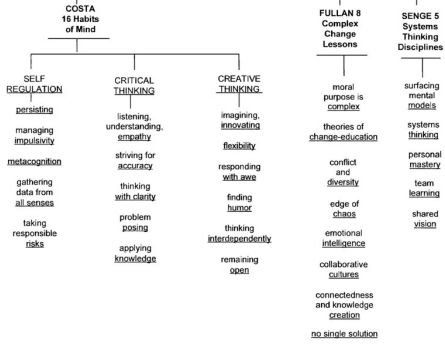
Section 3
Communicating with a New Language

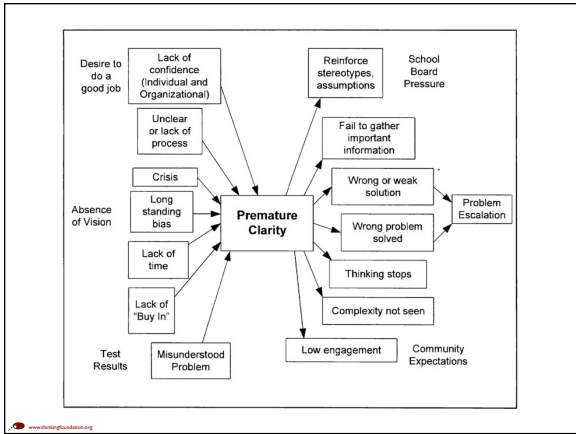
Section 4
Group and Organizational Development

Section 5
Guiding Thinking Maps Implementation

Section 6
Extending Thinking Maps Implementation

Connecting Dimensions of Organizational Learning





“Many would argue that we’ve used such a small part of our mental capacity because of our insistence on linear thinking.”

THINKING MAPS
A Common Visual Language for Learning Communities

context / frame of reference

describing qualities

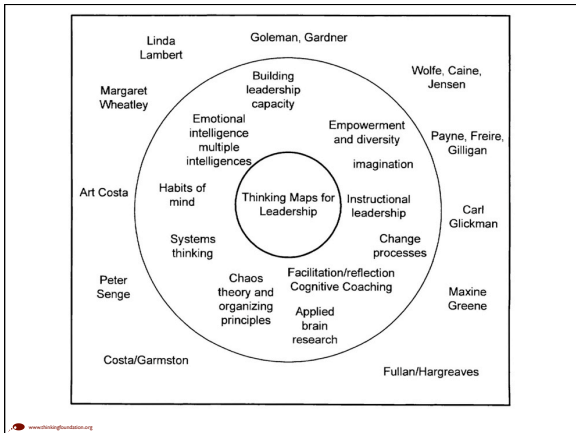
compare and contrast

sequencing

whole / part

cause and effect

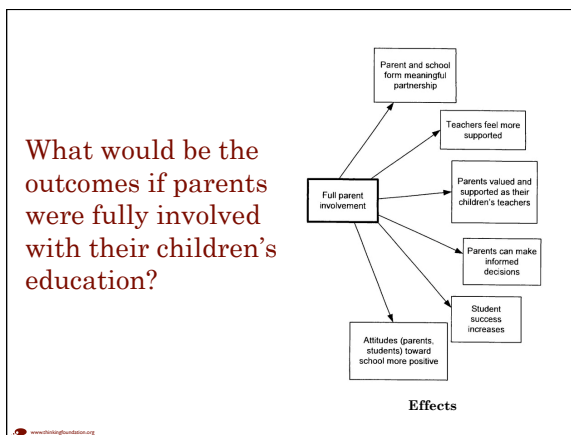
Margaret Wheatley
Leadership and the Sciences



Essential Leadership Questions	Thinking Processes Facilitated	Thinking Maps as Tools
How are we defining this topic? What is the context? What are our frames of reference which influence our points of view?	DEFINING IN CONTEXT	Circle Map
Let's describe the topic. Using adjectives and descriptive phrases, what are the sensory, logical and emotional attributes present?	DESCRIBING ATTRIBUTES/QUALITIES	Bubble Map
Let's compare our ideas. Where are the similarities? and differences? How does the present situation compare to our identified goal?	COMPARING and CONTRASTING	Double Bubble Map
How could we classify these ideas into groups or categories? What are the main ideas, supporting ideas and details in this information?	CLASSIFYING/ GROUPING IDEAS	Tree Map
Are there any physical, component parts and subparts that we need to analyze?	PART-WHOLE	Stack Map
What do we think happened? What is the sequence of events? Let's prioritize our solutions and then create a sequence plan of action.	SEQUENCING	Flow Map
What are the short- and long-term causes and effects of this event? What are the levers in the system? Given our solution, let's predict what will happen over time.	CAUSE-EFFECT	Multi-Flow Map
How is this situation related to other experiences we know? What analogy is posing our thinking?	SEEING ANALOGIES	Bridge Map

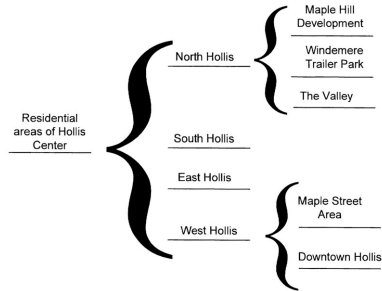
“What is essential is free exploration that brings to the surface the full depth of people’s experience and thought and yet can move beyond their individual views.”

Peter Senge
The Fifth Discipline

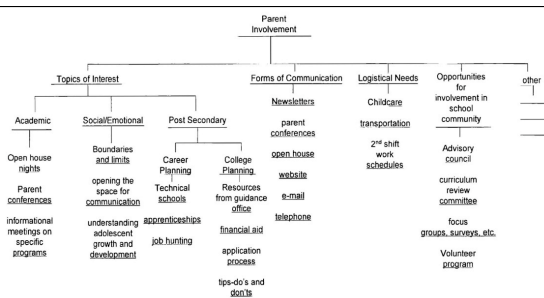




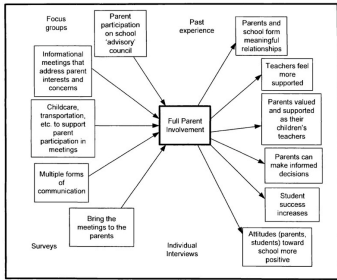
By comparing and contrasting other groups what can we learn that can inform our thinking?



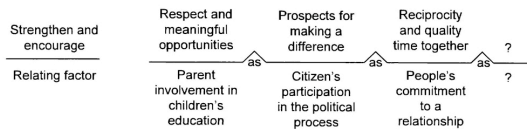
What is the residential structure of our community?



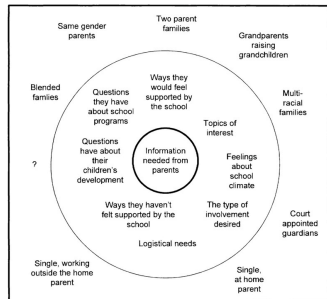
How can we organize the information we gathered?



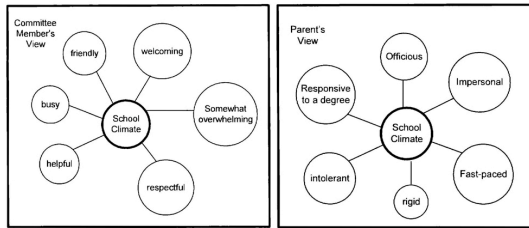
What would contribute to parents becoming fully involved?



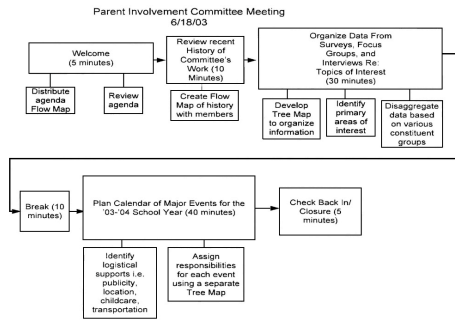
What is needed in a school to strengthen and encourage parent involvement?



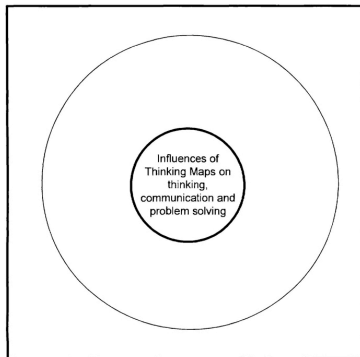
Who are the *parents* in our community?



Now that we have the information we need...



What are the steps and sub-stages of this work?



Thinking Maps is one of the most powerful tools that Learning Prep School uses to facilitate learning for students who have been unable to succeed in other educational environments.

Cynthia Manning, M. Ed.

www.thinkingmaps.org

...students can *see* themselves differently, as independent learners capable of “getting it”...

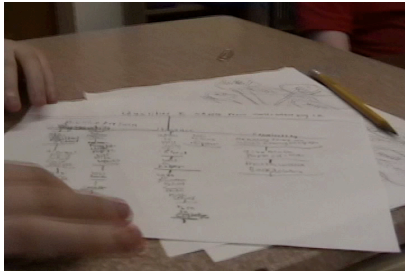
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“Thinking Maps give me a chance to learn.”

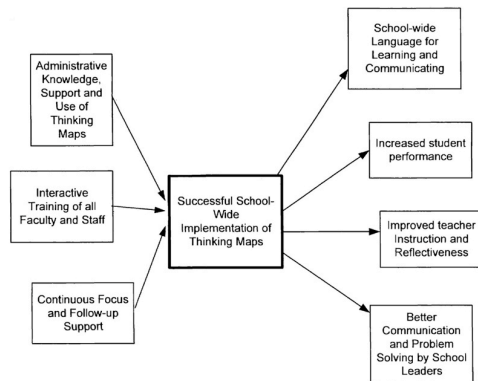
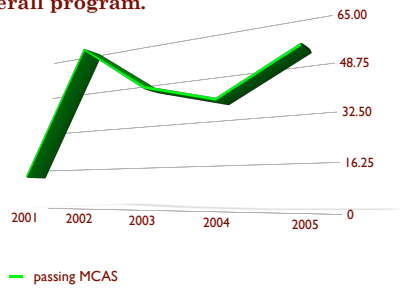
Learning Prep Student • West Newton, Massachusetts



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We now see the significant results of our students' performance through the use of these visual tools as integrated into our overall program.



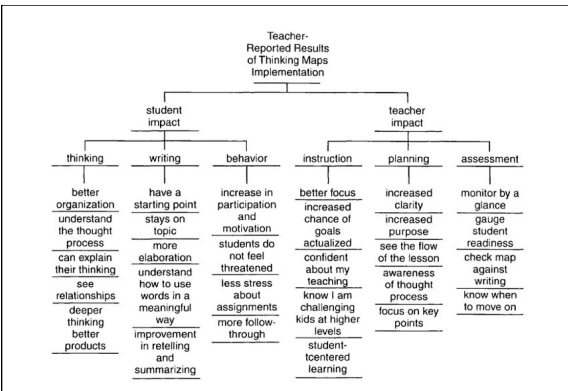


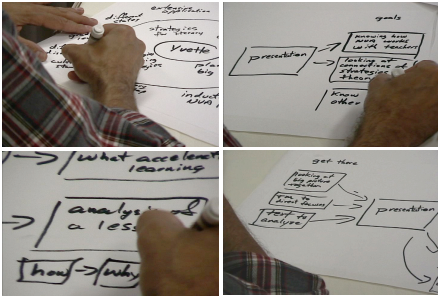
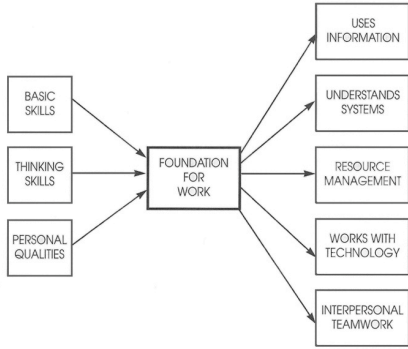
Figure 15.1 Teacher Reflection Results Tree Map

Characteristics of Today's and Tomorrow's Schools

SCHOOLS OF TODAY	SCHOOLS OF TOMORROW
STRATEGY	
<ul style="list-style-type: none"> Focus on development of basic skills Testing separate from teaching 	<ul style="list-style-type: none"> Focus on development of thinking skills Assessment integral to teaching
LEARNING ENVIRONMENT	
<ul style="list-style-type: none"> Recitation and recall from short-term memory Students work as individuals Hierarchically sequenced-basics before higher order 	<ul style="list-style-type: none"> Students actively construct knowledge for themselves Cooperative problem solving Skills learned in context of real problems
MANAGEMENT	
<ul style="list-style-type: none"> Supervision by administration 	<ul style="list-style-type: none"> Learner centered, teacher directed
OUTCOME	
<ul style="list-style-type: none"> Only some students learn to think 	<ul style="list-style-type: none"> All students learn to think

Source: Secretary's Commission on Achieving Necessary Skills (SCANS). (1991). *What Work Requires of Schools: A SCANS Report for America 2000* (p. 22). Washington D.C.: U.S. Department of Labor.

SCANS Cause-Effect Thinking Map: What Employers Demand of Workers



Questions to elicit goals of the planning conversation

Sample Questions

PLANNING:

1. Clarify goals
2. Determine Success indicators
3. Anticipate approaches, strategies, decision, and how to monitor them
4. Identify personal learning focus, data to be collected, and a plan for collecting evidence

REFLECTING:

Analyzing

Summarize impressions
Recall supporting information

Compare, analyze, infer, and determine cause-and-effect relationships.

Applying

Construct new learnings and applications
Reflect on coaching process and explore refinements.

What are some of the goals you have in mind for this lesson?

As you envision the lesson progressing, what will you be alert to as indicators that you are achieving your goals?

Given your previous experiences with these students and this content, what strategies will you use to help them? How will you know they are learning?

As you experiment with your instructional strategies, what skills are you interested in perfecting? What will you pay attention to in your own and your student's behavior to let you know that your strategies are working?

As you reflect on your lesson, how do you feel it went?

What did you notice in your student's behavior that indicated success?

What are some of your hypotheses about the factors that contribute to the success of the lesson?

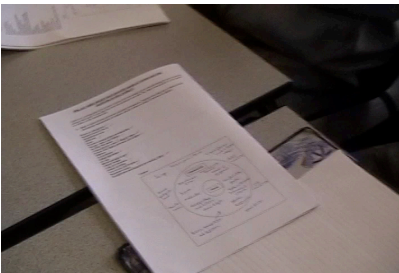
What new insights will you carry forth in your work? How might you apply them?

As you reflect on this coaching session, what did it do for you?
As you consider my role, what suggestions do you have to increase my effectiveness as a coach?



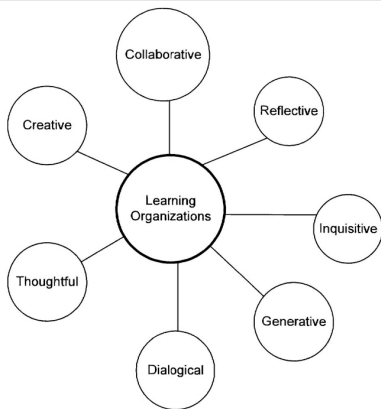
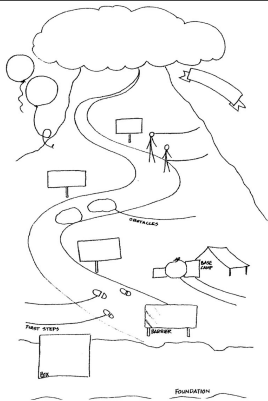
“It is a great metacognitive process for me.”

Yvette Jackson - Executive Director
National Urban Alliance for Effective Education



Testing

I used the flow map, and we have been using them so much that when I got done my first box I didn't need to use it because the flow map was in my head. I got my topic sentence down and my details just seemed to flow right out.





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