Mini-Grant

Graphic Organizers
and
How to Use Them

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Rationale for Graphic Organizers

I decided to apply to do this mini-grant since I use graphic organizers all the time within my Pre-GED class and also in diploma classes. I would not be able to teach without them.

Graphic organizers have the ability to "help your students classify ideas and communicate more effectively. Use graphic organizers within the class to structure writing projects, to help in problem solving, decision making, studying, planning research and brainstorming."
http://www.eduplace.com/graphicorganizer/

Graphic organizers are valuable tools for teaching and instruction. Unlike other teaching strategies, graphic organizers demonstrate a flexibility and endlessness in choices of use. A common trait to graphic organizers is their ability to show the order and completeness of the student's thought process. The teacher is able to see how the student understands the topic and this becomes clearly evident to the teacher and student when using graphic organizers. Using a range of graphic organizers shows both the close-up and the larger picture. Since many graphic organizers use short words or phrases, they are ideal for many types of learners including those for who English is a second language, and also for students with learning disabilities.
http://www.graphic.org/goindex.html

When used effectively, graphic organizers have the potential to foster learning in a number of areas. Chief among these are reading, comprehension, and vocabulary knowledge. Studies have indicated the ability of graphic organizers to substantially improve reading and vocabulary knowledge. Because the student is not merely reading a bunch of words but learning to understand the importance, or lack thereof, of particular concepts, and specific vocabulary words, the student is able to sift through the maze of words and attain better clarity. The student is able to understand the concept behind what he or she is reading, and is able to isolate text that is not important. This helps the student determine a main idea and build an entire story from there. This in turn boosts reading and writing skills and is especially beneficial to students writing an essay. It helps them structure essential ideas while eliminating non-essential ones. Vocabulary knowledge and comprehension skills have also been found to increase significantly after the use of these visual learning tools, also known as graphic organizers. (**http://www.graphic.org/organizers/1.html**)

According to research, the main reasons to use graphic organizers within the classroom setting are:

· To articulate the relationships between concepts outlined in the graphic organizer.

· To encourage students to contribute their ideas.

· To establish a connection between the material being learned and past learning.

· To refer to up coming material.

· To encourage structural analysis.

http://www.graphic.org/organizers/1.html

There is also a strong research base that supports the use of graphic organizers with students with learning disabilities. This is a proven method to help students with learning disabilities communicate ideas, show organization of concepts, show spatial agreement as well as reduce literacy demands. (National Institute for Literacy, Learning to Achieve Training)

There are three main reasons why teachers would use graphic organizers according to research collected by the National Institute for Literacy, or NIFL.
The three main reasons for using graphic organizers are:
1. That graphic organizers can increase content knowledge because important information is presented clearly and precisely
2. That graphic organizers combine showing with telling. Graphic organizers decrease literacy demands while structuring higher order thinking
3. That graphic organizers can be used flexibly.

According to research, graphic organizers have the potential for facilitating content learning as well. In using graphic organizers for content area teaching, graphic organizers help the teacher in explicit instruction. Graphic organizers allow the teacher to provide clear explanations of the material, model the learning process by completing the graphic organizer with the class, and engage in a scaffolded process. A scaffolded process occurs when the teacher leads, shows the student what to do, and then lets the student do

the work. Along this scaffoolded process, feedback is provided to the student about the material being presented and the understanding of the concepts presented within the graphic organizer. (National Institute for Literacy, Learning to Achieve Training)

A table of contents will be provided that will list the graphic organizers listed within this mini-grant and for what type of activity you would want to use the graphic organizer with.

I hope that the use of graphic organizers helps the students that you teach, and most importantly, helps the student learn the concepts that are being taught.

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Vocabulary Dealing with Graphic Organizers

- ✓ **Star/web**: Use to show definitions, attributes, examples, and brainstorming

- ✓ **Chart/Matrix**: Use to show attributes, comparing and contrasting, and evaluating.

- ✓ **Tree/Map**: Use to show classifications, pedigrees, analysis, structures, attributes, examples, and brainstorming.

- ✓ **Chain**: Use to show processes, sequences, causes and effects, and chronology.

- ✓ **Sketch**: Use to show physical structures, descriptions of places, spatial relationships, concrete objects, and visual images.

http://www.writedesignonline.com/organizers/

Vocabulary to help with defining key concepts in this section of the graphic organizer
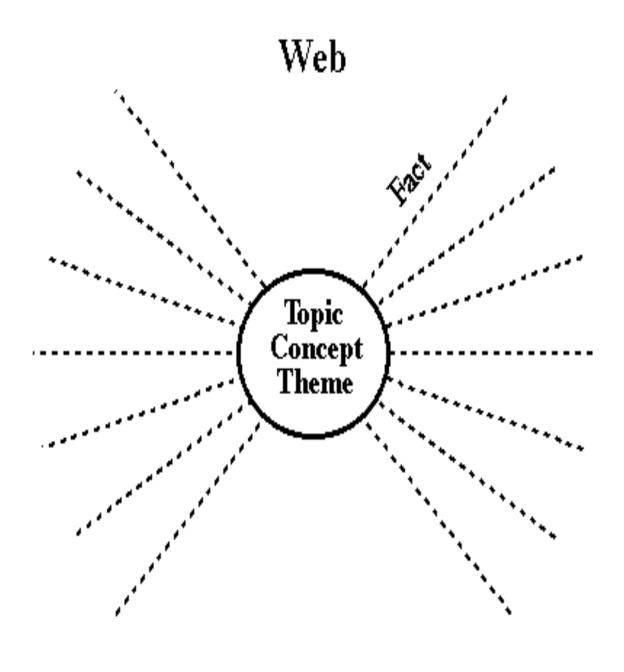
- **Analyze** **1.** to separate (a material or abstract entity) into constituent parts or elements; determine the elements or essential features of (opposed to synthesize): to analyze an argument. **2.** to examine critically, so as to bring out the essential elements or give the essence of: to analyze a poem. **3.** to examine carefully and in detail so as to identify causes, key factors, possible results, etc. (Webster's. p 74)

- **Brainstorm** a sudden impulse, idea, etc.: brainstorming - a conference technique of solving specific problems, amassing information, stimulating creative thinking, developing new ideas, etc., by unrestrained and spontaneous participation in discussion (Webster's. p 253).

- **Compare and Contrast** **compare** - to examine (two or more objects, ideas, people, etc.) in order to note similarities and differences; to compare two pieces of literary work (Webster's. p 416): **contrast** - to compare in order to show unlikeness or differences; note the opposite natures, purposes, etc., of: Contrast the political rights of Romans and Greeks (Webster's. p 442).

- **Evaluate** **1.** to determine or set the value of amount of; appraise: to evaluate property. **2.** to judge or determine the significance, worth, or quality of; assess; to evaluate the results of an experiment (Webster's. p 670).

- **Hypothesize** **1.** to form a hypothesis. **2.** to assume by hypothesis - **hypothesis** - **1.** a proposition, or set of propositions, set forth as an explanation for the occurrence of some specified group of phenomena, either asserted merely as a provisional conjecture to guide investigating (working hypothesis) or accepted as highly probable in the light of established facts. **2.** a proposition assumed as a premise in an argument. **3.** the antecedent of a conditional proposition. **4.** a mere assumption or guess (Webster's. p 944).

- **Interact** to act one upon another. **interaction** - reciprocal action, effect, or influence (Webster's. p 992).

- **Sequence** **1.** the following of one thing after another; succession. **2.** order of succession: a list of books in alphabetical sequence. **3.** a continuous or connected series: a sonnet sequence. **4.** something that follows; a subsequent event; result; consequence (Webster's. p 1747).

- **Visualize** **1.** to recall or form mental images or pictures. **2.** to make visual or visible. **3.** to form a mental image of. **4.** to make perceptible to the mind or imagination (Webster's. p 2127).

http://www.writedesignonline.com/organizers/

Synectics

Definition				
Similar	Feels Like	Opposite	Similar	Synthesis

Brainstorming Synectics (Gordon, 1961) is an approach to creative thinking that depends on looking at, what appears on the surface as, unrelated phenomenon and drawing relevant connections. Its main tool is analogy or metaphor. The approach, which is often used by groups, can help students develop creative responses to problem solving, to retain new information, to assist in generating writing, and to explore social and disciplinary problems. It helps users break existing mind sets and internalize abstract concepts. Synectics can be used with all ages and works well with those who withdraw from traditional methods of teaching and learning. (Couch, 1993)

http://www.writedesignonline.com/organizers/

Web

Topic Concept Theme

Fact

Analyzing Attributes/Brainstorming: Use to list facts, definitions, attributes, or examples related to a single topic, concept, or theme. May also be used to compare and contrast information generated on left and right sides of web.

http://www.writedesignonline.com/organizers/

CerebralChart

Main
Idea

Brainstorming: Cerebral charts use hierarchies, yet tend to be more free form in the beginning. Use to quickly amass information or elements, stimulate creative thinking, and develop new ideas in an unrestrained and spontaneous manner, generated either individually or by a group.

http://www.writedesignonline.com/organizers/

Network Tree

Main Idea

Hierarchy/Brainstorming: Use to show a system of persons or things ranked one above another, left to right; use in the beginning of a project to visually arrange interrelated and sequentially ordered sections within the whole, similar to an outline; subjects that lend themselves to this organizer are: projects (web sites), term papers, organizations (government or company), systems (body or machine), etc

http://www.writedesignonline.com/organizers/

T-Chart

Looks Like	Sounds Like
- - - - - - - - -	- - - - - - - - -
- - - - - - - - -	- - - - - - - - -
- - - - - - - - -	- - - - - - - - -

T-Chart

+ item	– item
+ item	– item
+ item	– item

Comparing and Contrasting: Use to analyze similarities and differences between two things (people, places, events, ideas, etc.), by placing individual characteristics in either the left or right sections.

http://www.writedesignonline.com/organizers/comparecontrast.html.

Compare/Contrast Matrix

	Name 1	Name 2
Attribute 1		
Attribute 1		
Attribute 1		

Comparing and Contrasting Use to show similarities and differences between two things (people, places, events, ideas, etc.). Key frame question: What things are being compared? How are they similar? How are they different? (NCREL, 1988)

http://www.writedesignonline.com/organizers/comparecontrast.html.

Compare and Contrast Matrix

Comparison/Contrast is used to show similarities and differences.

Key frame questions: What are being compared? How are they similar? How are they different?

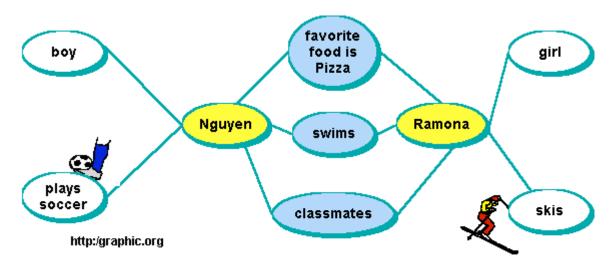|	Name 1	Name 2
Attribute 1		
Attribute 2		
Attribute 3		

http://www.sdcoe.k12.ca.us/score/actbank/tcomp.htm

Double Cell Diagram-Sample

Description: Two items linked by characteristics or attributes.

Uses: Describe and compare attributes and characteristics of two items, things, people, places, events or ideas.

Critical Questions:

- What items do you want to compare?
- What characteristics do the items have in common? What are not in common?
- How are the items similar and different?

http:/graphic.org

Suggestions:

A Double Cell Diagram is an excellent substitute for a Venn Diagram for comparing likenesses and differences. Good for use with younger children. Use cells and links with younger children, students with learning disabilities or ESOL students to help them create more complex webs and maps in the future. String, hula hoops, colored yarn, colored paper, colored pens all can be useful to make cells on the floor or wall for younger children. A good tool to launch writing about what is similar and what is not.

Double Cell Diagram

As a visual teaching technique, a double cell diagram is very effective. Along with comparison matrices and Venn diagrams, double cell diagrams are used as a powerful educational tool dedicated to developing the power of logical thinking amongst students. Since the characteristics of two objects are relative, they can only be fully explored if they are effectively compared. Thus, using a double cell diagram, students can get acquainted with new objects and concepts. This method not only allows students to

explore a new topic and further their knowledge about it, but also imparts key concepts in learning how to properly analyze a given set of information.

With the help of specific questions, a double cell diagram induces students to recall prior knowledge and generate new ideas related to the compared items. Once the teacher decides to employ a double cell diagram as an educational method, he/she should take into account several important points. The degree of sophistication of the double cell diagram should depend on the age and mental agility of the students being taught. Several helpful questions serving to define the aspects being confronted should be brought up. If possible, colorful diagrams should be used to encourage students' associative thinking. Colors can also be used to specify different aspects of comparison. Experts conclude diagrams with colors are easier to perceive than black-and-white ones, a theory that is especially critical to working with children, students with learning disabilities and ESOL students.

http://www.graphic.org/bubble.html

Venn Diagram Basic

Description: Two items linked by characteristics or attributes.

Uses: Describe and compare attributes and characteristics of items (things, people, places, events, ideas, etc.)

Critical Questions:

- What items do you want to compare? What characteristics do the items have in common (intersecting portion)?
- How are the items similar (the same) and different (non intersecting portion) based on the characteristics?

Suggestions: Venn diagrams are useful as a graphics organization tool when comparing two things (and particularly for use with younger children, students who have learning disabilities, and ESOL students). Simple Venn diagrams are used, in which no more than two curves intersect at a common point. Shared characteristics are listed in the overlapping section allowing for easy identification of which characteristics are shared and which aren't. String or colored yarn can be used to make circles on the floor and manipulatives and pictures are strongly encouraged.

Programs like SmartDraw and Microsoft Powerpoint allow for the drawing of Venn diagrams on PCs as well, if you have access to these tools and that the student is comfortable with working on the computer.

A Venn diagram serves to organize students' thoughts, and is labeled according to the topic at hand and the aspects that need to be compared and contrasted. Due to their relatively simple structure and visually effective nature, Venn diagrams are considered to be an indispensable educational technique, equally useful for both children and adults. Most teachers prefer to use a Venn diagram as a pre-writing activity in order to help students categorize the knowledge they have already gained. Having classified all the similarities and differences, students are able to make an in-depth analysis of the topic and draw a well-grounded conclusion.

Venn diagrams can be successfully applied to a wide range of subjects. For instance, students can compare and contrast several cities and their climates during a Geography lesson, organize various animals or different cell structures in Biology and study the character traits of different protagonists in works of twentieth century Literature. The key point is to determine the objects that need to be compared beforehand. The more aspects that are included in a Venn diagram, the more comprehensive the analysis is. To optimize the process you can use various colors and shapes. Originally, Venn diagrams were made using simple circles; however, triangles and quadrangles can be also used, especially when constructing several diagrams at the same time. If used correctly, this graphic tool makes the teaching and learning process a lot more interesting and effective.

Venn Diagram Expanded

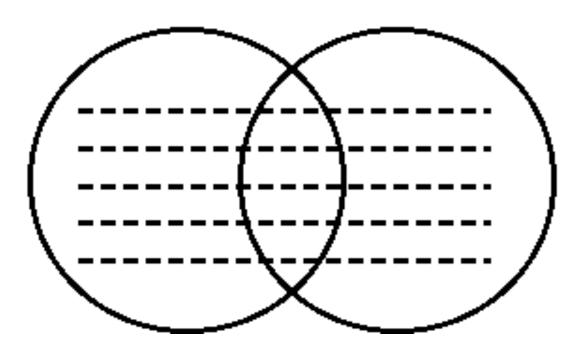**Description:** Three items linked by characteristics or attributes.

Uses: Describe and compare and attributes and characteristics of items (things, people, places, events, ideas, etc.)

Critical Questions:

- What items do you want to compare? What characteristics do the items have in common (intersecting portions)?
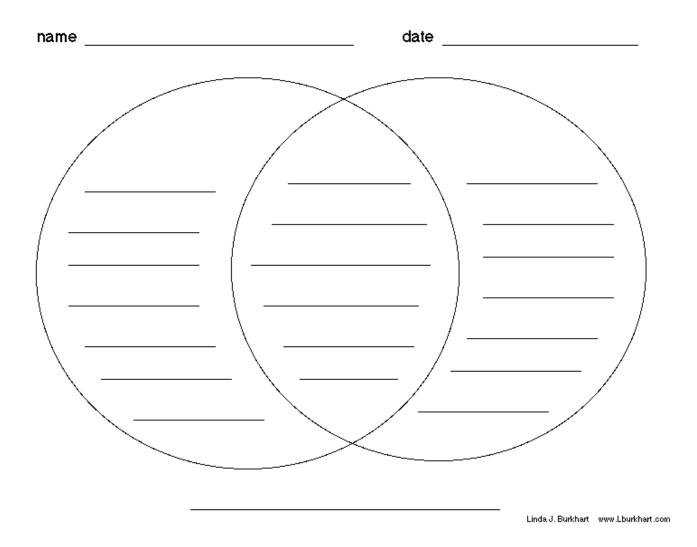- How are the items similar and different (nonintersecting portion) based on the characteristics?

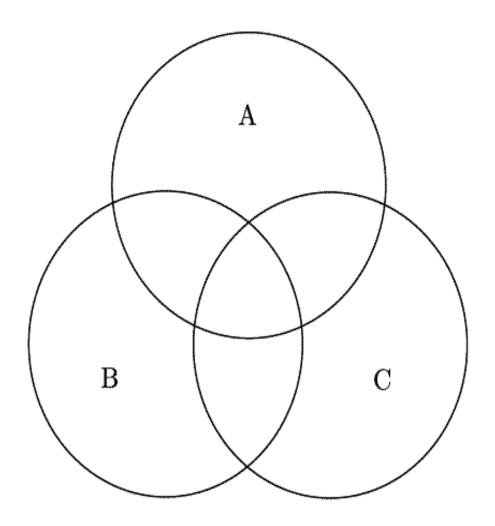http://www.graphic.org/venexp.html

Venn Diagram

Comparing and Contrasting: Use to analyze similarities and differences between two things (people, places, events, ideas, etc.), by placing individual characteristics in either the left or right sections, and common characteristics within the overlapping section.

http://www.writedesignonline.com/organizers/comparecontrast.html.

name _____   date _____

Linda J. Burkhart   www.Lburkhart.com

http://www.lburkhart.com/elem/clarist/venn.gif

Venn Diagram-Comparing Three Topics

Comparison Matrix

Description: Linked by characteristics or attributes.

Uses: Describe and compare attributes and characteristics of items (things, people, places, events, ideas, etc.), brainstorming.

Critical Questions:

* What items do you want to compare? What characteristics do you want to compare?
* How are the items similar and different based on the characteristics?

Suggestions: Place an 'X' in the box to indicate if an item possesses that characteristic. Make sure the student is clear and agrees on the definition of the specific characteristic.

How are they alike? How are they different?

		Characteristics			
		walk	talk	swim	read
Items To Be C O M P A R E D	person	X	X	X	X
	dog	X		X	
	cat	X		X	
	fish			X	

http://www.graphic.org

As an effective analytic tool, a comparison matrix serves to determine the basic characteristics of an object. Using the aggregation method, a comparison matrix outlines the most typical features of an item without drawing a conclusion directly, but by simplifying the process of analysis.

Used as tools for educational purposes, comparison matrices are effective visual aids, featuring a simple and exact structure. With the help of this high-end invention, students can make in-depth comparisons, confronting multiple objects and their aspects all at once. Consequently, the use of this visual teaching method contributes to the development of analytical skills among students.

While making a comparison matrix, the teacher should consider the following points. It is important to make sure that all compared items are known to the students; otherwise it will be difficult to outline the items' characteristics. If students haven't worked with comparison matrices before, the structure of the matrix should be as unsophisticated as possible. Remember, you can always add more characteristics for multifaceted comparison. If students' knowledge of the topic isn't deep yet, place only several objects to compare, but include various aspects. Such an approach allows students to gain extended information, even it is about a few items. Once students have gotten well acquainted with the items and attained basic knowledge about them, you can introduce another comparison matrix with more items. Also, if you assign the completion of a comparison matrix as a home task, ensure that it can be easily printed.

http://www.graphic.org/commat.html

KWLH

What We Know	What We Want to Find Out	What We Learned	How Can We Learn More

Predicting/Evaluating Use to help students activate prior knowledge. It is a group instruction activity that serves as a model for active thinking during reading.
K - Recall what group **KNOW**s about the subject.
W - Determine what group **WANT**s to learn.
L - Identify what group **LEARN**ed as they read.
H - **HOW** we can learn more (NCREL, 1988)
(D. Ogle, 1986)

http://www.writedesignonline.com/organizers/comparecontrast.html.

KWHL chart

Description: Matrix for planning and gathering initial information.

Uses: Accessing prior information on a topic or theme, identifying primary and secondary resources to access, developing a plan for accessing resources, identifying attributes and characteristics to research.

Critical Questions:

- What do we already know? What do we want to find out? How are we going to find out? What primary and secondary resources can we access?
- What attributes or characteristic should we focus on?

Suggestions: Excellent tool to access prior information and to develop a plan for investigation.

The K-W-L-H teaching technique is a good method to help students activate prior knowledge. It is a group instruction activity developed by Donna Ogle (1986) that serves as a model for active thinking during reading.

K - Stands for helping students recall what they **KNOW** about the subject.

W - Stands for helping students determine what they **WANT** to learn.

L - Stands for helping students identify what they **LEARN** as they read.

H - Stands for **HOW** we can learn more (other sources where additional information on the topic can be found).

Students complete the "categories" section at the bottom of the graphic organizer by asking themselves what each statement in the "L" section (What We Learned) describes. They use these categories and the information in the "H" section (How Can We Learn More) to learn more about the topic. Students also can use the categories to create additional graphic organizers. They can use the organizers to review and write about what they've learned.

See the following page for the template for the KWHL.

K	W	H	L
What do we know?	What do we want to find out?	How can we find out what we want to learn?	What did we learn?

Attributes or Characteristics we expect to use:

http://www.graphic.org

Sample **K-W-L-H**

Dinosaurs

What We Know	What We Want to Find Out	What We Learned	How Can We Learn More
Dinosaurs are large.	How long ago did they live?	An archeologist has an exciting life.	Research
			Museums
Dinosaurs are dead.	Why did they die?	Dinosaurs eat plants and some eat meat.	Field Trips
They lived a long time ago.	How do we know what they looked like?	Some dinosaurs were gigantic, but had small brains.	Archeological digs
There is a movie about dinosaurs	Who are the people who study dinosaurs?	Fossils uncover dinosaur traits.	Videos
			Internet computer search

Categories of Information we expect to use:

    A. Size
    B. Career
    C. Eating Habits
    D.
    E.
    F.
    G.

http://www.ncrel.org/sdrs/areas/issues/students/learning/lr1kwlh.htm
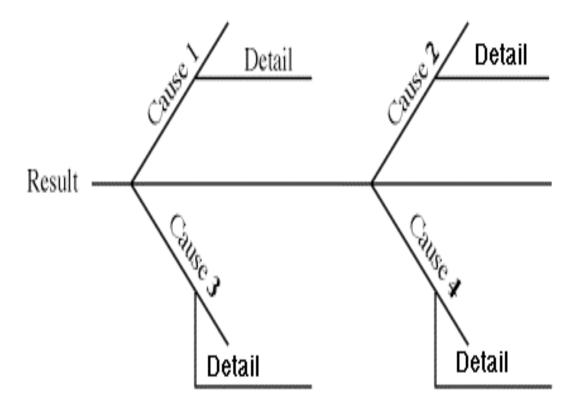
Fishbone Map

Analyzing: Used to show the interaction of a complex event (an election, a nuclear explosion) or complex phenomenon (juvenile delinquency, learning disabilities). Key frame questions: What are the factors that cause X? How do they interrelate? Are the factors that cause X the same as those that cause X to persist? (NCREL, 1988)

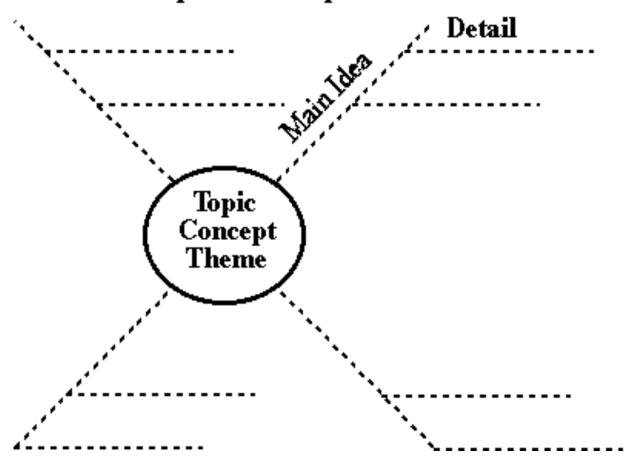http://www.writedesignonline.com/organizers/analyze.html

Fishbone Mapping

A Fishbone Map is used to show the causal interaction of a complex event (an election, a nuclear explosion) or complex phenomenon (juvenile delinquency, learning disabilities).

Key frame questions: What are the factors that cause X ? How do they interrelate? Are the factors that cause X the same as those that cause X to persist?

http://www.sdcoe.k12.ca.us/score/actbank/tfish.htm

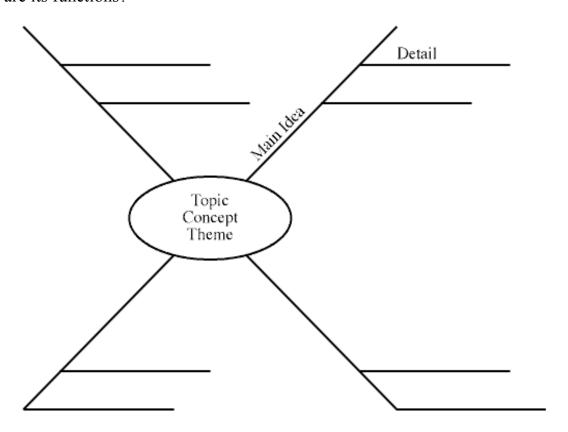# Spider Map

Detail

Main Idea

Topic Concept Theme

Analyzing: Used to describe a central idea: a thing (a geographic region), process (meiosis), concept (altruism), or proposition with support (experimental drugs should be available to AIDS victims). Key frame questions: What is the central idea? What are its attributes? What are its functions? (NCREL, 1988)

http://www.writedesignonline.com/organizers/analyze.html
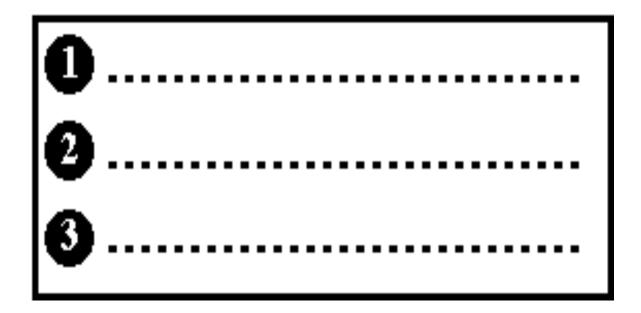
Spider Map

The Spider Map is used to describe a central idea: a thing, a process, a concept, a proposition. The map may be used to organize ideas or brainstorm ideas for a writing project.

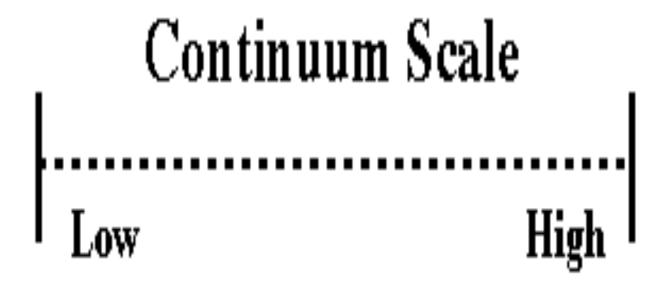Key frame questions: What is the central idea? What are its attributes? What are its functions?

Detail

Main Idea

Topic
Concept
Theme

http://www.sdcoe.k12.ca.us/score/actbank/tspider.htm

Ranking

1	· ·
2	· ·
3	· ·

Sequencing: Use when prioritizing elements from most important to least important; relative position or standing; a series of things or persons; or an orderly arrangement from 1st to last.

http://www.writedesignonline.com/organizers/sequence.html

Continuum Scale

Low   High
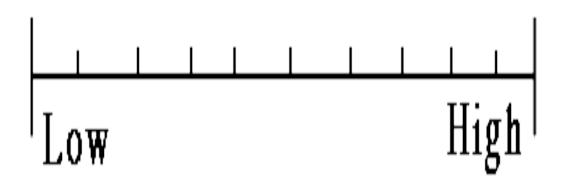
Sequencing: Use for time lines showing historical events or ages (grade levels in school), degrees of something (weight), shades of meaning (Likert scales), or ratings scales (achievement in school). Key frame questions: What is being scaled? What are the end points? (Pathways, 1997)

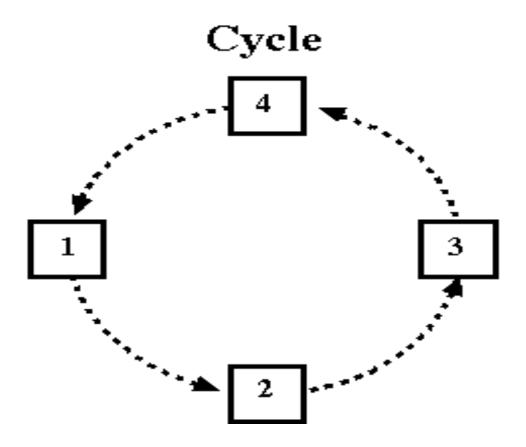http://www.writedesignonline.com/organizers/sequence.html

Continuum

Continuum is used for time lines showing historical events, ages (grade levels in school), degrees of something (weight), shades of meaning, or rating scales (achievement in school).

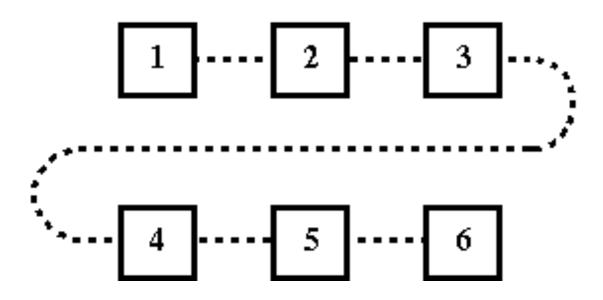Key frame questions: What is being scaled? What are the end points or extremes?

Low   High
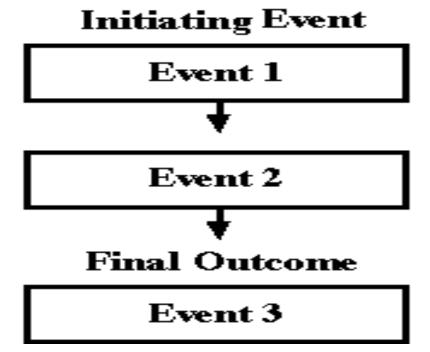
Cycle

Sequencing: Use to show how a series of events interact to produce a set of results again and again (weather phenomena, cycles of achievement and failure, the life cycle). Key frame questions: What are the critical events in the cycle? How are they related? In what ways are they self-reinforcing? (NCREL, 1988)

http://www.writedesignonline.com/organizers/sequence.html

Bridging Snapshots
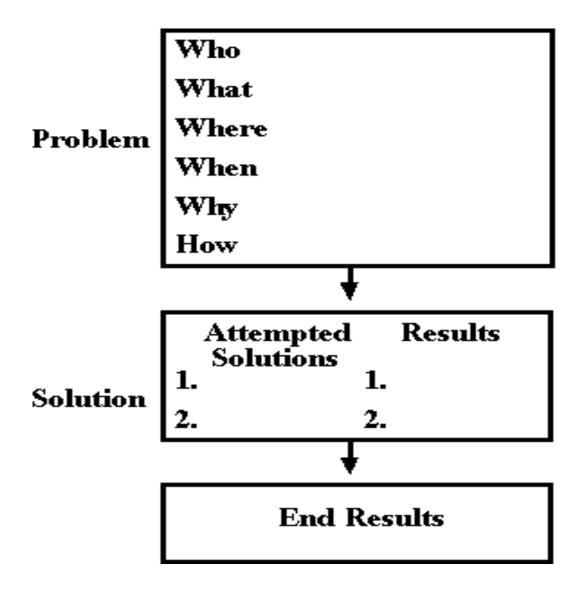

Sequencing: Use to see changes over time, reveal the sequence of step-by-step methods, illustrate complex processes, and show cause and effect

http://www.writedesignonline.com/organizers/sequence.html

Series of Events Chain

Initiating Event

```
┌─────────────────────────────┐
│          Event 1            │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│          Event 2            │
└─────────────────────────────┘
              │
              ▼
```

Final Outcome

```
┌─────────────────────────────┐
│          Event 3            │
└─────────────────────────────┘
```

Sequencing: Use to describe the stages of something (the life cycle of a primate); the steps in a linear procedure (how to neutralize an acid); a sequence of events (how feudalism led to the formation of nation states); or the goals, actions, and outcomes of a historical figure or character in a novel (the rise an fall of Napoleon). Key frame questions: What is the object, procedure, or initiating event? What are the stages or steps? How do they lead to one another? What is the final outcome? (NCREL, 1988)
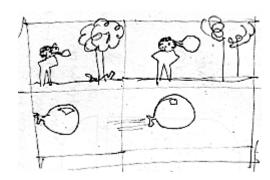
http://www.writedesignonline.com/organizers/sequence.html

Problem/Solution Outline

Problem	Who What Where When Why How

↓

Solution	Attempted Solutions 1. 2.	Results 1. 2.

↓

End Results

Sequencing: Use to show the problem solving process by defining the components of the problem and attempted solutions. Basis elements of the problem may vary, but the process is similar. (NCREL, 1988)

http://www.writedesignonline.com/organizers/sequence.html

Sketch-Sample

Sketches can be fun and or loose indicators that don't require great artistic ability to:

describe a physical phenomenon;

http://www.writedesignonline.com/organizers/visualize.html

show how money is made; or to

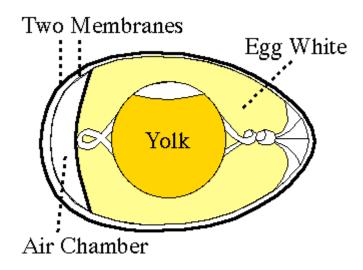http://www.writedesignonline.com/organizers/visualize.html

capture ideas from other people's work.
In this case a sketch of a photograph by Debbie Fleming Caffery,
"Smoke Walking", 1989, Patoutville, Louisiana
seen in the Museum of Photographic Arts, San Diego.

http://www.writedesignonline.com/organizers/visualize.html

show the revision and editing process by making changes to your ideas while still in the
concept development stage rather than in the implementation/execution stage.
http://www.writedesignonline.com/organizers/visualize.html

Detailed diagrams provide more formal options of visualization. Sample
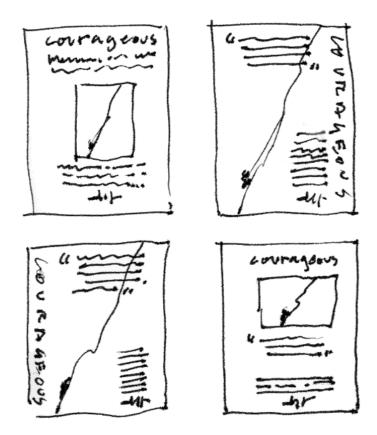
Two Membranes

Egg White

Yolk

Air Chamber

Visualizing: Use to see the description of physical structures, places, spatial relationships, concrete objects, abstract concepts, or visual images.

http://www.writedesignonline.com/organizers/visualize.html

Creating Thumbnails

Thumbnails represent scaled down versions of a final composition. For a project where the final size is 9" x 12", thumbnails might be approximately 2" x 2-2/3", large enough to show some detail, but small enough to work quickly.

Thumbnails enable you to make decisions about how you wish to present your content without investing a lot of time.
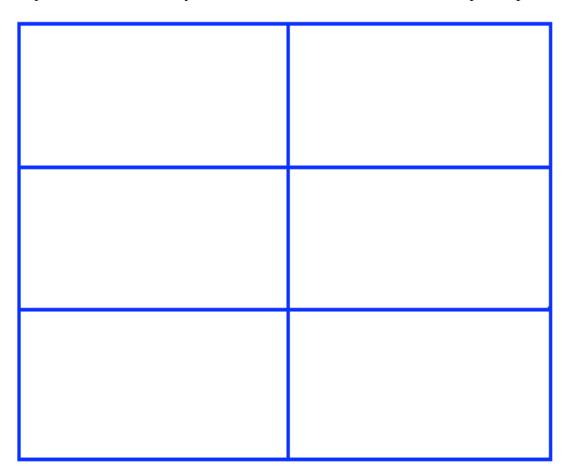

Make sure your thumbnails have the same proportions as the final composition.

Include all of the elements - images, text, and other graphic devices that will make up the final composition.

Keep in mind that even though thumbnails help you make decisions, changing scale to full size often changes the final layout.

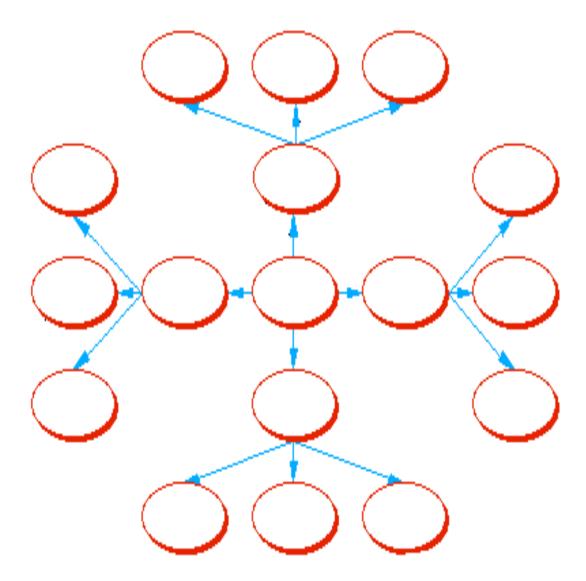http://www.writedesignonline.com/organizers/visualize.html

Storyboard

A storyboard is a graphic, sequential depiction of a narrative. Students recall major events of the story, and then illustrate the events in the squares provided.

Clustering

Clustering is a nonlinear activity that generates ideas, images and feelings around a stimulus word. As students cluster, their thoughts tumble out, enlarging their word bank for writing and often enabling them to see patterns in their ideas. Clustering may be a class or an individual activity.
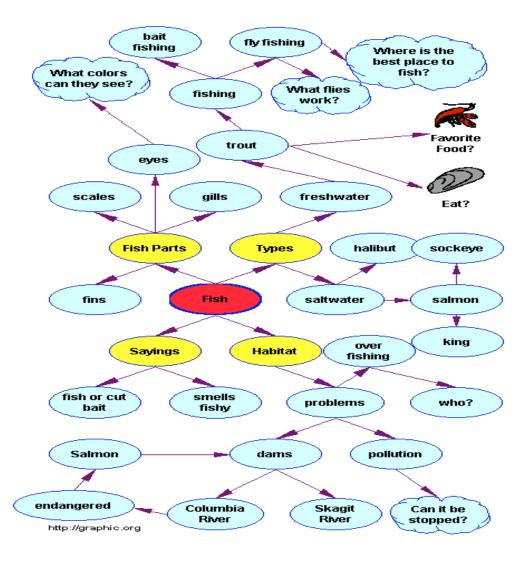
Brainstorming Web-Sample

Brainstorming is creative thinking by a group of people designed to generate a number of ideas to solve a given problem. All ideas and questions are linked.

In brainstorming, the goal is to generate ideas and questions, access prior knowledge, assess interests and knowledge, develop probing questions and problems.

Critical Questions:

- What is the topic or question to brainstorm?
- Is the process clear for brainstorming?

Suggestions:

- Relax. Play some creative music.
- Spelling or style doesn't count.
- Don't worry about organization.
- Think quantity.
- Be positive, don't criticize.
- Free-associate ideas. Keep them simple.
- Write or sketch as quickly as you can.
- Write or sketch in any order.
- Develop all ideas.
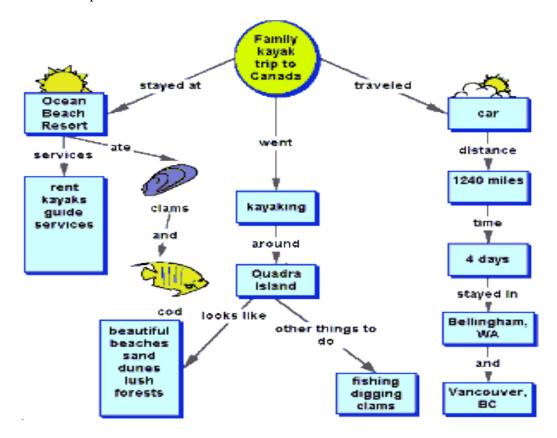- Keep working.
- Combine to improve each other's ideas

Webbing Strategies:

- Work from a central idea, concept, topic or question, gathering and linking thoughts in text and/or pictures. Expand thoughts from the center like branches on a web. Weave the web. When one branch stops or an idea doesn't fit create a new branch.
- An alternative is to free associate a random list then sift, sort and develop relational links and design the web. Expand web branches and links. Explore any associations that strike your fancy.
- Use paper and pencil, text or free sketch. Connect thoughts with relational links. Use sticky notes as an effective alternative. Free associate a different idea on each note, regroup the sticky notes into categories, and then construct a web on butcher paper. Use different colored sticky notes to denote headings or categories that emerge from the brainstorm. Develop links on the paper -- text or sketches can be added at any time.
- By far the most effective and efficient method is to use a commercial software program such as Inspirations.
- Software programs have significant advantages over paper and pencil. They encourage building, creating and inventing -- yet keep the web legible. Webs become unwieldy as they grow. Software program manage growth. Select the look -- cluster, branching, right to left etc. Try different looks and nudge the cells to for style. An emerging new thought? Click on another cell or start a new branch. Change of mind? New insight? Revise, move, delete and paste. Save, print, or export the map into various formats. Some programs produce a nice neat linear text outline. Cool!
- Group guidelines are a must when for maximum effectiveness. Use a strategy called 'Think, Pair, Share'. Work from individual association to sharing with a partner then collaborating as a group to develop the web.

http://www.graphic.org/brainst.html

Concept Map

A concept map is a special form of a web diagram for exploring knowledge and gathering and sharing information. Concept mapping is the strategy employed to develop a concept map. A concept map consists of nodes or cells that contain a concept, item or question and links. The links are labeled and denote direction with an arrow symbol. The labeled links explain the relationship between the nodes. The arrow describes the direction of the relationship and reads like a sentence.

Uses:

- Develop an understanding of a body of knowledge. Explore new information and relationships. Access prior knowledge. Gather new knowledge and information. Share knowledge and information generated. Design structures or processes such as written documents, constructions, web sites, web search, multimedia presentations.
- Problem solve options.

Critical Questions:

- What is the central word, concept, research question or problem around which to build the map?

- What are the concepts, items, descriptive words or telling questions that you can <u>associate</u> with the concept, topic, research question or problem?
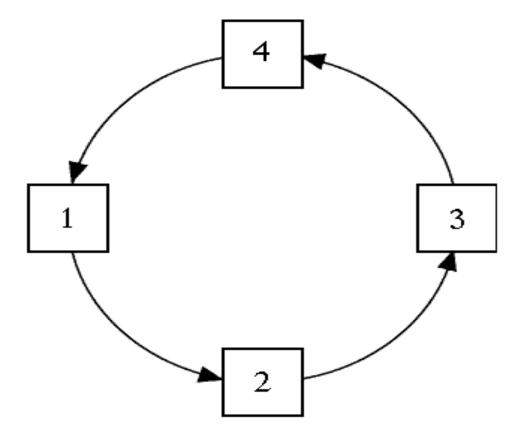
Suggestions:

- Use a top down approach, working from general to specific or use a free association approach by brainstorming nodes and then develop links and relationships. Use different colors and shapes for nodes & links to identify different types of information. Use different colored nodes to identify prior and new information. Use a cloud node to identify a question.

- Gather information to a question in the question node.

http://www.graphic.org/concept.html

Cycle

A depiction of a Cycle attempts to show how a series of events interacts to produce a set of results again and again, such as the life cycle or a cycle of poor decisions.

Key frame questions: What are the main events in the cycle? How do they interact and return to the beginning again?
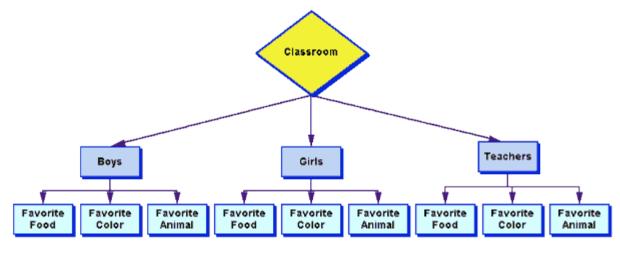
Hierarchy Diagram-Sample

Description: Topics and attributes are linked by subordinate relationships.

Uses: Group items (things, people, places, events, ideas, etc.) into categories.

http://www.graphic.org

Critical Questions:

- What items do we want to put together or classify? Top tier. How can we put them into groups that are alike? Second tier. Develop a rule to describe the group as to why they are alike. Are there any items that do not belong? If so create another group. (third tier)
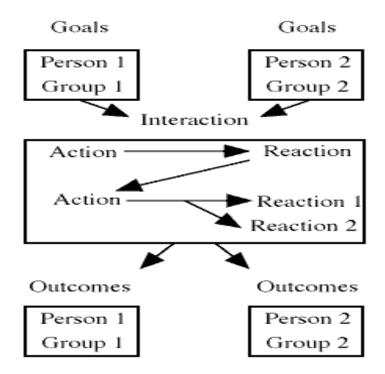- Repeat process until all items are classified.

Suggestions: Initially, students can either free-associate items and then begin to group ideas, or students can start with one major item and add links. Using tiers or rows helps the student to visualize classifying and breaking items into categories.

http://www.graphic.org/class.html

Interaction Outline

Interaction Outline is used to show the nature of an interaction between persons or groups, such as the interaction between Europeans settlers and American Indians.

Key frame questions: Who are the persons or groups? What were their goals? Did they conflict or cooperate? What was the outcome for each person or group?
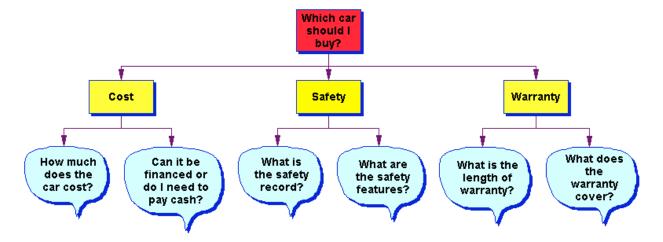
Cluster Diagram - Research Cycle- Sample

Description: Research question is linked by criterion and telling questions.

Uses: Develop criterion and telling questions for investigations.

Critical Questions:

- What is the research question or problem?
- What are the criterions against which I will weigh the decision?
- What are the telling questions that will focus the search for information?
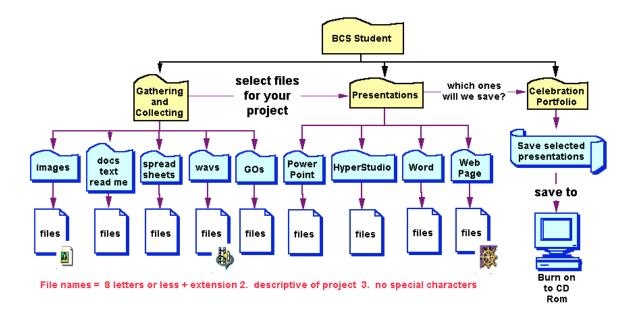- How will I gather the information?

Suggestions: The Research Cycle, developed by Dr. Jamie Mckenzie, is a powerful tool for developing student investigations. His web site, From, an electronic journal, is an excellent resource for learning more about creating researchable questions, The Research Cycle and integrating technology in schools.

http://www.graphic.org/cluster.html

File System -- Desktop Management -- Hierarchy Diagram--Sample

Description: Folders and Files are linked by subordinate relationships. The flow of information gathering to portfolio collection moves from left to right.
The diagram was created by students to organize collection and distribution of information. The structure and flow is designed to accommodate collecting small fragments of information, developing projects and CD ROM portfolio.

Uses: Develop a student filing system to organize their classroom NT desktop.

Critical Questions:

- What folders to we want to create? Why? What types of files do we want to keep in each folder?
- Are there any files that do not belong?

Suggestions: Initially students can either free associate names of folders and files they want to create and save; in turn, select files to save in which folders. Using tiers or rows helps the student to visualize classifying and placement.

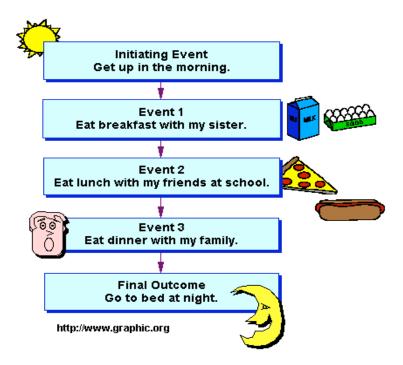http://www.graphic.org/filesys.html

Linear String-Sample

Description: Events are linked by time.

Uses: Describe a sequence of events, stages, phases, actions and outcomes.

Critical Questions:

- What is the name of the event, procedure or human figure that will be described? What are the stages, steps, phases or events? How do the stages, steps, phases or events relate to one another?
- What is the final outcome?

Remarks: This version is good for use with beginning learners and as a first step in developing linear relationships.

Initiating Event
Get up in the morning.

Event 1
Eat breakfast with my sister.

Event 2
Eat lunch with my friends at school.

Event 3
Eat dinner with my family.

Final Outcome
Go to bed at night.

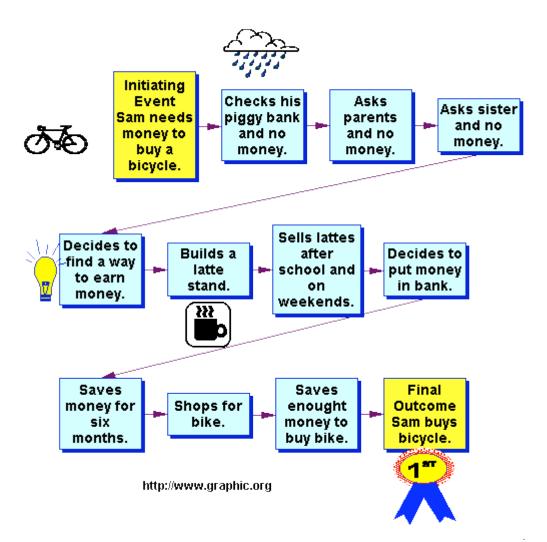http://www.graphic.org

http://www.graphic.org/bstring.html

Expanded Linear String-Sample

Description: Events are linked by time.

Uses: Describe a sequence of events, stages, phases, life cycles, actions and outcomes.

Critical Questions:

- What is the name of the event, procedure or human figure that will be described? What are the stages, steps, phases or events? How do the stages, steps, phases or events relate to one another?
- What is the final outcome?

http://www.graphic.org

Domino Effect String

Description: Events are linked by time. A subsequent event <u>requires</u> a preceding event to happen.

Uses: Describe a sequence of events, stages, phases, life cycles, actions and outcomes that require a preceding event to happen.

- What is the name of the event, procedure or human figure that will be described? What are the stages, steps, phases or events? How do the stages, steps, phases or events relate to one another? What happens if an event does not take place?
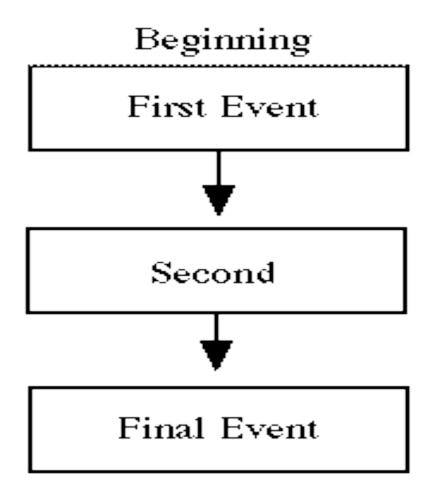- What is the final outcome?

Remarks: The Linear String can serve the same purpose as the Domino Chart to describe events that <u>require</u> a preceding event to happen. Add the critical question: What happens if an event does not take place?

http://www.graphic.org/domino.html

Chain of Events

Chain of Events is used to describe the stages of an event, the actions of character or the steps in a procedure.

Key questions: What is the first step in the procedure or initiating event? What are the next stages or steps? How does one event lead to one another? What is the final outcome?
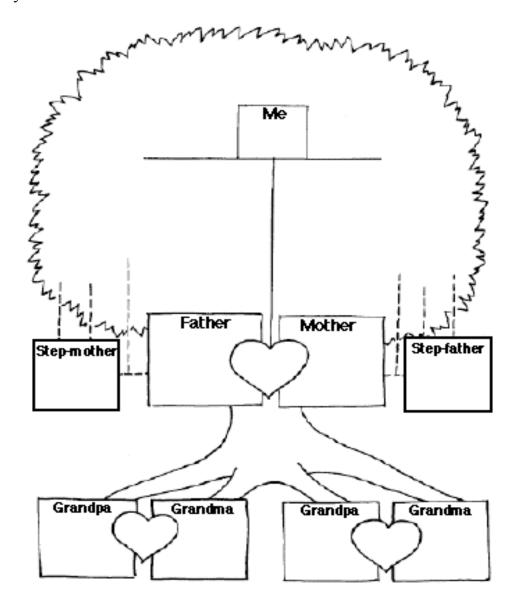
Beginning
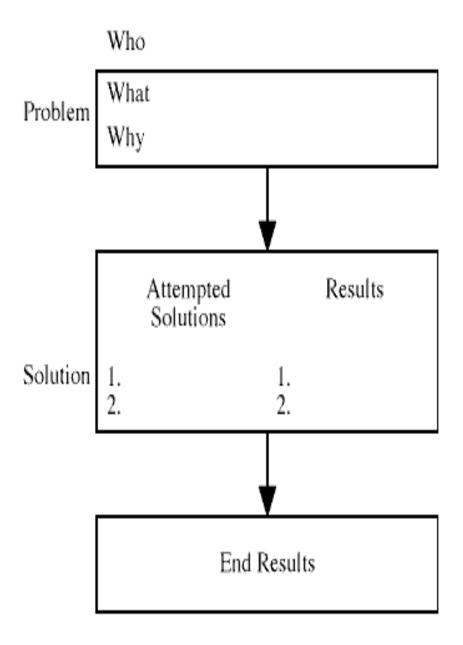
First Event

↓

Second

↓

Final Event

Family Tree

Family Tree shows how family members are related.

Key frame question: Who are my ancestors? How are they related on the Family Tree?

Problem/Solution

Problem/Solution requires students to identify a problem and consider multiple solutions and possible results.

Who

| Problem | What |
| | Why |

Solution

	Attempted Solutions	Results
	1.	1.
	2.	2.

End Results

http://www.sdcoe.k12.ca.us/score/actbank/tprobsol.htm