

Lesson 5

Thinking Maps® and Graphic Organizers



Key Words

analogies
cause and effect
classifying
comparing and contrasting
defining in context
describing
part-whole relationship
sequencing
thinking process

What You Will Learn to Do

- Use Thinking Maps® and graphic organizers as tools for teaching others

Linked Core Abilities

- Communicate using verbal, nonverbal, visual, and written techniques

Skills and Knowledge You Will Gain Along the Way

- Identify the factors associated with brain-based learning
- Describe the benefits of graphic organizers to the learner
- Compare types of visual tools
- Match thinking processes in learning to Thinking Maps®
- Define the key words contained in this lesson

Introduction

Graphic organizers and Thinking Maps® are both based on the brain and educational research that supports the use of visuals in a classroom. According to Eric Jensen in *Teaching with the Brain in Mind*, 90 percent of all information that comes to the brain is visual. Robert Marzano's *Classroom Instruction That Works* cites research that proves that using visuals in a classroom improves student achievement.

Each kind of visual tool can encourage student-centered and cooperative learning. The JROTC curriculum uses both graphic organizers and Thinking Maps® within its lesson plans. In this lesson you examine the various types of visual tools and use them as you continue to improve your teaching skills.

Types of Visual Tools

Visual tools are excellent tools for learning the structure of thinking skills. Teachers have been using visuals for years to help students make abstract concepts more concrete. These visuals provide a powerful picture of information and allow the mind to “see” patterns and relationships. Some tools are perfect for simple brainstorming; others are task-specific, organizing content. Tools such as Thinking Maps® relate directly to a thinking skill or process.

What type of visual tool is being used in Figure 12.5.1?

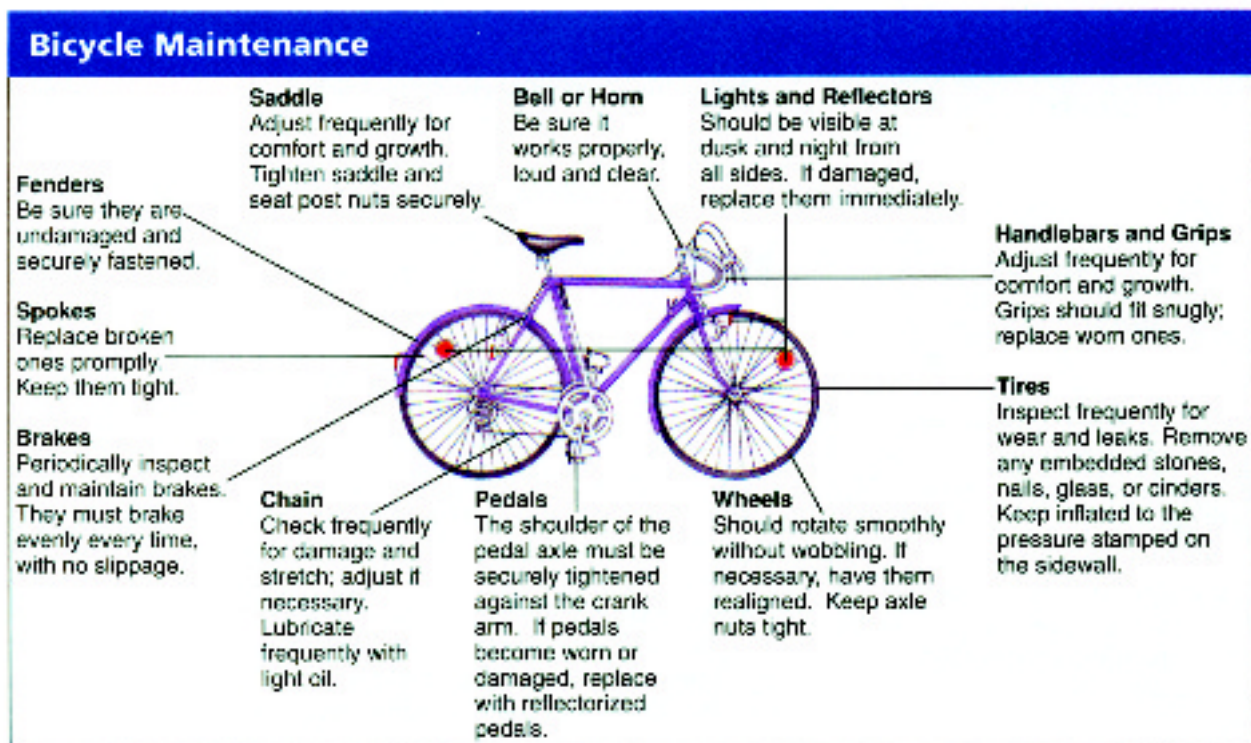


Figure 12.5.1: What type of visual tool is being demonstrated?

Courtesy of Boston Graphics.

Key Note Term

thinking process – the organized way in which thinking occurs

There are three basic types of visual tools for learning and enhancing the **thinking process**. These can be defined as brainstorm webs, task-specific graphic organizers, and Thinking Maps®.

Brainstorm Webs

Brainstorm webs are visual tools used for personal knowledge and include mind mapping and webbing.

A mind map is a form of brainstorming using a free-flowing documentation process where lines connect concepts to each other. The core subject is in the center; the main spokes are like sub parts of chapters. Related ideas can be color coded, circled, or attached by lines. Pictures and words can both be used. For example, as seen in Table 12.5.1, you could use this tool to discuss what it will take for a cadet to successfully earn a high school diploma.

The concept web uses text to link main concepts and subconcepts or even sub-sub-concepts. The center circle is the main concept or idea. The smaller circles connecting to the main concept represent the sub-concepts; connected to these sub-concepts are sub-sub-concepts. For example, the center circle could be citizenship. The smaller connected circles are subconcepts related to citizenship.

These smaller circles can also be explored for additional supporting concepts. An illustration might be the subconcept of voting as a critical part of citizenship. Most cadets can't vote yet, but they could continue to explore how they might encourage voting or how they might get involved with the voting process, as seen in Table 12.5.2.

When using these tools in a teaching environment, you can ask the students to use any of these types of webs to brainstorm a topic of their choice. They are very effectively used during the inquire phase of lesson plans. Students can complete this activity alone, in pairs, or as a group. An example of how they can be used is to have students complete a web individually. Then pair up and exchange their notes. Each student should read his or her partner's web ideas and try to summarize the concept being brainstormed without any help from the cadet who created the visual. Paired students should then discuss their summaries.

Task-Specific Graphic Organizers

Task-specific graphic organizers are used for isolated tasks and are found in different textbooks. They are used to represent life cycles, timelines, and other content-specific data. One example is the Fishbone Diagram.

This structure helps cadets think of important components of a problem to solve, an issue to explore, or a project to plan. The head of the fish represents a problem, issue, or project. "Ribs" of the fish represent component parts of the problem and the related elements of each part. For example, cadets could explore how to prepare for an upcoming orienteering competition. Each rib represents the critical elements of preparation. Attached to each rib are the processes or activities that will assist in accomplishing each key element.

An example of how to use task-specific graphic organizers in a teaching environment is to have students work in pairs to survey their textbooks or other resources

to look for content that could be represented by graphic organizers and visuals, such as the steps to determine direction of travel, or the timeline for how the framers created the constitution. Then have students choose and draw graphic organizers to represent their thinking about the subject or topic.

Table 12.5.1: Brainstorming


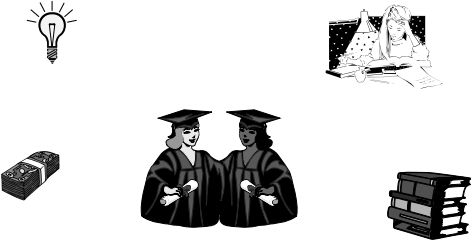
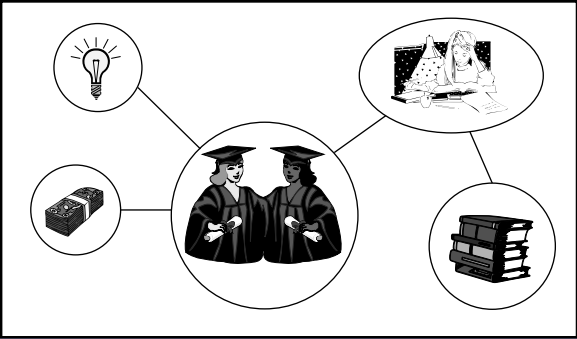
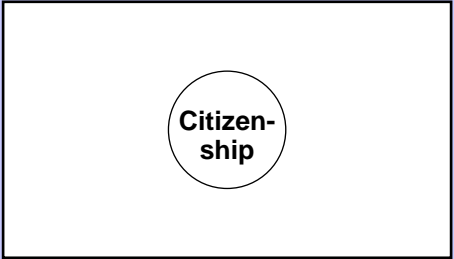
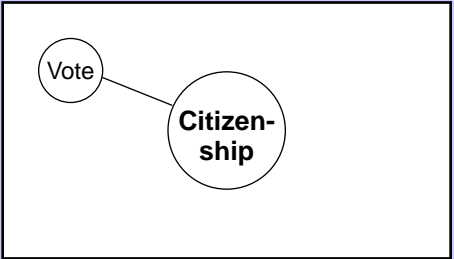
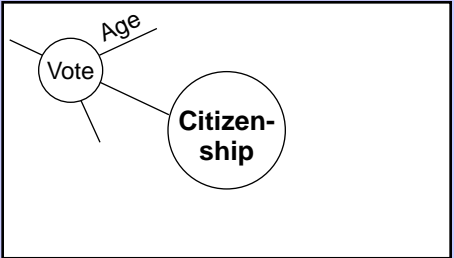
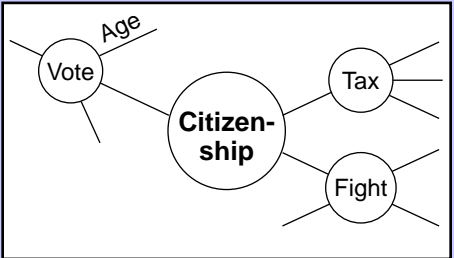
Step	Action	Graphic
1	Set up chart paper on an easel and get the markers. If possible place the paper in a horizontal position.	
2	Draw the central concept on the paper. Ask the cadets to define what the concept is—for example, graduate from high school.	
3	The cadets will brainstorm what it takes to graduate and draw pictures or images to show these items—for example, money, books, studying, and ideas are some of the information they could provide.	
4	Link the thoughts to show relationships of ideas—for example, books are needed before you can study and get your degree. Ideas as well as money are independent ideas that support receiving a degree.	

Table 12.5.2: Steps to Change the Voting Process

Step	Action	Graphic
1	Set up chart paper on an easel and get the markers. If possible place the paper in a horizontal position.	
2	Draw a circle in the center of the paper with a diameter sufficient to hold the main idea and write the main idea in the circle.	
3	Draw a connected subconcept containing a concept related to the main concept.	
4	Draw a ray out from the subconcept and place an element of voting on the ray. Add additional rays as needed.	
5	Add additional subconcepts with rays as needed to cover all the elements.	

Thinking Maps®

Thinking Maps® give students and teachers a common visual language for learning that can be used with all subject matter and across all LET levels in classrooms and whole schools. The purpose for using them is to transfer thinking processes, integrate learning, and assess progress. Thinking Maps® consist of eight graphics or maps. These maps include the Circle Map or **defining in context**, the Tree Map or **classifying**, the Flow Map or **sequencing**, the Bridge Map or **analogies**, the Multiflow Map or **cause and effect reasoning**, the Double Bubble Map or **comparing and contrasting**, the Bubble Map or **describing** qualities, and the Brace Map or **part-whole relationship**. Each one is tied directly to a specific thinking process. Look at the key word definitions for each map and notice how they are used to organize your thinking.

Note

The introductory “Thinking Maps®” lesson (Chapter 3, Lesson 1) contains pictures of each type of map discussed here. Each map is also defined and described in that lesson.

Thinking Maps® are most effective when they are used together to develop a learning objective, concept, or performance task, as seen in Table 12.5.3. An example of how multiple maps can be used to develop an understanding of heat injuries is illustrated in Figure 12.5.2.

Putting Them All Together

As closure for the three preceding activities, ask cadets to draw some conclusions about the effectiveness of these three different types of visual tools.

Comparing Thinking Maps® to Other Graphic Organizers

Graphic organizers and webs are commonly used strategies that help organize and process a great deal of information. They can help make relationships and connections visible or concrete. Thinking Maps® combine the flexibility of brainstorm webs and the structure of task-specific graphic organizers with a clearly defined, common thinking process language. Graphic organizers and webs help people graphically organize information. Thinking Maps® help people think about their information and construct knowledge.

The most important difference between Thinking Maps® and graphic organizers is that each Thinking Map® is based on a fundamental thinking skill.

Key Note Terms

defining in context – a process where a specific concept is defined and explored

classifying – a process of sorting things into categories or groups

sequencing – a process of ordering or examining stages of an event

analogies – a process of seeing the relating factor or the same relationship to something



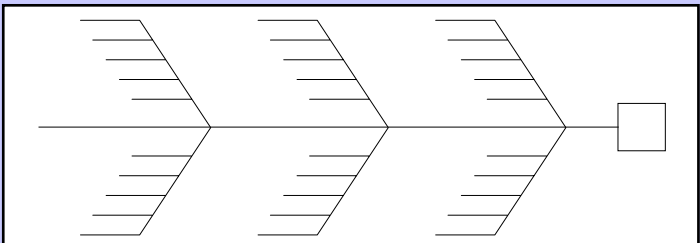
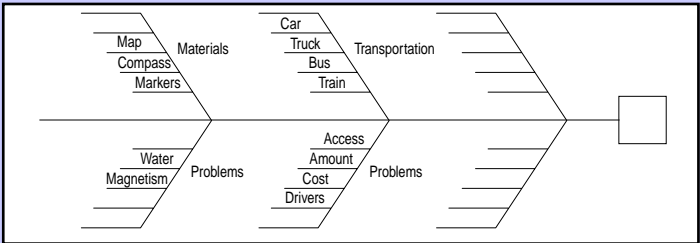
cause and effect – a process of identifying the interrelationship of what results from an action

comparing and contrasting – a process of identifying similarities and differences of things

describing – a process of seeing qualities, characteristics, traits and/or properties of things

part-whole relationships – a process of identifying the relationship between a whole physical object and its parts

Table 12.5.3: Using a Thinking Map®

Step	Action	Graphic
1	Set up chart paper on an easel and get the markers. If possible place the paper in a horizontal position.	
2	Draw a square about the size of a CD-ROM case. This will be the head.	
3	Draw a horizontal line from the left side of the head to the left side of the paper. This is the backbone.	
4	Draw ribs out from the backbone above and below the backbone. Make sure they correspond and touch each other at the intersection. Add rays as needed.	
5	<p>Instruct the cadets to write their responses for one point of view on the bottom set of bones and the other point of view on the top.</p> <p>EXAMPLE: On the bottom write: Problems</p> <p>On the top write: Materials and Transportation</p>	

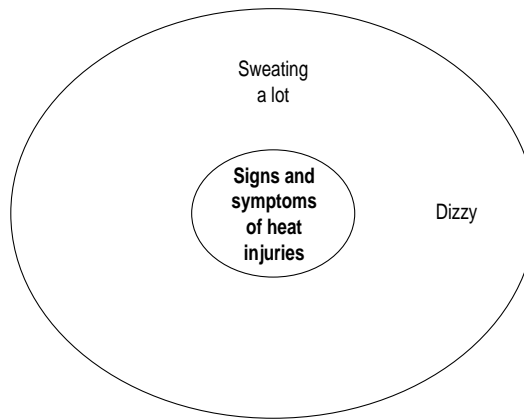
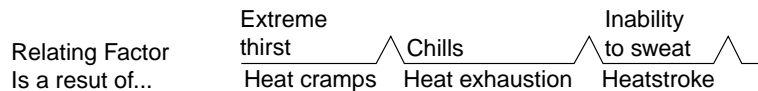
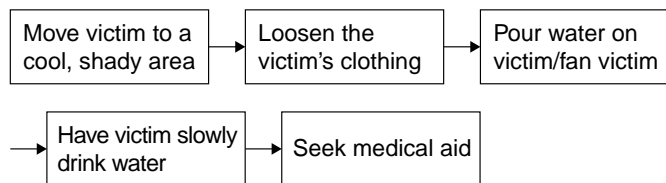
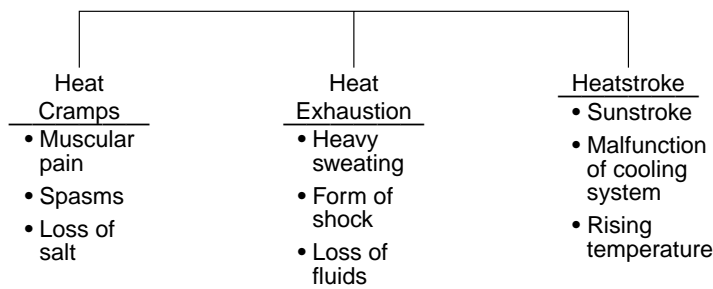
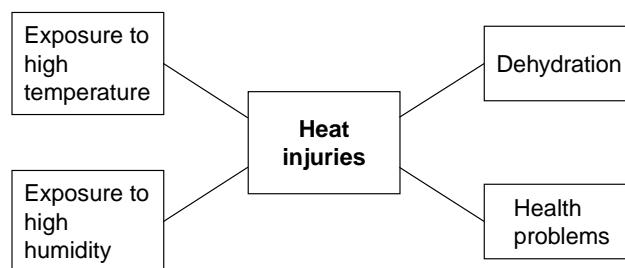


Figure 12.5.2: Using multiple maps. Copyright ©2004 by Thinking Maps®, Inc.

Heat Injuries



*Extreme thirst is a result of heat cramps, just as chills is a result of heat exhaustion, just as the inability to sweat is a result of heatstroke.



This thinking skills foundation supports three intellectual outcomes:

- Students learn clearly stated definitions for eight fundamental thinking skills.
- Students are applying multiple thinking skills (as maps) to complex, multistep problems.
- Students are empowered to use these visual tools for transferring thinking skills across disciplines.

The Double Bubble Map in Figure 12.5.3 compares the similarities and differences between graphic organizers and webs and Thinking Maps®.

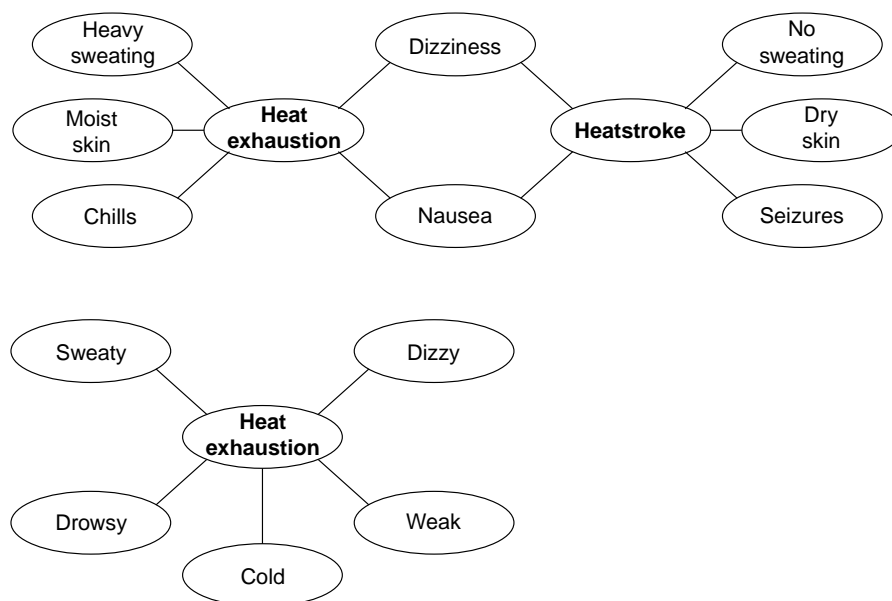
Which Visual Tool Do I Choose?

As you are reading content or listening to someone speak, your brain is processing the information by figuring out what to do with it. When that happens, the next step is to visualize a graphic organizer, web, or Thinking Map® that can help you understand and remember the information. If, for example, the information you receive is asking you to define something, you may choose to use a mind map, a concept map, or a Circle Map as illustrated earlier in this lesson. If you are being asked to compare and contrast something, you may choose to use a Venn diagram or a Double Bubble Map. Graphic organizers, webs, and Thinking Maps® have proven to be highly successful for the learner. When considering which visual tool to use, remember that Thinking Maps® are consistently used for a specific thinking process while the other tools are less defined and therefore are not always used in the same way for the same purpose.

Look at the example in Figure 12.5.4. Discuss with a partner or group which visual tool you feel is most beneficial and effective for learning. What are the advantages and disadvantages of each?

Figure 12.5.3: Similarities and differences.

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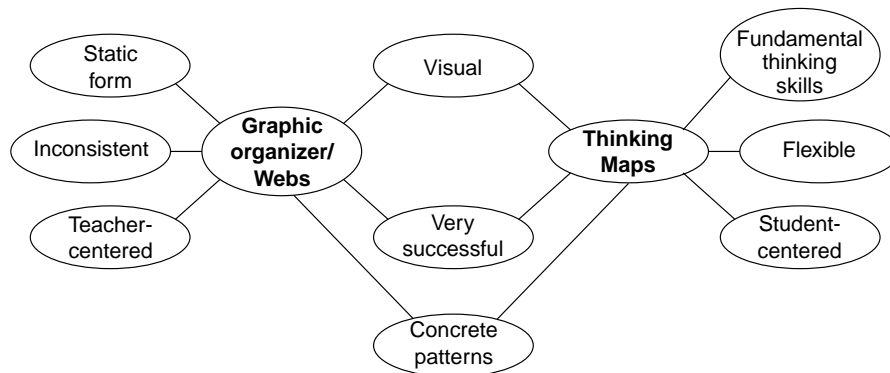


Figure 12.5.4: Contrasting and comparing visual tools.

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Now practice picking a visual tool for learning. Think about a specific task you might do in JROTC. Choose a graphic organizer and a Thinking Map® to represent the same tasks. Share why the visual tools were chosen and which will help you retain the information the most.

Use the Double Bubble Map to help you remember the similarities and differences between Thinking Maps® and other graphic organizers.

Conclusion

Overall, Thinking Maps® and graphic organizers allow you to visually organize concepts, ideas, data, thoughts, and feelings. Choosing the appropriate map or graphic organizer depends on the type of elements that need organizing and analyzing. After the organization process is complete, understanding complex concepts, decision-making, and problem-solving becomes easier.

In the next lesson, you will learn how to use feedback in the classroom. Giving constructive feedback is one of the most important tasks you have as an instructor because you provide information that learners use to improve themselves during the course. Such feedback guides learners while they can still take corrective action.

Lesson Review

1. Name and describe the three types of visual tools.
2. What are the similarities and differences between Thinking Maps® and other graphic organizers?
3. What are the advantages and/or disadvantages of using Thinking Maps®?
4. What are the advantages and/or disadvantages of using graphic organizers and webs?