

Aiming High

A COUNTYWIDE COMMITMENT TO CLOSE
THE ACHIEVEMENT GAP FOR ENGLISH LEARNERS

Aspirando a lo Mejor

RESOURCE

Thinking Maps are invaluable for pre-writing.... I am able to quickly assess whether students have understood a concept or learned key information by glancing at their completed maps.

—Pamell Gallagher, teacher
Olivet School

Thinking Maps

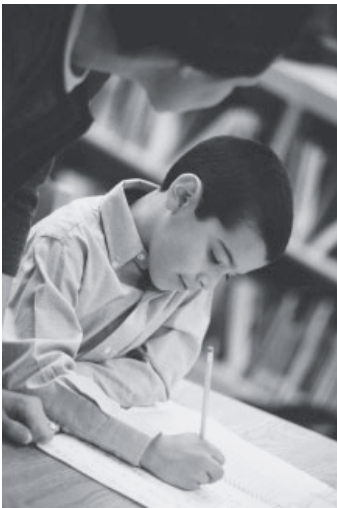


Thinking Maps are an important strategy for student success. They help all children, whether their primary learning style is kinesthetic, auditory, or verbal. It's a very good strategy for English Language Learners because it takes away the necessity to speak and write English.

—Stefanie Holzman, principal
Roosevelt Elementary School



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About this publication

This publication is the second of four “briefs” that SCOE is distributing over the next several months to support you in providing more effective instruction for all students, especially the English Learners in your classrooms. It’s linked to the Aiming High initiative, our countywide commitment to close the achievement gap for English Learners. Twenty-seven districts are participating in Aiming High, but even if your district is not among those, I believe this information is relevant to you and your school.

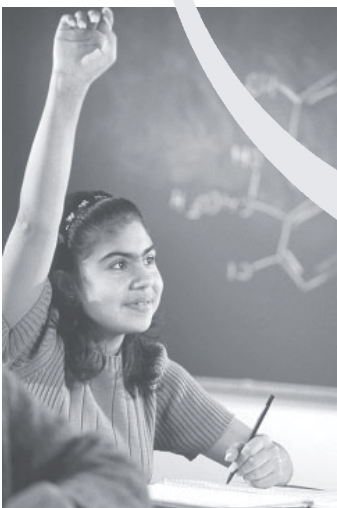
The topic of this brief is *Thinking Maps*. As described by Stefanie Holzman, principal of Roosevelt Elementary School in Long Beach, the schoolwide use of Thinking Maps can effectively raise student achievement in schools with diverse student populations. Ms. Holzman believes that Thinking Maps are the most important and impactful school improvement effort her school has implemented—and as you’ll read in this brief, they have seen real success.

Thinking Maps are a tool that may help us close the achievement gap. Although the use of Thinking Maps is not a “silver bullet” for raising EL achievement, it does align with current research. In his publication *What Works in Classroom Instruction*, Robert Marzano identified nine instructional strategies that have the greatest potential for positively affecting student learning. This information was based on a mega-analysis of research from over 100 studies on classroom instruction.

What Marzano learned from his research is that common instructional conventions—such as summarizing, identifying similarities and differences, using nonlinguistic representations, and generating and testing hypotheses—can strongly influence student achievement. By using Thinking Maps, teachers can take many of the strategies Marzano identified and use them consistently across content areas and grade levels, thereby helping students build fluency in their usage.

Last year, SCOE reviewed a variety of instructional improvement strategies, looking for resources we could recommend to schools in pursuit of improved

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Nine instructional categories that strongly affect student achievement

- ◆ Identifying similarities and differences
- ◆ Summarizing and note-taking
- ◆ Reinforcing effort and providing recognition
- ◆ Homework and practice
- ◆ Nonlinguistic representations
- ◆ Cooperative learning
- ◆ Setting goals and providing feedback
- ◆ Generating and testing hypotheses
- ◆ Activating prior knowledge

Robert J. Marzano, Barbara B. Gaddy, and Ceri Dean. (2000). *What Works in Classroom Instruction*. Aurora, CO: Mid-continent Research for Education and Learning.

Thinking Maps®: Strategy-Based Learning for English Language Learners (and Others!)

by *Stefanie Holzman*

Principal, Roosevelt Elementary School, Long Beach, CA

Roosevelt Elementary has the demographics of an inner city school: 99% ethnicity, 100% free and reduced lunch, and 85% English Language Learners. But we are a California Distinguished School and have a score of 717. Some of our success can be attributed to Thinking Maps, which I introduced when I came to Roosevelt four years ago.

Thinking Maps are an important strategy for student success. They help all children, whether their primary learning style is kinesthetic, auditory, or verbal. It's a very good strategy for English Language Learners because it takes away the necessity to speak and write English. It can be effectively used to support higher level thinking skills as well as low student achievement. It matches the content standards. It just seems too good to be true.

At my school, Thinking Maps are not *another* thing, they are *the* thing. They have become part of the language of my school. You see them everywhere. We have seen positive effects both in individual classrooms and schoolwide. At the classroom level, we have found:

- They are easy for students to use.
- They are helpful for differentiation, especially with English Language Learners.
- Once they are taught, they are owned.
- We can start teaching them in kindergarten.
- We can use them in our assessments. Data drives everything we do, and this is part of the data we use.
- They can be used in any content area or grade level.

At the schoolwide level, teachers have discovered it is easy to teach to standards using Thinking Maps. We have found that they have helped us develop a common language. They lead to reflective conversations and collaborative efforts among all teachers—including new teachers. Thinking Maps are being used everywhere. At my staff meetings, I don't have an agenda—it's a map. When we talk about information, it's always a map. Also, our non-English speaking parents can be trained to use maps.

From an administrator's point of view, Thinking Maps make it easy to assess the following:

- Student learning;
- The content being taught;

- Whether student-centered learning is taking place;
- The kinds/levels of thinking being taught;
- Whether differentiation is occurring.

I can now walk into a classroom and know all of these things by looking at the Thinking Maps. I don't have to talk to students or look at student work—just the Thinking Maps.

The Eight Types of Thinking Maps

Thinking Maps are non-linguistic representations. So are graphic organizers. However, Thinking Maps are different from graphic organizers in that they are visual representations of *thinking*. They help students see which thinking skills are used to solve problems. Graphic organizers do not promote strategic thinking; they promote activity. Without maps, students may come up with the right answer, but have no clear idea what thought process was used to find it.

David Hyerle discovered that there are 400 graphic organizers in this world. Looking closely at them, he found that they represented just eight fundamental thinking processes. He developed "maps" to graphically illustrate each of these eight types of thinking. The Thinking Maps he developed are: circle, bubble, double bubble, tree, brace, flow, multi-flow, and bridge. (*See Table on page 3.*)

1. Circle Map. The circle map is just two concentric circles. In the middle of the circle you put the key ideas and on the outside circle you put everything you know about those ideas. It is like a basket that collects words or ideas, and those words and ideas are not always connected.

For example:

In kindergarten, a teacher asks, "What do you know about the letter 'd'?" Students make a circle map of all they know about this letter.

In Open Court, we study proper nouns. Students collect them on a circle map and they can keep adding to the map.

In math, students collect math vocabulary in a circle map. At the high school level, students put everything they know about the coordinate plane in the circle.

Children who speak no English when they come to school can access this kind of thinking. It is a good vocabulary strategy for use in all languages. You do have to teach grammar—nouns, verbs, adjectives, word structure, opposition, synonyms, and so on. But working it out with the map helps students have some control over how to figure out a word they don't know.

The frame on the outside of the map is a way to show the source of the information or to include different points of view. It can be used with any one of the eight maps. By the way, the eight maps do not work by themselves; they can be integrated together. This becomes clear as you work with the different types of maps.

2. Bubble Map. A bubble map may look like a cluster or a web, but it's not. A bubble map is only for describing things. It uses only one part of speech—the adjective. By itself, it is one of the least useful of the maps. But it can be used very effectively in combination with other maps.

For example:

In first grade our students start writing a response to literature. That means they summarize the story, and talk about how the character changed over time. We don't ask the first graders to write. We ask them to give us a map that tells how the story went. That would be a flow map. (See #6, *Flow Map*.) Then we ask them to describe how the character changes over time. This is a bubble map. So at the beginning of the story the character was shocked and excited. In the middle, he was calm and bored. At the end, he was happy and having fun.

Do you see the value of the maps for assessing students' understanding? If you have two maps that tell the story and describe the characters, do you think that is good evidence of students' understanding of the story? And they are easy for students to do. There is no cognitive load on writing the answers. The cognitive challenge is in showing what they understand. They can use their cognitive energy on maps, not on writing. That's why the maps are so powerful.

3. Double Bubble Map. A double bubble map documents the thinking involved in comparing and contrasting, in showing similar and different qualities of things. Kids love the double bubble map because they can control it so easily.

A Venn diagram, which is a graphic organizer, is also used to compare and contrast. It is very useful in mathematics, and we actually use the double bubble map to teach Venn diagrams. In a double bubble map, the similarities are in the center and the differences are outside. If you put a circle around the characteristics of one thing and another circle

around the characteristics of another thing, you have a Venn diagram. That's how we teach Venn diagrams—by teaching the underlying thinking first.

For example:

A good time to use a double bubble map is when students are working on one story and preparing to do another. In fourth grade, students compare and contrast two stories or two characters, and they make a double bubble map to compare the two stories.

The text structures for a double bubble map are compare and contrast words like: “on the other hand,” “same,” and “different.” These are words that tell students they are comparing. So when kids are taking notes from a text, they look for the text structures.

4. Tree Map. The underlying thinking process for a tree map is classification and organization. This is truly just an outline form. A tree map is literally the whole subject, main idea, main idea, details, details, details. It helps students look at text and understand text structures. They can take information from the book and organize it.

For example:

In kindergarten, students organized the information about each one of the characters in *The Three Bears*. It can be language-based or non-language-based such as organizing different shapes or sizes.

Fifth graders started with the statement that “Change can be positive or negative.” Then they looked at different situations and identified which characteristics were positive and which were negative.

The power of the Thinking Map is the way it helps students organize information to deliver to someone else. Regardless of content area or grade level, students can prove that they understand the concept. For ELL who are low level in terms of their language ability, creating a tree map is the end step. But other students can write a paragraph based on the information. In this way, we can differentiate instruction. The students who do only the tree map have shown that they learned the content. Students who don't have difficulties with grammar, spelling, or punctuation can integrate their map into writing. So you can differentiate in this way, but you can also use the map alone to assess students' knowledge.

5. Brace Map. The brace map helps identify whole and part relationships. It is used for something concrete that can be broken into components or subparts. A brace map is different from a tree map because you physically break things apart with a brace map. A tree map shows the classification

CLOSING THE ACHIEVEMENT GAP FOR ENGLISH LEARNERS

of the parts—where you put the main ideas and details—while the brace map shows the components of the whole. It didn't seem to be very useful until we started using it in math.

For example:

A first-grade math problem could look like this: Penny had five marbles. She gave three marbles to Fred. How many marbles does she have now? Our students

would understand that problem like this: You have the whole. Now you have one part. Then you have another part. They understand that it's a subtraction problem because they started with the whole and were given one of the parts, but the other part is missing. The same thing applies to an addition problem: Penny had three marbles. She got five more marbles. How many marbles

does she have now? They understand that the two parts need to equal the whole, and that's an addition problem. This is one of the strongest ways to use a brace map.

In kindergarten, students did a circle map with all their ideas about the body, and then they did a brace map of the parts of the body.

A brace map is good for teaching the setting of stories—break all the parts of a house into separate rooms or the town into different buildings.

You can go whole to part or part to whole with a brace map. It is a good way to show English Language Learners how things are put together.

6. Flow Map. If you want to work with a sequence of events, a flow map is helpful. First, you can use a circle map to list out things, e.g. what you have to do today. Then you can put them in sequence—what comes first, what comes second, etc. You prioritize and give them a sequence.

Some examples:

- Writing a summary after reading a book or after taking a test;
- Describing the life of a virus (can include illustrations);

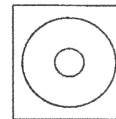
THINKING MAPS



How are you defining this thing or idea? What is the context? What is your frame of reference?

DEFINING IN CONTEXT

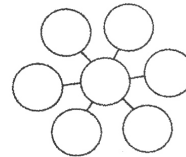
Circle Map



How are you describing this thing? Which adjectives would best describe this thing?

DESCRIBING QUALITIES

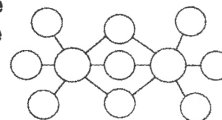
Bubble Map



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

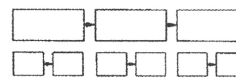
Brace Map



What happened? What is the sequence of events? What are the substages?

SEQUENCING

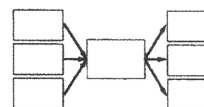
Flow Map



What are the causes and effects of this event? What might happen next?

CAUSE and EFFECT

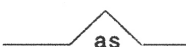
Multi-Flow Map



What is the analogy being used? What is the guiding metaphor?

SEEING ANALOGIES

Bridge Map



- Problem-solving in math;
- Putting letters or decimals in order;
- Telling a story with a beginning, middle, and end.

Flow maps are helpful in teaching the language of text.

The text structures for flow maps are words that indicate a sequence: “first, second, last, subsequently, finally.” Of course, dates are also indicators of flow, as are history timelines.

7. Multi-flow Map. Multi-flow maps are one of the most powerful maps. Multi-flow maps show cause and effect. The event is in the middle.

For example:

A student is sent to the principal’s office. On the far left are the causes: What caused you to be sent here? “I threw the ball at someone.” What else? “I didn’t follow the problem-solving rules.” What else? “I didn’t listen to the teacher when she asked me not to throw the ball.” What will the effects be? “You are going to call my mom.” What’s another effect? “I’m learning.” What’s another effect? “I’m not going to have recess for a week.”

Kindergarten example: The event is, “It was a good day for kites.” What caused it to be a good day and what happened as a result?

First grade example: The event is, “I was nervous on the first day of school.” What caused them to be nervous is on the left and the effect is on the right.

Social studies example: The causes and effects of the Industrial Revolution. There may be no correlation between the left side and the right. That’s fine.

Science example: A volcano explodes and Pompeii is destroyed. What caused the volcano to explode? What were the effects?

Textbooks don’t always say, “These are the causes and effects.” You need to look for key words like “however” or “as a result.” Those words indicate it is a multi-flow map.

8. Bridge Map. A bridge map is used to illustrate analogies and metaphors. It’s helpful for showing the relationship of the concrete to the abstract.

For example:

In kindergarten, you show that “one” has one dot, and “two” has two dots, and so on. You teach the relating factor. It’s important to know the relating factor in an analogy, that is, the underlying relationship between the two parts of the analogy.

In first grade, you show doubles: one plus one is the same as two, just like two plus two is the same as four; three plus three is the same as six, etc. Showing analogies is one of the most powerful things we do.

We teach vocabulary this way. “Different” is the opposite of “same” just like “sharp” is opposite of “dull” or “big” is opposite of “small.” We repeat the phrase “opposite of,” so that the relating factor is always stated.

When we use Thinking Maps, our purpose is to help students transfer thinking processes and integrate their learning. We also use them to continuously assess student progress.

Why do we think this work with Thinking Maps is so powerful for students? Here are some of the reasons:

- Students become aware of the types of thinking they can apply to a text/assignment;
- Students learn ways to organize information in a manner that makes sense to them;
- Students have control over the way they want to think about the text/assignment;
- Students can easily demonstrate their thinking;
- Students have a strategy to determine the way the author is presenting information.

The use of Thinking Maps has been a significant factor in providing effective instruction for all students and closing the achievement gap at Roosevelt School.

For more information about the use of Thinking Maps at Roosevelt Elementary School, contact Stefanie Holzman, principal, sholzman@lbusd.k12.ca.us. Please note, the term “Thinking Maps” and the term “Thinking Maps” with the graphic forms of the eight maps are registered trademarks. No use of the term “Thinking Maps” with or without the graphic forms of the eight maps may be used in any way without the permission of Thinking Maps, Inc. Before using Thinking Maps in the classroom, in-depth training approved by Thinking Maps, Inc. is required. For more information on Thinking Maps and the requisite training, see www.thinkingmaps.com.

This presentation was part of the 13th Annual Administrator Conference “Closing the Achievement Gap for EL Students” presented at the Sonoma County Office of Education in April 2004. Publication support was provided by the California Department of Education: Regional Support Plan for High Schools
AVID Regional Director: Gail Wright ■ *AVID Regional Coordinator:* Annette Murray ■ *Editor:* Carol Lingman

Thinking Maps in local schools

Comments from a sixth-grade teacher at Olivet School

Thinking Maps have helped me organize my curriculum. They are a common language for thinking processes in all subjects. They have given me an instructional focus, a year-long theme, and simplified my use of the district Language Arts program.

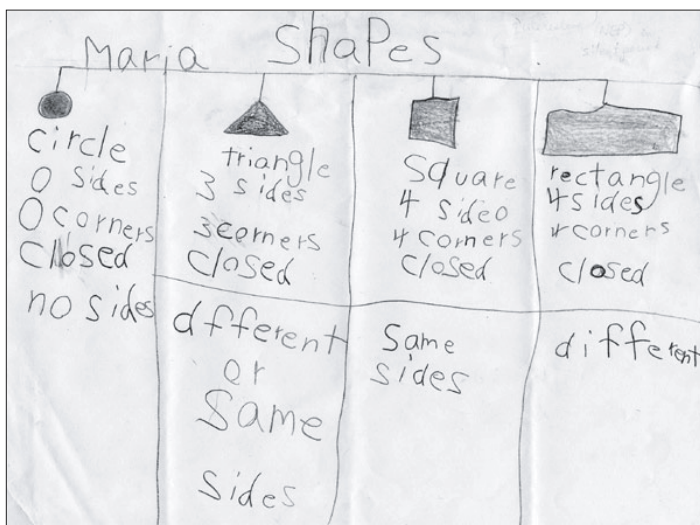
I like being able to teach concepts and skills with just eight maps. They have been a great tool for grammar, spelling, and vocabulary instruction. The maps have also given me new ways to ask for information from students.

Thinking Maps are invaluable for pre-writing. They are a great way for students to show me their understanding of a story. I love being able to say, "Use three different tree maps to classify your spelling words three different ways." I feel I am able to quickly assess whether students have understood a concept or learned key information by glancing at their completed maps.

All my students like them and benefit from their use. Most important of all, Thinking Maps help both my students and me "think about our thinking." My class says I should definitely continue to use Thinking Maps with students next year. —Pamell Gallagher

Three Thinking Map examples from Pamell Gallagher's class

- ◆ After a field trip to Alcatraz, instead of writing an essay about what they learned, students used maps in small groups to illustrate their understanding of this island's many layers of history.
- ◆ In another activity, students read a selection in their social studies books and demonstrated their understanding using a map of their choice. They did this six times, using the same type of map no more than two times.
- ◆ Students used a Flow Map to make a timeline of ancient civilization and a Tree Map to take notes for a research paper. They used maps to compare and contrast two ancient civilizations, learn what led to the civilizations'



A Tree Map by a first-grade student from Kawana School, teacher Maureen Minto

WHAT STUDENTS SAY

Comments from Olivet School

- ◆ I like the Circle Map best because I like getting down my ideas.
- ◆ Thinking Maps help me a lot with my writing.
- ◆ They help me explain what characters are like.
- ◆ They help me organize my thoughts.
- ◆ I like the Multi-flow Map best because I like thinking about what happened and what might happen next.
- ◆ I like using the Brace Map so I can learn the words for parts of things.

WHAT TEACHERS SAY

Comments from Steele Lane School

- ◆ I am so excited about Thinking Maps! I introduced them before journal writing and we used them to brainstorm before we wrote. The writing in my second-grade class improved more than I have ever seen it improve in one day. —Sue Myatt, second grade
- ◆ The inservice was one of the best ones I have been to in many years. I was able to use the materials in my classroom the next day. —Mary Coover, first grade
- ◆ ...Concrete, useful, applicable tools. Students are asking questions about the Circle Map we posted on the wall. It was a practical, informative training. —Mike Seigel, third grade

rise and fall, describe a character from history, and demonstrate analogous relationships (the Nile River was the source of fertile land for Egypt as the Tigris and Euphrates were the source for Mesopotamia, etc.).

...continued from page 2

EL achievement. We concluded that the use of Thinking Maps was a common-sense approach that has real promise in helping to close the achievement gap. As a result, we invited ten schools to participate in a one-year pilot in which individual teachers agreed to learn about Thinking Maps and use them consistently in their classrooms. A SCOE content specialist was paired with each school and monthly follow-up meetings were held.

So far, we are excited by what the teachers are telling us and optimistic about the potential of school-wide implementation. In 2005-06, we plan to formally evaluate the Thinking Map pilot and assess its impact on overall student achievement and EL advancement. If the data shows that achievement has improved, we will provide additional opportunities for schools to learn about Thinking Maps, with a goal of countywide participation. This summer, SCOE will

offer two introductory workshops to teachers from another ten schools (see box, left). If a group of teachers from your school is interested, please contact me at drussell@scoe.org or 524-2786.



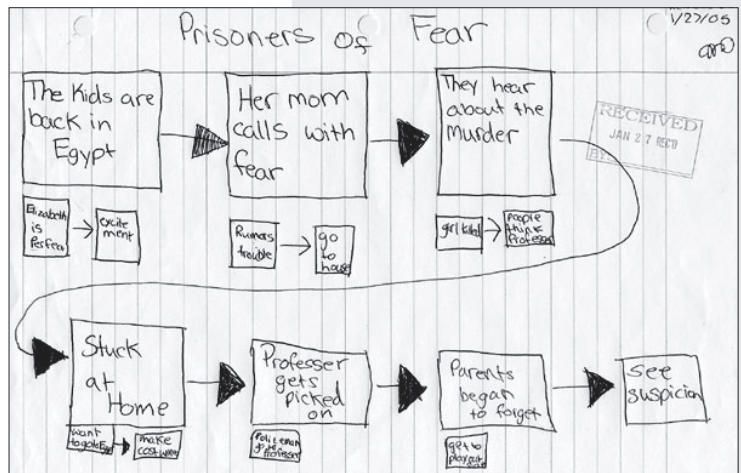
Don Russell, Ed.D.
Assistant Superintendent, SCOE

February, 2005

Organizing Student Thinking

This is a two-day introductory workshop that will be offered by SCOE this August. It is for school teams interested in piloting Thinking Map strategies for possible schoolwide implementation. Teams are comprised of at least three teachers and the principal. Schools must sign an agreement outlining the requirements of participation in the pilot.

August 4-5 or August 15-16
\$100 per person
Information: 524-2786



A Flow Map by a sixth-grader at Dunham School, teacher Tara Carter

BOOKS FOR FURTHER STUDY

Classroom Instruction that Works, by Robert J. Marzano, Debra J. Pickering, and Jane E. Pollock (ASCD, Association for Supervision and Curriculum Development, 2001)

A Field Guide to Using Visual Tools, by David Hyerle (ASCD, Association for Supervision and Curriculum Development, 2000)

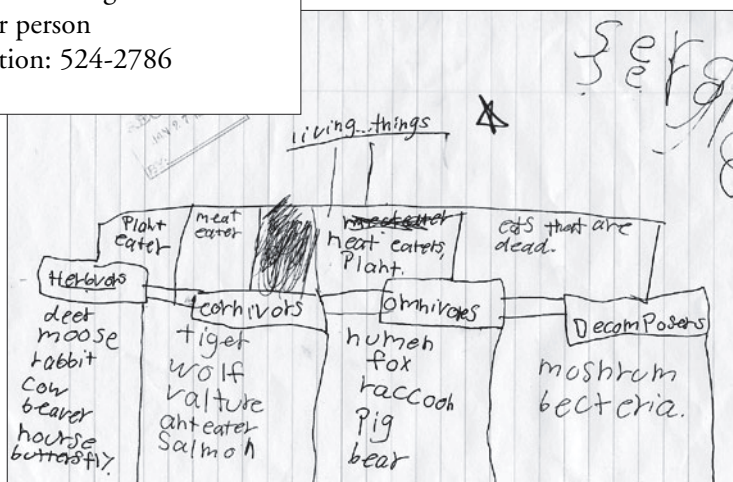
Student Successes with Thinking Maps, edited by David Hyerle (Corwin Press, 2004)

What Works in Classroom Instruction, by Robert J. Marzano, Barbara B. Gaddy, and Ceri Dean (Mid-continent Research for Education and Learning, 2000)

WEBSITES

Designs for Thinking
www.mapthemind.com

Thinking Maps, Inc.
www.thinkingmaps.com



A Tree Map by a fifth-grade EL student at Dunham School, teacher Gretchen Schmidt