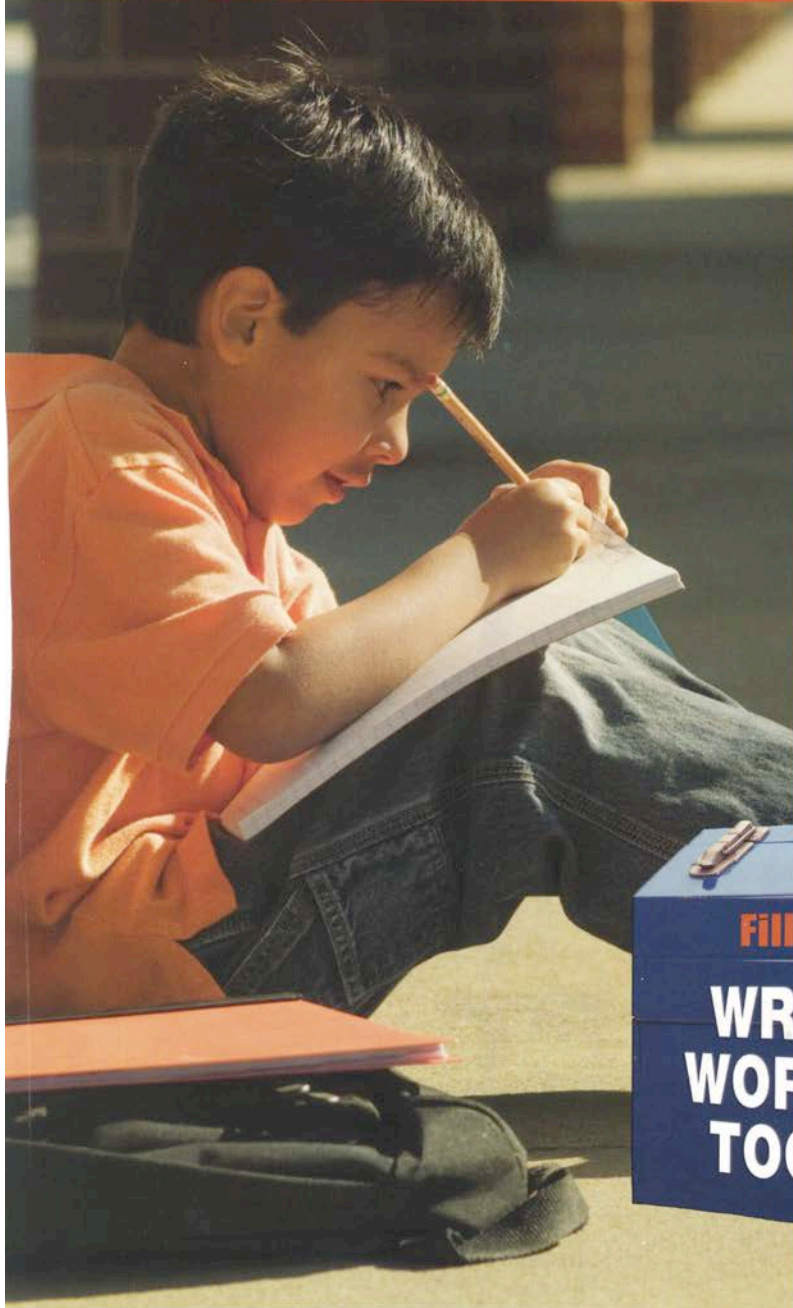


# TODAY'S CATHOLIC Teacher

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**MAP THE WAY**  
to Higher  
Achievement

**CAREER  
MOVES**  
Outside the  
Classroom

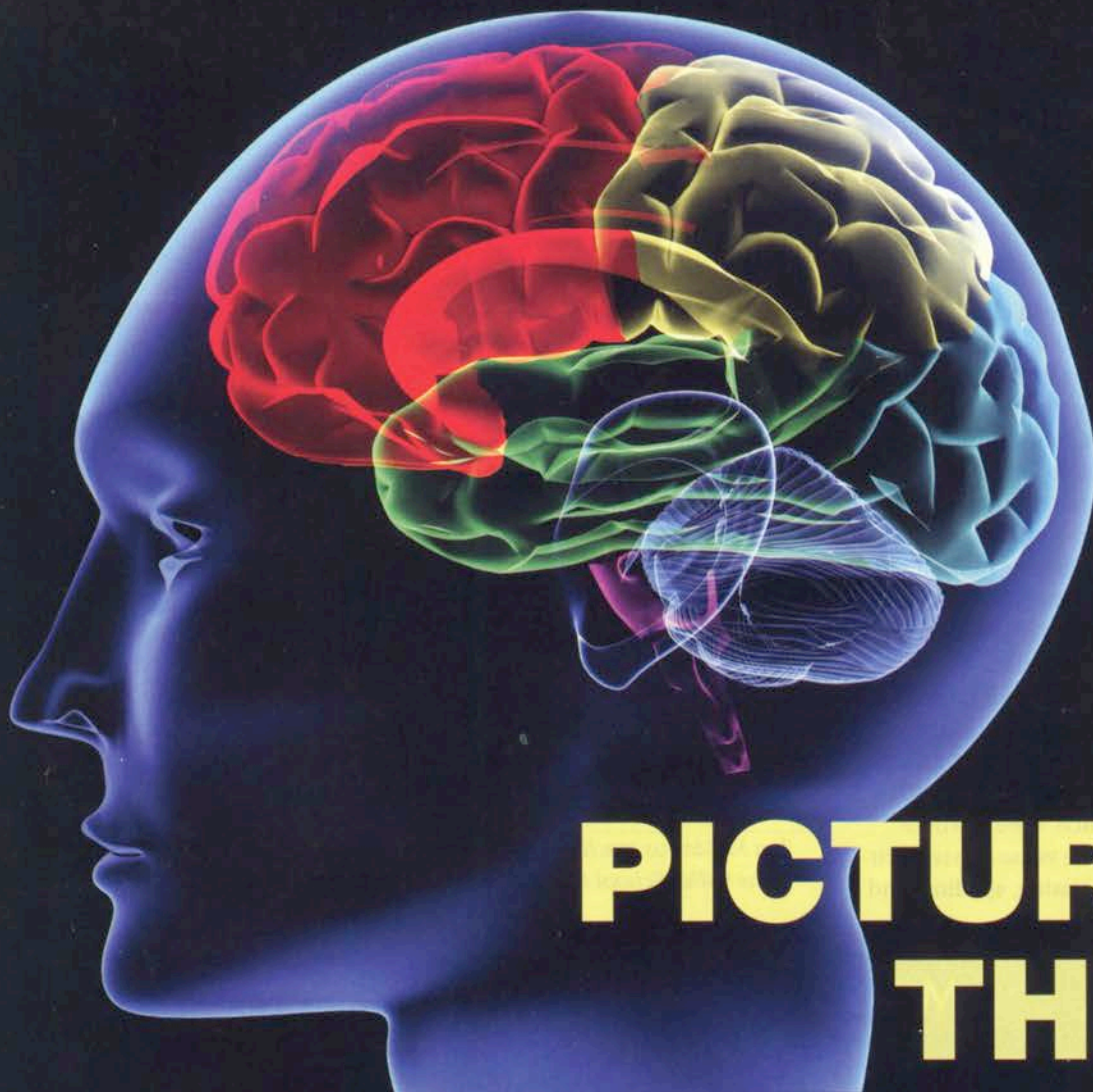
**MEMORY,  
EMOTIONS,  
& READING**

**Fill Up Your**  
**WRITER'S  
WORKSHOP  
TOOLBOX**

**Lou Whitaker's Article:**

*Picture This: Teaching Mapping to Improve Student Achievement.*  
Today's Catholic Teacher Magazine, April 2009.





# PICTURE THIS

## Teaching Mapping to Improve Student Achievement

LOU E. WHITAKER, ED.D.

**C**redible staff development programs must be research-based. For public schools to receive federal funding, their teacher training must be founded on sound, empirical data. Likewise, when a Catholic school goes through its accreditation process, the visiting team will verify that the school's professional development programs are based on best practices in education.

But often our path to sound, empirical data is a result of accidental research—a serendipitous situation. As principal at Pope John Paul II Catholic School in Lecanto, Florida, I stumbled across a situation that led to my eventual doctoral research. I was searching for a topic that related to my interest in neuroscience and brain-compatible learning strategies. I found it right in one of my classrooms.

### Action Research by Accident

One afternoon the eighth-grade students at Pope John Paul II Catholic School were assigned to read a chapter in social studies and to be prepared for a test the following day. This was an excellent opportunity for the students to learn to use the software product *Inspiration*® that the school had recently purchased. Since I was familiar with the software, I volunteered to teach the class and model for my technology teacher how to teach mapping using the new computer software.

To review for the test, the students read aloud each paragraph and then I began to mind map it onto the large screen projector. *Mind mapping* is the process of putting one's thoughts on paper using graphics and key words. The time flew by, and the students only had time to outline half of the chapter. They read the rest of the



chapter on their own. The next day, they took their social studies test.

When I asked how they did on the test after using *Inspiration* to help them take notes, the students told me that the majority of them received a grade of C. At first I was disappointed in these results, but after further discussions with the students I found that most of the students received an A on the first half of the test that we mapped together, and an F on the second half of the test which they studied on their own. The students reported that they could remember and recall information very easily when using the computer software to help them mind map, but they had difficulty remembering what they had read by themselves. This accidental action research project piqued my interest on using a graphic organizer to help students retain and recall information.

### What Is Mapping?

Mind mapping is a way of taking notes using pictures, symbols, and words. A graphic organizer “forms a powerful visual picture of information and allows the mind ‘to see’ undiscovered patterns and relationships,” according to *Inspiration Software* (2003, p. 2). The student starts with a central idea and draws symbols or pictures to represent key topics or thoughts. Lines and arrows are inserted to show relationships between the items. It is a blueprint, or a sentence diagram, of what is covered in class. It is a creative method of connecting ideas to one another. Webs, concepts maps, and idea maps, as well as the software *Inspiration*, are all forms of mind mapping. As David Hyerle explained in *Visual Tools for Constructing Knowledge* (1996), “Visual tools are

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computer.*

for constructing representations of knowledge. . . . We use maps to find our way to new information, much like an evolving treasure map of the mind for seeking new meaning in tests and other materials” (p. 11).

When the teacher was interviewed after this accidental action research, she commented that she observed that the group was very attentive during the lesson, which was actually difficult for this group of students. In general, these students had very short attention spans, and yet they were very interested and remained on task for the duration of the lesson. The teacher also observed that the students were studying for the test using the graphic organizer, something she had rarely witnessed before. This would seem to imply that the students were interested in studying from their maps. The teacher also noted that she could see an improvement in student learning as well as in behavior. She believed that there was a

definite improvement in classroom management due to the way the information was presented (Whitaker, 2004, p. 14).

The students were also interviewed and were asked questions regarding the mapping process. The most important qualitative data reported from the interviewing process were that 90 percent of the students believed the graphic organizer helped them recall information. The teacher observed the students studying for the test on their own, without being asked to do so—an atypical occurrence. Was this a tool the students could easily understand and actually enjoy using? This pilot program opened the door to more questions.

### Research Study

It became evident that mapping was a teaching strategy that should be implemented throughout our school, and as a result, it became the focus of my doctoral research. The study began by having the teachers use mapping as their primary form of instruction. The teacher would mind map the lesson using graphics and short words, graphing the lesson on the board or overhead projector. At first, the students merely copied what the teacher drew, but eventually they could map lessons on their own.

After a couple of weeks of hand mind mapping, they went into the computer lab to map the lessons using *Inspiration*. Because today’s students are so computer savvy, they were mapping at lightning speed—and loving it! This was evident when one of the teachers sent me an email to tell me that at recess time a group of students asked if they could cut

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### Teaching Mapping to Improve Student Achievement

recess short so they could go back in and finish mapping their social studies lesson on the computer! Their attitudes were changing. They were excited about coming to class and enjoyed taking notes this way (Whitaker, 2004, p. 77).

The teachers used a key strategy that was very important. Whenever a lesson or map was completed, the teacher asked the student to “tell the story” to another student. This form of reciprocal teaching cemented what they had learned in the lesson. How does this work neurologically in the brain?

The Dana Foundation has an excellent picture that clearly demonstrates what is going on as parts of the brain are being stimulated. This picture includes viewing different areas of the brain through the use of Positron Emission Tomography (PET Scan). Thanks to advanced technology, researchers are able to see the various levels of activity in the brain. In a PET Scan, the lighter the color, the more activity is occurring, while darker color indicates less activity. When a student *hears words*, for example, the temporal lobes will appear light. When a person is *seeing words on a page* and not really listening to anything, then the occipital region of the brain shows the lighter color. If a student is asked to speak, the temporal region (middle lateral section) will appear lighter; and then if the student is asked to think about what he is going to say—*generate his thoughts*—while giving a speech, for example, the frontal lobes will show high levels of activity.

### Teaching Strategies

What is the best teaching strategy to use in the classroom? Doesn't it make sense that the more areas of the brain

that are stimulated, the better chance the student will have of retaining the information? This is why lecture is one of the weakest teaching strategies to use; only one area of the brain is being stimulated: the temporal lobes. Cooperative learning is preferred because it involves more regions of the brain.

But what is the best teaching method to use? Reciprocal teaching. Who is the smartest person in the classroom? The teacher! Why? One reason is that he or she is using all regions of the brain when a lesson is being taught. A teacher is constantly thinking about what to say next, activating the frontal lobes. As the teacher speaks, the parietal lobes are firing. At the same time, the teacher listens to the students' responses (temporal lobes) and monitors everything going on in the classroom (visual/occipital lobes).

All regions of the brain are activated when a person is teaching a lesson. How can we use this information to improve learning? Once a student has learned a lesson, have that student teach it to another student. By verbalizing what he or she has learned, more of the student's neurons become activated; and the more areas of the brain that are activated, the better chance a student has to remember what was taught.

Once the instructor teaches a segment of a lesson, the teacher should stop, pair up students with partners, and have the students take turns teaching each other. As the students are doing this, the teacher should circulate throughout the room and listen closely to what is being taught. If the information is correct, then that is a good indication that the students understand the lesson. If not, the teacher must reteach or clarify any miscon-

ceptions. This reciprocal teaching method gives the students an opportunity to activate many different regions of their brains, and gives the teacher an opportunity to monitor what the children have learned and the progress of the lesson. So if you want students to learn, let them teach!

In this research study, the students were instructed to “tell the story” to their partners. This activated the various regions of the brain, giving them a better chance to retain the information. This method works for all children, including children with special needs. To get a representative sample, the research was conducted at both a Catholic school and a public elementary school, with the 133 students ranging from those with learning disabilities to those designated as gifted (Whitaker, 2004).

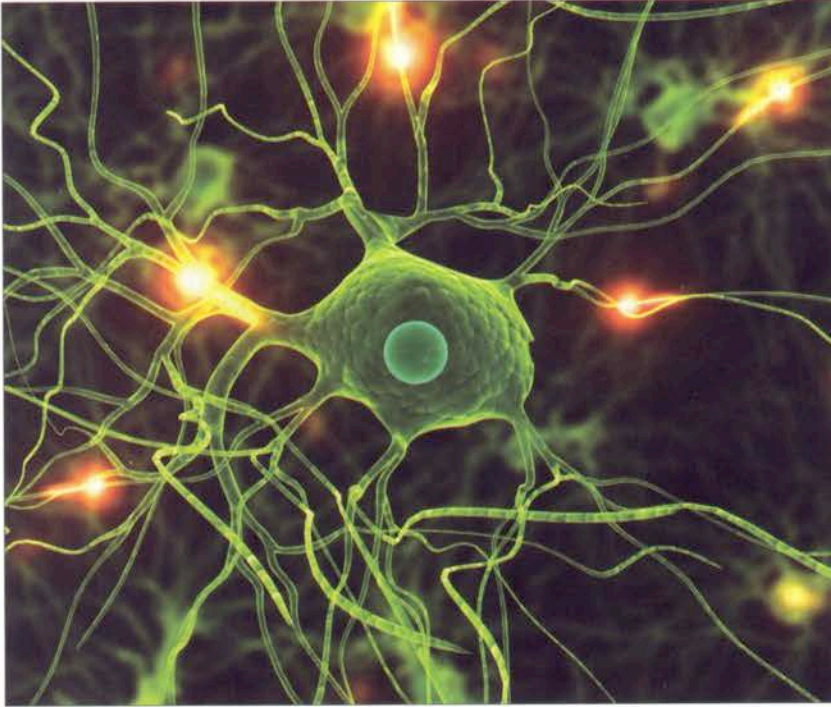
There was one learning-disabled child who could map by hand, map on the computer, and then “tell the story.” Although he struggled to read and couldn't read the fourth-grade social studies textbook, with this method (mapping and reciprocal teaching) he learned the material and passed the tests! The teacher commented on how this changed the child's attitude toward class and improved his self-image. He was now able to keep up with the class and did very well academically, despite his reading limitations (Whitaker, 2004).

Numerous studies support findings that graphic organizers help students retain or recall information. Not only does it help recall or retention, mapping assists in organizing concepts hierarchically and aids in the transfer of learning (Beissner et al., 1993). The use of graphic organizers helps integrate content that, in turn,



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improves problem-solving skills and student outcomes (Armbruster & Anderson, 1980; Beissner et al.). As Hyerle (1996) cleverly stated it, by using maps and graphic organizers, the students can now “see the forest and the trees” (p. 2).

This research was not only about mapping and improving student achievement, it was about changing attitudes regarding taking notes in class and studying. Walt Disney once said, “Give me the person with the right attitude and I can teach him anything.” If students are excited and actively involved in the lesson, they can learn anything. The use of mapping and reciprocal teaching are simple strategies teachers can use to get students excited about learning. Administrators and teachers should evaluate their current staff development programs to ensure they include providing opportunities for teach-

ers to implement their own action research on finding ways to improve attitudes, thereby increasing student achievement. ▲

*Dr. Lou E. Whitaker is principal of Pope John Paul II Catholic School in Lecanto, FL.*

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## Replicating This Action Research in Your Classroom

1. The teacher models mapping: Teacher maps the lesson and the students copy.
2. The students map on their own as the teacher talks about the lesson.
3. When the lesson or map is complete, “tell the story” (reciprocal teaching with a partner). The students use the computer to map the lesson using a graphic organizer software program such as *Inspiration*. (Ask the technology teacher to teach the computer skills.)
4. When the map is complete, “tell the story” again (reciprocal teaching with a partner).
5. Watch attitude and student achievement change in your classroom!