BRAINSTORMING: OVERVIEW AND SUGGESTIONS

Brainstorming is a very important yet often overlooked part of the writing process. This step provides valuable oral rehearsal of thoughts and ideas, which is essential for learning-disabled students.

Brainstorming offers the teacher an opportunity to help students activate prior knowledge, give feedback on ideas, work together in a group, draw connections among various concepts, and help students develop substrands for topics. Brainstorming also helps develop organizational skills, as students have an opportunity to clarify and organize ideas before they write.

Teachers can conduct brainstorming in a number of ways. The first, and probably most common, is a teacher-led technique. The teacher introduces a topic and solicits ideas from students in a rather random fashion. At the same time, the teacher writes all ideas and suggestions on the board so that students can see what has already been discussed.

Although this may sound like a fairly easy task for the teacher, it actually involves a number of carefully planned steps or techniques. Good brainstorming is not simply allowing the students to talk; rather, it entails careful planning about how to gear a discussion toward specific purposes.

Suggestions for Effective Teacher-Led Brainstorming

First, be sure you have a goal in mind. Know, in advance, where you want the discussion to go to support the writing assignment. Be prepared for what students may discuss and develop ways to draw them in your direction.

Second, accept almost any relevant contribution. The purpose of brainstorming is to activate prior knowledge and creativity, and both vary from student to student. One student may make a connection that you or other students have not made. Therefore, it is important to acknowledge everyone as a valuable contributor, and provide a safe environment for everyone to participate without fear of ridicule. Otherwise, students who feel that their contributions are silly or unimportant will be reluctant to participate in the future and will lose out on the important oral rehearsal experience.

Next, provide cues when necessary. Although brainstorming often sounds like fun to those without language disabilities, it can be daunting to learning-disabled students. Brainstorming involves prior knowledge (which learning-disabled students may not possess), guessing (which can provoke anxiety for students uncomfortable with risk-taking), and some degree of creative thinking. Learning-disabled students often get stuck when they are not provided with enough structure to complete a task. Brainstorming is difficult because of its seeming lack of structure. Some learning-disabled students simply do not like it, and need more parameters than simply, "Give me your thoughts on..."

As a result, cues are often necessary to get learning-disabled students thinking and talking. For example, if a teacher is introducing the concept of the Dust Bowl during the Depression, learning-disabled students may not be able to guess what it is. A typical response from a student might be, "How am I supposed to know? We haven't even learned it yet...." To encourage contributions, the teacher might offer cues like: "How does something become dusty? What do you think of when you think of that word? What about a bowl? What different types of bowls are there? mixing bowls? contest bowls like football? bowl haircuts? What is the shape of a bowl?"

Cues that go beyond the words themselves might include additional information about the topic: "The Dust Bowl refers to an actual place during the Depression. Given what we know about dust and bowls, where do you think this place might be? Why? What do you suppose happened there? Why would we call it this?" Often, cueing questions cause learning-disabled students to realize that

they do know a lot about a particular topic; they may simply need more time and discussion to realize it. Over time, the teacher should encourage students to devise and ask their own questions.

When a teacher senses that a student is having trouble with brainstorming, independent brainstorming (i.e., by oneself at the desk or at home) is never a good idea. The teacher should always be available to the student to provide cues and encouragement or supply a willing and supportive peer helper who works well with the student having difficulty.

Another brainstorming suggestion is to expect individual contributions to be on par with the child's ability. It is unrealistic to expect abstract or creative ideas from a child not yet at this level. Instead, closely consider each child's current capability and ask questions appropriate to that level. It may be helpful to think in terms of Bloom's taxonomy, in which you ask questions at a variety of levels to suit each child's needs. By asking each child an appropriate question, you ensure success.

Also, use the board when brainstorming. While students talk, record all relevant contributions on the board. This not only provides visual reminders of what has been said, it also makes it easier to draw connections later between various concepts. Visual reinforcement of information (in which lines are literally drawn between various concepts) is always helpful for learning-disabled students.

Last, set a time limit for class brainstorming. As with any activity, students can become bored if an activity goes on too long. Limit your discussion to a manageable time frame for everyone. A carefully planned discussion should achieve your goals in a reasonable time. Stop when you sense that students are losing interest or when the discussion is not going in the direction you want. Later, you can try again, or when appropriate, move to the organizing step.

Suggestions for More Independent Brainstorming: Acronyms, ISM, and Metacognitive Instruction

Independent brainstorming is a higher-level skill that demands more abstract and critical ability on the part of the student. Most learning-disabled students, when initially learning to brainstorm, need the teacher to lead and cue them effectively. Once the teacher is not present to do this, students are left alone to generate ideas, stay on topic, and develop their own substrands/subtopics. This involves some degree of abstract and critical thinking, which must be developed over time. Without the ability to do such thinking, students may think, "I don't know anything about this. I have nothing to write."

Once you determine that a student can brainstorm without assistance, two methods are helpful: the use of acronyms and a group method called interactive semantic mapping (ISM).

Acronyms

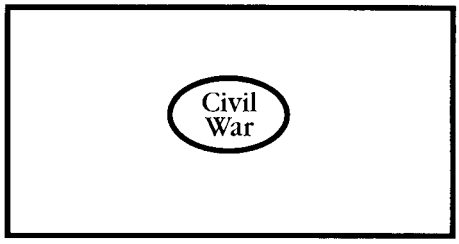
Acronyms, mnemonic devices that cue students' memories for a procedure, can help encourage students to brainstorm more independently. One brainstorming acronym, THINK, comes from the University of Kansas Medical Center (Boyle 1993). It emphasizes the thinking-before-writing-process.

Tap:	Tap into what you know about the topic and list at least eight ideas.
Hammer:	Hammer away at five good ideas by circling them and linking three details to each (create pods).
Identify:	Identify the pods by linking them together and numbering each one according to where it should occur in the story.
Now:	Now write a paragraph for each pod.
Keep:	Keep it neat through a search for spelling and punctuation errors.

Using an acronym does not guarantee improved thinking or brainstorming ability. Rather, the main purpose is to heighten a student's awareness of the brainstorming procedure. Acronyms can also be created by individuals or the class. The idea is to create one accessible enough for students to remember and apply easily.

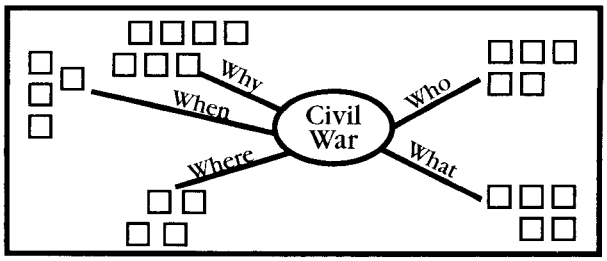
Interactive Semantic Mapping

Interactive semantic mapping (Scanlon, Duran, Reyes and Gillado 1992) is a more independent, collaborative group brainstorming project. It is highly effective in improving student writing and comprehension. Before reading and writing about new material, the teacher divides the class into groups of five to six students. Each group has a large piece of paper or poster board, plus a pad of Post-It notes. The concept to be studied or brainstormed is written in the middle of the large paper.



Within each group, one student is the scribe; this person is in charge of writing down all the brainstormed phrases and words. Together, all students brainstorm and make predictions about the concept. As students generate ideas and guess, the scribe writes down every descriptor on a separate Post-It note and sticks it to the paper. Once the students have generated many ideas, the large paper has a messy, haphazard arrangement of note papers.

When the students run out of ideas, they work together to categorize the information. It helps to have a few students pick up a bunch of notes, read them aloud one at a time, and find consensus regarding categories. As major categories are generated, students place notes that fall under the same category together on the big piece of paper. They then draw a line from the center concept out to the category and label that line to make the category clear.



Eventually, students usually categorize all their ideas into four to five major areas. They have constructed a semantic map at this point. This map can be used as an outline for writing or as a comprehension check later.

To use the process as a pre-writing technique, students can write from the map and verify exact facts, if necessary, after they learn more about the topic. Edits can be made during the proofreading and editing process.

Research indicates that ISM can dramatically improve comprehension and quiz scores. Because the students process the information so intently from the beginning, they have increased access to it in memory.

Some helpful hints about ISM follow:

1. Some student groups need help from you while they learn the technique. Although you should try to stay in the background, you may need to give very direct suggestions for categories and keep the students on task.
2. When beginning, you may want to review common categories with the students, so they do not have excessive difficulty with this step. You may want to start by choosing mapping exercises that can draw on the simpler categories such as who, what, where, when, why and how, and remind students of these categories as they brainstorm (if necessary).
3. Especially at the early stages, you may need to remind the students to talk to each other, not to you. At first, students tend to look to you for verification of every idea. Respond by saying, "What does the group think? You should ask each other these questions. Talk to each other."
4. Do not overly use this technique. Although it is generally viewed by students as somewhat fun, ISM takes effort and a positive, cooperative attitude. It should not be used before every writing (or comprehension) exercise; instead, it should be used sparingly to maintain enthusiasm for it. At other times, use regular teacher-led brainstorming or individual brainstorming to serve your purposes.
5. Possibly, assign the role of leader. This person can monitor interruptive behavior, make sure all are heard, and spearhead the categorization process. A leader can further reduce the amount of teacher-led brainstorming and increase interactive brainstorming.

Overall, ISM is valuable because it helps students:

—activate prior knowledge more independently
—tie new knowledge with old
—predict relationships
—use cooperative knowledge
—understand concepts in relation to context
—justify relationships that exist between and among concepts
—confirm their understanding and study for tests and quizzes
—construct semantic maps

Metacognitive Strategies

In traditional metacognitive training, students are taught to ask themselves key questions during the brainstorming process that allow them to be independent and lead them to a finished product. This type of cognitive strategy instruction is commonly used with learning-disabled students, who often lack the ability to self-question and plan effectively. They need direct instruction to do this. Teachers most often teach this skill during long-term projects (for time monitoring and procedural purposes) and for critical writing.

When writing, self-talk is necessary because students must constantly question their writing. The self-questions, "Am I being clear? Am I addressing my audience effectively? Have I answered the question?" are all a part of the writing process. Generally, non-learning-disabled students do this quite naturally without any formal training. However, learning-disabled students sometimes lack the language structures (and, hence, critical thinking skills) to do self-talk on their own. Teachers must teach them these skills in a formal manner.

Researchers have been investigating this aspect of the writing process for learning-disabled students. For example, Englert and Raphael (1988) have developed sets of self-questions to accompany each step of the writing process. They call this cognitive strategy instruction in writing (CSIW). The idea

is to develop question-asking in the students to boost metacognitive skills. These skills, in turn, should help their writing.

In the brainstorming step, they suggest questions like:

—Who am I writing for?
—Why am I writing this?
—What do I already know about this topic?
—How can I group my ideas?
—Can I organize them according to a text structure that I know? (for example, comparison/contrast, explanation, problem/solution)

Additional brainstorming questions are:

—What is my topic? Do I know related topics?
—Who is my audience? What is the best way to address them?
—Can I relate this topic to anything I already know?
—Where can I get more information? Who can I ask?
—What is the best way to present this information?

Ideally, students should have sheets with these questions already on them so they can fill in their own answers and cue their thinking. Also, repeated exposure to the same type of questions for all forms of writing helps students learn and internalize the question types.

One key to independent metacognitive skill and brainstorming is correct modeling. You provide questions and initially model their correct use. A second key is repeated exposure to a reliable procedure. Repeated exposure to the sheets with questions helps students to internalize the information and apply it independently. When students use the same questions for an extended time, they begin to learn them on their own and achieve independence.

4. Statement PIE Method

This technique is considered a strategy for paragraph writing, as it generates details for writing (Hanau 1974 as cited in Wallace and Bott 1989). However, in a modified form, it can also be used for brainstorming because it gives direct suggestions for students to think about. PIE stands for:

—**P**roof
—**I**nformation
—**E**xamples

During a brainstorm, an acronym like PIE can help students think in a more direct way about the concept.

Overall, the importance of brainstorming, whether teacher-led, independent, or interactive, cannot be overestimated. Because of the strong link between oral and written language, appropriate rehearsal of thoughts and ideas is imperative to good writing. Without a brainstorming session, learning-disabled students are often at a loss about what or how to write. With a good brainstorming session, they can more confidently and enthusiastically put pencil to paper.