Strategy 1

Brainstorming and Discussion

WHAT: DEFINING THE STRATEGY

In which order did these three things happen in the story?

What do these vocabulary words mean within the context of the text?

Analyze how what is directly stated in the text differs from what is really meant.

What is the author's point of view? Cite evidence.

These are just a few of the questions that should be asked as students engage in brainstorming and discussing answers in an effort to comprehend text. Yet I challenge you to visit a number of classrooms, particularly middle and high school classrooms, and pay attention to the person who is doing the majority of the talking. I bet you a dinner that it would be the teacher!

I have learned something interesting! Did you know that every time your students learn something new in class, they grow a new brain cell called a dendrite? Brain research is telling us that the person in a classroom who is doing the most talking about the content is actually growing the most dendrites. In fact, according to Ekwall and Shanker (1988), while people only learn 20 percent of what they hear, they learn 70 percent of what they say as they talk and 90 percent of what they say as they are engaged in doing something. This makes the strategy of brainstorming and discussion a necessity if you want students to comprehend and remember your content. When students have opportunities to brainstorm ideas with their peers without the fear of criticism, they begin to naturally increase their comprehension and higher-order thinking skills.

By the way, I have been teaching adults for more than twenty years. Did you know that teachers are some of the chattiest people on the face of the earth and yet many of them do not allow students to engage in that same behavior in their classrooms? How ironic is that?

WHY: THEORETICAL FRAMEWORK

Questions formed and asked during brainstorming and discussion should be divided into two general categories: (1) those that can be reasoned deductively, wherein the correct answer can be deduced from the data provided, and (2) those that can be reasoned inductively, wherein questions have multiple solutions (DeLandtsheer, 2011).

When students engage in literature or discussion circles when reading literary or informational texts, they can have text-based conversations and share meaningful ideas regarding what they have read (McLaughlin, 2010).

One of the most powerful ways that students process new information is to talk about it with their peers (Allen & Currie, 2012).

When used as a formative assessment strategy and students are engaged in collaborative conversations, discussion supports many of the Common Core State Standards, such as speaking and listening (McLaughlin & Overturf, 2013).

Brainstorming enables all students who have ideas to receive special recognition for their original thoughts (Armstrong, 2009).

When students discuss, they should talk about a topic in a friendly yet constructive manner. They should offer ideas, knowledge, data, information, and rationales for their positions and opinions while simultaneously attempting to convince others to accept their positions (Costa, 2008).

The benefits of effective *student-centered question-and-response discussions* include increased student participation and engagement and the lowering of students' affective filters (Willis, 2007).

When teachers and students share their thinking aloud when reading, not only is comprehension improved, students' discussion skills and enjoyment of literature are also enhanced (Oster, 2001).

Small-group conversations have the advantage of facilitating higher-order thinking skills, motivating students, and fostering reading comprehension (Berne & Clark, 2008).

Open-ended questions allow students of all ability levels to listen, think, and engage in class discussions without the fear of being incorrect (Willis, 2007).

One of the top fourteen stress producers in adolescent brains is not allowing for any discussion during class time (Feinstein, 2009).

HOW: INSTRUCTIONAL ACTIVITIES

Category: **Reading Literature/Informational Text**
Grade Level Range: **Kindergarten–Grade 2**
Standard/Objective: **Identify unknown words in print**

- Ask the following questions to support students' use of self-monitoring behaviors when reading literature or informational text:
  - Were you correct?
  - Where's the word that gave you trouble (following an error)?
  - What's wrong?
  - Why did you stop reading?
  - What letter would you expect to be at the beginning of the word?
  - What letter would you expect to be at the end of the word?
  - Would the word _____ make sense here?
  - What do you think it looks like?
  - It could possibly be _____, but consider _____.
  - Does it look right and sound right to you?

SOURCES: Adapted from Clay (1993); Goodman (1996); Routman (1991); Department of Education (New Zealand, 1985).

Category: **Reading Literature/Informational Text; Speaking**
Grade Level Range: **Kindergarten–Grade 12**
Standard/Objective: **Brainstorm a variety of ideas**

- Give students a question to which there may be more than one right answer. Have students participate in a brainstorming session, providing multiple ideas while ensuring that all students follow the *DOVE* guidelines, which are as follows:
  - *Defer* judgment when other students are contributing ideas.
  - *One* idea at a time is presented.
  - A *variety* of ideas are encouraged.
  - *Energy* is directed to the task at hand.

Category: **Vocabulary**
Grade Level Range: **Grades 1–12**
Standard/Objective: **Use context clues to define vocabulary**

- Have students use context clues to identify an unknown word by following the procedure outlined in the following.
  - Place a visual on the document camera containing a passage where you have omitted several key vocabulary words of the author. These words should be able to be figured out contextually.

- Ask students to look at the key word and the words before and after the omitted word. Have them predict a probable meaning and make a decision as to whether the meaning fits the context of the passage.
- Discuss the meaning with the class and whether it fits the context.
- Reveal the original word choice of the author and compare it with students' recommendations (Blachowicz & Fisher, 2002, p. 29).

Category: **Vocabulary**
Grade Level Range: **Grades 1–12**
Standard/Objective: **Recall content-area vocabulary**

➢ Before, during, or following a unit of study, have students create an alphabet book by brainstorming as many content-area words as they can recall that begin with a designated letter of the alphabet. For example, a math alphabet book could contain the following words:

A add, algorithm, algebra
B binomial, binary, bisect
C calculus, calculator, communicative property
D divide, denominator, decimal
E equal sign, equation, estimate
F figure, fraction, Fibonacci
G geometry, geoboard, grams
H height, hexagon, hectometer

And the list continues.

Adaptation: Put some music and movement into this activity by giving each student a copy of the alphabet book on page 18 (Figure 1.1). Have students move around the room and find students who can provide content-area vocabulary words according to the game directions on the page.

Category: **Reading Literature/Informational Text**
Grade Level Range: **Kindergarten–Grade 12**
Standard/Objective: **Make predictions regarding text**

➢ Have students brainstorm questions to test the comprehension of their classmates. These questions should be written above the knowledge level of Bloom's Taxonomy and require peers to comprehend, apply, analyze, synthesize, or evaluate. Refer to Bloom's Taxonomy Revised (Figure 1.2, page 20) to ensure that students are answering questions at all levels of the revised taxonomy.

Figure 1.1 Alphabet Book

ALPHABET BOOK					
A	B	C	D	E	F
G	H	I	J	K	L
M	N	O	P	Q	R
S	T	U	V	W	X
Y	Z	**Rules of the Game** 1. Must have sixty or more words. 2. Can provide twenty words yourself. 3. Must get remaining words from at least eight people outside your "family." 4. Must complete game with eight minutes.			

Figure 1.2 Bloom's Taxonomy "Revised": Key Words, Model Questions, and Instructional Strategies

Bloom's Taxonomy (1956) has stood the test of time. Recently, Anderson Krathwohl (2001) have proposed some minor changes to include the renaming and reordering of the taxonomy. This reference reflects those recommended changes.

I. REMEMBER (KNOWLEDGE)
(shallow processing: drawing out factual answers, testing recall and recognition)

Verbs for Objectives	Model Questions	Instructional Strategies
Choose	Who?	Highlighting
Describe	Where?	Rehearsal
Define	Which one?	Memorizing
Identify	What?	Mnemonics
Label	How?	
List	What is the best one?	
Locate	Why?	
Match	How much?	
Memorize	When?	
Name	What does it mean?	
Omit		
Recite		
Recognize		
Select		
State		

II. UNDERSTAND (COMPREHENSION)
(translating, interpreting and extrapolating)

Verbs for Objectives	Model Questions	Instructional Strategies
Classify	State in your own words.	Key examples
Defend	Which are facts?	Emphasize connections
Demonstrate	What does this mean?	Elaborate concepts
Distinguish	Is this the same as. . .?	Summarize
Explain	Give an example.	Paraphrase
Express	Select the best definition.	STUDENTS explain
Extend	Condense this paragraph.	STUDENTS state the rule
Give example	What would happen if . . .?	"Why does this example. . .?"
Illustrate	State in one word . . .	Create visual representations
Indicate	Explain what is happening.	(concept maps, outlines,
Interrelate	What part doesn't fit?	flow charts organizers,
Interpret	Explain what is meant.	analogies, pro/con grids)
Infer	What expectations are there?	PRO/CON
Judge	Read the graph (table).	*NOTE: The faculty member can*
Match	What are they saying?	*show them, but they have to*
Paraphrase	This represents. . .	*do it.*
Represent	What seems to be . . .?	Metaphors, rubrics, heuristics
Restate	Is it valid that . . .?	
Rewrite	What seems likely?	
Select	Show in a graph, table.	
Show	Which statements support . . .?	
Summarize	What restrictions would you add?	
Tell		
Translate		

III. APPLY

(Knowing when to apply, why to apply, and recognizing patterns of transfer to situations that are new, unfamiliar, or have a new slant for students)

Verbs for Objectives	Model Questions	Instructional Strategies
Apply	Predict what would happen if…	Modeling
Choose	Choose the best statements that apply.	Cognitive apprenticeships
Dramatize	Judge the effects.	"Mindful" practice—NOT just a "routine" practice
Explain	What would result?	
Generalize	Tell what would happen.	Part and whole sequencing
Judge	Tell how, when, where, why.	Authentic situations
Organize	Tell how much change there would be.	"Coached" practice
Paint	Identify the results of. . .	Case studies
Prepare		Simulations
Produce		Algorithms
Select		
Show		
Sketch		
Solve		
Use		

IV. ANALYZE (breaking down into parts, forms)

Verbs for Objectives	Model Questions	Instructional Strategies
Analyze	What is the function of . . .?	Models of thinking
Categorize	What's fact? Opinion?	Challenging assumptions
Classify	What assumptions. . .?	Retrospective analysis
Compare	What statement is relevant?	Reflection through journaling
Differentiate	What motive is there?	Debates
Distinguish	Related to, extraneous to, not applicable.	Discussions and other collaborating learning activities
Identify	What conclusions?	
Infer	What does the author believe?	Decision-making situations
Point out	What does the author assume?	
Select	Make a distinction.	
Subdivide	State the point of view of . . .	
Survey	What is the premise?	
	State the point of view of . . .	
	What ideas apply?	
	What ideas justify the conclusion?	
	What's the relationship between?	
	The least essential statements are . . .	
	What's the main idea? Theme?	
	What inconsistencies, fallacies?	
	What literary form is used?	
	What persuasive technique?	
	Implicit in the statement is . . .	

(Continued)

(Continued)

V. EVALUATE (according to some set of criteria, and state why)

Verbs for Objectives	Model Questions	Instructional Strategies
Appraise Judge Criticize Defend Compare	What fallacies, consistencies, inconsistencies appear? Which is more important, moral, better, logical, valid, appropriate? Find the errors.	Challenging assumptions Journaling Debates Discussions and other collaborating learning activities Decision-making situations

VI. CREATE (SYNTHESIS)
(combining elements into a pattern not clearly there before)

Verbs for Objectives	Model Questions	Instructional Strategies
Choose Combine Compose Construct Create Design Develop Do Formulate Hypothesize Invent Make Make up Originate Organize Plan Produce Role play Tell	How would you test. . .? Propose an alternative. Solve the following. How else would you . . .? State a rule.	Modeling Challenging assumptions Reflection through journaling Debates Discussions and other collaborating learning activities Design Decision-making situations

Web References

- www.coun.uvic.ca/learn/program/hndouts/bloom.html
- www.fwl.org/edtech/blooms.html
- http://apu.edu/~bmccarty/curricula/mse592/intro/tsld006.htm
- http://152.30.11.86/deer/Houghton/learner/think/bloomsTaxonomy.html
- http://amath.colorado.edu/appm/courses/7400/1996Spr/bloom.html
- www.stedwards.edu/cte/bloomtax.htm
- http://quarles.unbc.edu/lsc/bloom.html
- www.wested.org/tie/dlrn/blooms.html
- www.bena.com/ewinters/bloom.html
- http://weber.u.washington.edu/~krumme/guides/bloom.html

References

Anderson, L. W. & Krathwohl, D. R. (2001). A Taxonomy for learning, teaching, and assessing.
Bloom, B. S. (Ed.). (1956). *Taxonomy of educational objectives: The classification of educational goals by a committee of college and university examiners.* New York: Longmans.
John Maynard, University of Texas, Austin
Marilla Svinicki, University of Texas, Austin

SOURCE: Compiled by the IUPUI Center for Teaching and Learning (revised December 2002).

Category: **Reading Literature/Informational Text**
Grade Level Range: **Grades 1–12**
Standard/Objective: **Comprehend informational text**

- Have students use Stauffer's (1975) Directed Reading Thinking Activity (DR-TA) with both narrative and informational text by predicting from a picture or from the title of a story or a chapter what the text will be about and then reading a segment of the text to confirm those predictions. Have students then make another prediction from the new text read. The sequence of predicting, validating, and predicting again continues until the end of the passage or text.

Category: **Reading Informational Text**
Grade Level Range: **Grades 3–12**
Standard/Objective: **Comprehend content-area text**

- Teach students the SQ3R technique for generating and answering questions regarding informational text. The steps in the SQ3R technique are as follows:

  - *Survey*—Students preview a chapter in a content-area textbook. They look at bold headings, captions, illustrations, italicized or boldface vocabulary words, and so on.
  - *Question*—Students formulate and write down questions that they would like to have answered based on the information gleaned during the preview. They turn headings into questions.
  - *Read*—Students read for the express purpose of answering the questions generated during the previous question stage of the technique. They write the answers to the questions in their own words rather than copying them from the text.
  - *Recite*—Students read each question and tell the answer in their own words.
  - *Review*—Students review the questions and answers after a twenty-four-hour period and then periodically to facilitate memory.

Category: **Reading Literature/Informational Text**
Grade Level Range: **Kindergarten–Grade 12**
Standard/Objective: **Comprehend content-area text**

- According to the Common Core State Standards, there are seven rigorous proficiencies in the area of thinking that students need to master. Each of the proficiencies has three explicit-thinking skills

that can be taught from kindergarten through grade 12 and across all curricular areas. They are as follows:

- Critical Thinking—Analyze, Evaluate, Problem Solve
- Creative Thinking—Generate, Associate, Hypothesize
- Complex Thinking—Clarify, Interpret, Determine
- Comprehensive Thinking—Understand, Infer, Compare
- Collaborative Thinking—Explain, Develop, Decide
- Communicative Thinking—Reason, Connect, Represent
- Cognitive Transfer of Thinking—Synthesize, Generalize, Apply (Bellanca, Fogarty, & Pete, 2012)

Refer to these twenty-one explicit-thinking verbs when forming questions from content that students can discuss orally during whole-class or small-group instruction or in writing.

Category:	**Reading Literature/Informational Text**
Grade Level Range:	**Grades 1–12**
Standard/Objective:	**Comprehend cross-curricular text**

Use the following process of *close reading* to help students understand complex texts. These steps can be implemented with the whole class and may take more than one or two days to complete.

1. Following little or no prereading discussion, introduce the text to students.
2. *First reading*—Have students read the whole text by themselves without any assistance.
3. *Second reading*—Provide a fluent model by reading the entire text aloud. Stop periodically to discuss vocabulary, the historical or social context of the passage, or a sentence structure that is more complicated. Do not explain the ideas, characters, or specific events in the text. Have students discuss the text.
4. Formulate questions that students can only answer from the text and pose them to the class. No questions should be able to be answered from the personal experiences of the student.
5. *Third reading*—Have students read the text and locate evidence to answer the text-dependent questions.
6. When appropriate, have students use other brain-compatible strategies, such as music, art, role play, or graphic organizers, to improve their comprehension of the text.

7. Have students develop one concise sentence to answer each of the text-dependent questions.
8. Have students provide orally or in writing an analysis of the text, including text-based evidence to support their analysis (McLaughlin & Overturf, 2013).

Category: **Reading Literature/Informational Text**
Grade Level Range: **Grades 6–12**
Standard/Objective: **Comprehend content-area text**

- Have students form small groups called literature circles. All students read the same story, poem, or book and engage in a discussion of that selection with members of the group assigned specific roles to perform. Some possible roles are as follows:
  - *Discussion director*—Formulates the questions to be discussed and makes sure that all group members contribute.
  - *Literary luminary*—Reads orally the most important parts of the text.
  - *Connector*—Assists group in connecting the text read with ideas in the real world.
  - *Illustrator*—Draws pictures for clarification.
  - *Summarizer*—Periodically highlights the main ideas of the discussion.
  - *Vocabulary enricher*—Provides definitions for any unfamiliar words that are crucial for understanding the text.
  - *Investigator*—Supplies any necessary background information that the group needs (Vacca et al., 2003).

Category: **Reading Literature/Informational Text; Speaking**
Grade Level Range: **Grades 6–12**
Standard/Objective: **Comprehend cross-curricular text**

- Involve students in a Socratic seminar by following the procedures outlined here.
  - Determine the main idea from a story, poem, or book previously read.
  - Design a series of questions that encourage students to think at the comprehension, application, analysis, synthesis, or evaluation levels of Bloom's Taxonomy (see Figure 1.2).
  - Have students form two circles, one inside the other. Have students who will be participating in the discussion sit in the

inner circle while students who will be taking notes sit in the outer circle.

- Begin a ten- to fifteen-minute discussion by asking a core question in the series of questions to get the conversation started. Continue to engage students by asking additional questions.
- Have a student in the inner or outer circle summarize the main points made during the discussion.
- Debrief with students by asking for ways in which the seminar could have been improved. Implement any meaningful suggestions during the next seminar (Tanner & Cassados, 1998).

REFLECTION AND APPLICATION

How will I incorporate *brainstorming and discussion* into instruction to engage students' brains?

Which brainstorming and discussion activities am I already incorporating into my reading and language arts curriculum?

What additional activities will I incorporate?