VARIATION: If your students will be reading a narrative text like a short story, biography, or historical novel, you can do a very similar predicting activity by selecting a set of eight to fifteen *sentences* instead of single words (of course, you will pick sentences with great Tier 2 words in them as well as technical vocabulary). Each student gets one sentence on a piece of paper, and then students walk around the room, reading their different sentences to each other and predicting what the text will be about. When they go on to read the complete passage, students will implicitly be comparing the actual text to their hypotheses. Kids seem to find it fun when the sentences they worked with earlier suddenly pop up in the text. We call this activity a Quotation Mingle and Harvey and Nancy Steineke have written about it in another of our family of books (Daniels and Steineke, 2013).

TO LEARN MORE

Daniels, Harvey, and Nancy Steineke. 2013. *Texts and Lessons for Teaching Literature*. Portsmouth, NH. Heinemann.

Wood, K. 1984. "Probable Passages: A Writing Strategy." *Reading Teacher* 37: 496–499.

DURING READING

STRATEGY: **Partner Reading**

FOCUS: **Sharing Ideas, Discussing, Debate**

WHEN TO USE: Before Reading **During Reading** After Reading

DESCRIPTION:
Instead of reading silently and alone, pairs of students sit side by side and take turns reading a selection of content-area text aloud to each other. Between paragraphs, the partners stop to discuss and clarify their understanding of each section before changing readers and proceeding. While partners work, the teacher observes, confers, and coaches. After five to ten minutes of this collaborative reading "warm-up," kids can shift into individual silent reading for the rest of the text.

Why Use It?

When we think of our students at work reading, we naturally envision individual students quietly processing text, pencil in hand, in a well-lit place. And obviously, being able to fluently read in this mode, without much outside scaffolding, is our goal in every subject—and an explicit target of the Common Core Standards. But some students—and highly technical content—require more support, especially early in the year. Remember, both the standards and our curriculum call for a long, gradual ladder of experiences, maybe 180 rung-days, leading to end-of-year proficiency. We must start kids where they are today, and keep moving up, using necessary scaffolds like paired reading. What our students can do out loud with a partner today, they can do silently and singly later, as they internalize the thinking strategies of proficient readers.

How Does It Work?

1. Select an important chunk of content-area text and set aside at least five to ten minutes of classroom reading time. We know, finding that time can be hard. We have so much content to cover that we often assign most reading as homework. While this seems to save instructional time, if kids come back the next day with zero understanding, then the shortcut has failed. And further, if kids never read under our close supervision, we cannot monitor their challenges, understand what

support they need, and just plain coach them through. With this strategy you provide some live, interactive reading to launch kids into a text, so they can continue reading alone with high comprehension when they tackle the rest of it.

2 Form partners, matching kids who will work well together and who are at roughly the same reading level, so one doesn't shame or dominate the other. A variation of this strategy, more popular in the elementary grades, is commonly referred to as "paired reading," in which the teacher intentionally matches up stronger with weaker readers, hoping that the more advanced student will be a good peer model. We've seen this tried in middle and high school too, but often the interpersonal issues are too tender to make this a safe choice. Instead we partner up kids at the same level.

3 Now, explain partner reading, and then demonstrate it for the class, using a student volunteer as your own partner. Show students the basic version, where partners sit close together so they can comfortably use their "indoor voices." Both people have a copy of the reading selection in front of them, and they take turns reading aloud one paragraph at a time. After each paragraph, you and your kid partner stop and discuss your thinking. You may want to show (or later, co-create) a list of possible partner discussion topics, and project it for kids to use until they internalize the process. Typical conversation starters might be:

* What did the author say?
* What were the big ideas?
* Were there some hard words?
* Is there anything we didn't understand?
* How can we figure it out?
* What questions do we have?
* What do we think will come up in the next paragraph?

These items help kids focus on clarifying meaning, confirming what was actually said in the text, and how the passage fits together with previous and upcoming paragraphs.

4 After your demonstration, set pairs to work on another chunk of text. Roam the room and sit in with several pairs to see what successes and struggles different kids are having. Don't be shy to jump in and coach or do a mini-think-aloud of your own, to show how you monitor your thinking, notice your own confusions, and demand clarity of this particular subject-area text. And when you find common problems coming up in multiple pairs, you can shape these into a whole-class mini-lesson to teach later in the day, right at the moment of use.

5 As time runs out, call for some discussion of the text so far, asking several pairs to share what understandings and questions they had. At this point, the students should be prepped to complete the reading independently, in class or at home.

VARIATION: Pairs can read the whole text out loud in unison, as long as they can synchronize their voices, have those between-paragraph chats, and not get crazy loud. Or kids can read each paragraph silently, and then discuss out loud at the same intervals; this requires partners to roughly equalize their reading rates so no one is staring into space while the other is still reading silently. If you do this frequently, we encourage you to constantly mix up the pairs, so that kids read with many different classmates, building friendliness and support in the room.

TO LEARN MORE

Daniels, Harvey, and Nancy Steineke. 2011. *Texts and Lessons for Content-Area Reading.* Portsmouth, NH: Heinemann.

Simon, Cathy Allen. 2013. "Using Paired Reading to Increase Fluency and Peer Cooperation." IRA/NCTE ReadWriteThink. www.readwritethink.org/professional-development/strategy-guides/using-paired-reading-increase-30952.html.

STRATEGY: **Post-it Response Notes**

FOCUS: **Reading as Thinking**

WHEN TO USE: Before Reading **During Reading** After Reading

DESCRIPTION:

As they read, students stop, think, and react to the text. They pause to jot briefly on small sticky notes, recording key aspects of the topic as well as their reactions, questions, and connections. The teacher can specify the kinds of information to focus on or the kinds of response she'd like for students to try out. Students can then use these notes to help them participate in discussions, write response pieces, or engage in other processing of ideas after they've read. If the books or articles are their own, students can leave the notes in place for later reflection. If the materials are from a class library or class set, before returning them students can transfer the sticky notes to their own notebooks, where they can serve as review material. Sticky notes can also be used to hold the codes or annotations described in our next two strategies, Annotating Text and Coding Text (pages 121–127).

Why Use It?

How did we ever function without Post-it notes, in any part of our lives, including reading challenging text? We've all had that experience of "waking up" after half an hour of reading to realize that our minds were elsewhere, mulling concerns in the rest of our life, and we have no idea what we've just read. Post-its to the rescue! Tracking and returning to important spots in our reading is something all competent readers do, particularly with material for a course or other practical purpose. Jotting and placing Post-it responses along the way makes this kind of thinking concrete for students, helping them slow down and recognize significant information or elements they encounter.

When using Post-its, instead of a separate notebook, students can attach their thinking directly to the point in the text where they had a response, question, or connection. The movability of sticky notes adds to their usefulness, too, because they can be rearranged or relocated in a variety of ways, enabling students to explore and elaborate on the material being studied. And they are just plain vital when kids are working on books or magazines that they are forbidden to mark up (which is a lot of the time). Sticky notes are thus a great tool for supporting many of the other during-reading strategies in this chapter.

How Does It Work?

1. Before students first try this thinking tool, model its use with a separate short piece of reading—just a paragraph or two—so they can watch the kinds of information or responses that you stop, jot, and stick. Then give directions about specifics kids should watch for as they read, and what to write on their sticky notes. For example: "As you read the article from the Internet, 'Radiation and Risk' [www.physics.isu.edu/radinf/risk.htm], on the effects of nuclear radiation on the human body, place a sticky note at any spots where you were confused and write a few words or phrases on it to explain your confusion or question. Also place sticky notes at points where the information surprised you and in just a few words, explain on each one how your thinking was changed."

2. Now let kids try it out with a fresh piece of content-area text. After a few minutes of posting, have students use their notes to turn and talk with a neighbor (see the Turn and Talk strategy on pages 134–137).

3. Next, call everyone together for a whole-class sharing of the Post-it notations. Seek a wide range of volunteers to get a sense of the scope of reactions to the text. If you want to be sure kids noticed certain passages that you consider critical, prime the pump by asking things like, "Did anybody have a Post-it at the bottom of page 3? Will you read it aloud for us, please?" If nobody posted in that critical spot, share your own!

   Language arts teacher Annie Combs, in New Miami, Ohio, often has students jot sticky notes on a debatable issue in their reading; for example, "What do you think is the main conflict in the book *The Outsiders*?" Then after the students have compared notes in pairs, they bring their notes up to the whiteboard at the front of the room (a few at a time, of course), where they place them in specific categories. The whole class can see how the votes went and then discuss the options and why people chose specific ones.

4. As you finish your whole-class discussion, ask students to write on each note the page number where they had attached it and then transfer the notes to a separate sheet of paper with their name on it, so you can easily collect and review these. If they are reading a historical novel or nonfiction book, the series of Post-its constitutes a record of their thinking all the way through the book—who needs a quiz?

VARIATION: For many of us, Post-it note responses have become a bread-and-butter strategy, one applying to all kinds of subject-area reading, every day. And we regularly use all kinds of interactive groupings—pairs, literature circles, lab partners, inquiry teams—for kids to process their notes and their thinking. We keep it fun and fresh. The small 1½ × 2-inch notes don't take up lots of space

and actually reduce anxiety at the beginning. When we say to kids, "Just write a little bit," they can see that we really mean it with that tiny yellow square. Students enjoy using multiple colors of Post-its to distinguish between various kinds of response. And later, the larger notes come in handy when students have more to say about some question or idea. When kids are reading books, show them how to place the Post-its so that they hang slightly off the edge of a page, to make each one an easily located tab. As we have suggested, it's often useful to have kids come up to the front of the room and place their Post-its on a chart or list of responses. When you do this, be sure to have students sign them first.

VARIATION: Annie Combs often asks students to place notes to mark three important ideas in a chapter or article they are reading. On these notes they write the quotes they've chosen, or write out the ideas in their own words. They transfer these to their writer's notebooks and use them to write a summary paragraph. Annie finds that this process strengthens students' comprehension of the material and focuses on the important elements rather than random details.

Annie also uses the notes as admit slips of a sort (see this strategy on pages 140–142) for developing vocabulary—something her students need lots of help with, since most have few books in their homes. She places a Post-it on each desk, and when the students come in, she asks them to compare two words—say *biography* and *autobiography*. Each student writes a definition for one or the other and places his or her note up on the board under its category. She and the class then discuss the various definitions and what they reveal about the words as well as what the students understand about them.

TO LEARN MORE

Daniels, Harvey, and Nancy Steineke. 2011. *Texts and Lessons for Content-Area Reading.* Portsmouth, NH: Heinemann.

Harvey, Stephanie, and Anne Goudvis. 2007. *Strategies That Work: Teaching Comprehension for Understanding and Engagement* (2nd ed.). 67–80. York, ME: Stenhouse.

STRATEGY: **Annotating Text**

FOCI: **Reading as Thinking**
Making Connections to Other Texts, Information, and Self

WHEN TO USE: Before Reading **During Reading** After Reading

DESCRIPTION:
Annotation is the mother of all during-reading strategies. It is a practice that virtually all skillful readers apply when they seek deep understanding of text. In school, this means having students purposefully stop, think, and react when they run across important information in content-area material. Instead of rushing through the assignment, they slow down and monitor the selection for key information, relevant connections, puzzling questions, mental imagery, contradictions, and things that just make you go "What?!" And then students jot down a few words in the margin to capture and flag those reactions. Later, students draw upon these notes for a wide array of discussions and interactions.

Why Use It?

What do *you* do when you encounter a piece of "high-stakes text" in your own reading life? Something you really need to understand deeply: a required article for a graduate course, your teaching contract, a report from your doctor? If you are like many skillful adult readers, you'd probably say: "I mark it up." Meaning that, over your long reading life, you have developed a way of making notes on a piece of writing that help you to understand and remember it better. Well, if this is something that we lifelong, pro-level readers routinely do, then we'd better be teaching this strategy to kids right now. In fact, in the elementary grades, this kind of "stop, think, and react" reading is already happening, guided by excellent resources like *The Comprehension Toolkit*, from our colleagues Stephanie Harvey and Anne Goudvis (2005).

Check out the example of an annotated text on page 124. It shows the residue of one student's thinking on the way through a science article, using that active, self-monitoring "stop, think, and react" mind-set. You can see how the reader is chewing on details, connecting ideas inside the text, posing questions, making interpretations, and even doodling some ideas. Harvey and Goudvis call these marks the "tracks of a student's thinking." But this is not just for little kids. Laying down such tracks is also recommended for incoming freshmen at Harvard University: "Mark up the margins of your text with words and phrases," implores a memo from the University Library, "Get in the habit of hearing yourself ask questions" (2013).

How Does It Work?

1. First, as usual, the teacher needs to model her own annotation on a projected article. If you already taught our think-aloud on pages 94–97, you have already done this. When you did that think-aloud and stopped to share your thinking with kids, we suggested that you jot down a couple of words in the margin to label your thinking, right? Basically the same thing here. But with annotation we want kids to focus on the content as much as the thinking process, and so we write a little bit more on the page.

2. After your demonstration, invite students to see if they can classify the different kinds of thinking you were doing as you annotated—and make a list of the categories.

   questions
   connections
   visual images
   important parts
   times I got lost
   wow factors: surprising, funky, weird, yuck, no way
   authors' style/point of view

3. Now give students another short article—just a couple of paragraphs—and ask them to annotate it, looking at the posted list for cues on when to stop, think, and make notes. When they are done, ask several kids to share their experience: "Did anyone make a connection?" "Who had a place where they got lost or confused?" "Did anyone do some kind of thinking that we don't have on our list yet?" If someone reports making a prediction, drawing a quick cartoon, or any other kind of useful thinking, add those to the list.

4. Provide ample instruction and practice. Annotation is not something you use once; many teachers use some version of it with *every* reading assignment. Once we see how much better students comprehend when they have some purposes for reading and a pencil in hand, it just doesn't make sense to say "read this for Friday" anymore. And there are countless variations to keep it fresh. Coding Text and Post-it Note Responses are other valuable versions of annotating. In Smokey and Nancy's book *Texts and Lessons for Content-Area Reading* (2011), they lay out an iteration called Point-of-View Annotation in which kids read the text as a character or historical figure and annotate it from that point of view.

VARIATION: There is another kind of text marking that we call *conceptual annotation*. Instead of having kids mark general reactions to a text (questions, inferences), we offer a little more teacher direction. We identify three or four big ideas (obviously, the key ideas in the text) that we want kids to be on the lookout for. Let's say you are a biology teacher having kids read an article about concussions as part of your unit on the brain and the nervous system. Here's how you might set up conceptual annotation:

> *"OK, guys, while you are reading this article, there are four things I want you to annotate for:* [project these terms]
>
> * the *causes* of concussions
> * the *symptoms* of concussions
> * the *treatment* of concussions
> * the *prevention* of concussions
>
> That means, as you read though this piece, when you run across some information about what causes concussions, you're going to stop, think about what the author is saying, and make some notes in the margin to help you remember that information. And when you come across some info about the symptoms of concussions, you'll stop and think about it, and make some marginal notes about that. Same for treatment and prevention. Now here's a warning, the information will not necessarily arrive in this order, and there may be repeated, separate sections with information about each of our four targets. So be alert. When we are done reading and annotating, you'll be able to compare your notes with a buddy to see what you captured and what you might have missed. Ready? Let's read."

When setting up conceptual annotation, it is important to narrow the focus to just three or four key concepts, so kids can enter the text actively searching for those big ideas, not scrambling to memorize every detail.

TO LEARN MORE

Harvard University Library. 2013. "Interrogating Texts: 6 Reading Habits to Develop in Your First Year at Harvard." http://guides.library.harvard.edu/sixreadinghabits.

Harvey, Stephanie, and Anne Goudvis. 2005. *Comprehension Toolkit*. Portsmouth, NH: Heinemann.

Tovani, Cris. 2003. *I Read It but I Don't Get It*. York, ME: Stenhouse.

EXAMPLE

Los Alamos National Laboratory
70 YEARS OF INNOVATIONS: Creating a safer, more secure tomorrow

isn't this when Japan bombs were made?

? really

Mission nuclear weapons

While the role and prominence of nuclear weapons in U.S. security policy has diminished with the end of the Cold War, nuclear weapons continue to provide an essential component of national security.
Nuclear weapons are used every day

not "used", except as a threat

- as security hedge in very uncertain world
- to reassure allies that U.S. security guarantee remains unquestionable
- as a disincentive to adversaries from taking hostile and aggressive actions against the U.S. and its allies

what about 9/11?

Four systems designed by Los Alamos

Los Alamos is the design agency for four systems in the stockpile, including

- B61 gravity bomb, deployed to variety of strategic and tactical aircraft
- W78, carried by U.S. Air Force's Minuteman III intercontinental ballistic missiles
- W76 and W88, carried by U.S. Navy's Trident missile submarines

no nuclear what
"Triad" planes ~~ships~~ missles ships

This triad of launch platforms (aircraft, land-based missiles, and submarines) provides the President with the strongest, flexible, and most survivable nuclear deterrent.

for who? the enemy of us?

Each warhead/bomb designed by Los Alamos meets a rigorous and demanding set of requirements and conditions as outlined by either the Air Force or the Navy.

Stockpile life extension work

The nation's investment in the advanced scientific experimental, engineering, and computational capabilities at Los Alamos allows the Laboratory to confidently extend the service life of the nation's nuclear deterrent without resorting to full-scale underground testing.

do not get this - why test if we know how to build them already?

Life Extension Program (LEP) activities are extending the lifetime of warheads and bombs designed to meet Cold War requirements (high yield to weight) for an additional 20-30 years beyond their original expected lifetimes (10–15 years). LEPs also provide the opportunity to install enhanced safety and security features in existing weapons to meet today's and the future's security environment.

make bombs last longer - do they wear out?

funny to say safe about a nuclear bomb

Los Alamos, in partnership with the production plants and Sandia, is performing an LEP on the W76, which will ensure the long-term viability of the nation's sea-based deterrent. Los Alamos also is in the very early stages of an LEP in support of the B61. Under guidance provided by the Nuclear Weapons Council, Los Alamos plans to deliver the first LEP B61 to the U.S. Air Force in 2019. Components that will be refurbished as part of the B61 include new detonator cables, main charges, foams, and polymers and a new gas transfer system.

must be the parts that have to be fixed

I never thought atom bombs could "wear out" or need maintenance but looks like they do...

STRATEGY: **Coding Text**

FOCI: **Reading as Thinking**
Inferring, Interpreting, and Drawing Conclusions

WHEN TO USE: Before Reading **During Reading** After Reading

DESCRIPTION:
A quick way for students to capture and record their mental responses to their reading is to use a simple coding system. While she is reading, if a student notices a connection to another unit in your course, to another subject, or to something in her life, she jots a **C** in the margin; if she has a question, she jots a **?** If she runs across something new and exciting, she'll put down a **!** Students may add brief phrases or comments to explain their thinking. If the book belongs to the school, or if the teacher wishes students to be able to spot their notations quickly during class discussion, the codes can be placed on the Post-it notes as we described previously.

Why Use It?

Coding is basically a speedier form of marking text that achieves the same goals as annotation—getting kids to stop, think, and react as they read. If students are not accustomed to thinking their way through texts, they need to make conscious efforts to do so, but the marking should not be so laborious as to totally interrupt the flow of their reading. Symbols help students remember a strategy, notice when their thinking has followed it, and then very briefly note the spot in the text where that thinking occurred. If we want students to think more deeply as they read, we need to provide explicit mechanisms for them to do this, rather than just exhort them to "really think about this material."

How Does It Work?

1. Choose some codes that would work well in your subject area. Here is one generic set called INSERT (Interactive Notation System for Effective Reading and Thinking) that many content area teachers have found useful:

✓	Confirms what you thought
X	Contradicts what you thought
?	Puzzles you
???	Confuses you
★	Strikes you as very important
!	Is new or interesting to you

You can also invent your own coding system that matches the subject matter at hand.

2. Project a short text and model your own coding process for the class. Teachers at Downers Grove South High School have students use text coding extensively in their classes. But as reading coach Amy Stoops and science department chair Karen Eder explain, without this initial modeling, the students dutifully insert the codes—without realizing their purpose. Because the teacher is usually well acquainted with the material she's teaching, it can be difficult to realize the challenge students experience when the same information is often so new to them. Without some demonstration and guidance, students can have difficulty understanding what to mark and how to think about it.

3. Have students share their coded responses with a partner as they work through the selection. Then gather the whole class by asking, "Look through the reading and see if you've put any exclamation points in there for new and exciting information. Good, who'd like to share one?" For math application problems, students in pairs can compare their coding of information provided or requests for solutions in order to learn problem-solving processes. In book or article discussion circles, the codes can help students refer back to relevant information or evidence to support the ideas they are sharing. For reading support activities like KWL, students can mark spots in the material where their questions get answered or where new questions come up. In studying for tests or performance evaluations, the codes can help students spot important information or ideas they need to remember.

VARIATION: At Downers Grove South High School, the application of text coding varies widely across various subjects. With physics problems, for example, codes can help students to identify relevant information and figure out what result they are seeking. In biology, students may be looking for evidence of a particular phenomenon or concept, or the use of a particular vocabulary term. And as the students grow expert with the strategy, teachers invite students to create their own sets of codes. These young people enjoy including colors, emoticons from the text messaging world, and symbols they make up.

TO LEARN MORE

Buehl, Doug. 2009. *Classroom Strategies for Interactive Learning* (3rd ed.). Newark, DE: IRA.

Vaughn, Joseph, and Thomas Estes. 1986. *Reading and Reasoning Beyond the Primary Grades.* New York: Allyn and Bacon.

A wide variety of websites provide explanations of the strategy—including one at www.famlit.org/free-resources/educator-resources/educator-resources-adult-learners that includes video clips showing a teacher introducing coding with an adult literacy class.

STRATEGY: **Multicolumn Notes**

FOCI: **Inferring, Interpreting, Drawing Conclusions**
Analyzing Author's Purpose, Theme, Point of View

WHEN TO USE: Before Reading **During Reading** After Reading

DESCRIPTION:
Students take reading notes in two or more columns, with lines drawn vertically down the middle of each page. In the standard version, the left-hand column is for summarizing important ideas from the text. In the right column, students write their own thoughts and responses—questions, confusions, personal reactions, reflections on what the information means. Sometimes teachers call this base version a *double-entry journal*—and they often go on to develop more complex three- or four-column note-taking forms to suit their subject matter. This structure was originally called Cornell Notes, but whatever the name, it is a highly flexible strategy that can be tweaked to serve every subject area.

Why Use It?

Students must be able to discern the most important information in a text, rather than mechanically plodding through the reading and viewing everything as equally significant. Putting the material in one's own words—that is, taking effective notes as one reads—is one way that proficient students do this. Along with summarizing information, students need opportunities to reflect on the topic, to wonder about its significance, or to ask themselves what might be implied by the ideas presented. Thus the notes balance the two main aspects of reading that the Common Core Standards highlight—clearly comprehending information and ideas that a text conveys, and actively thinking about its meaning, significance, legitimacy, truth, and application. This is a more continuous, expansive, and self-directed response tool, compared to Post-it notes or coding.

How Does It Work?

1 As always, it's essential to model, so that students not only carry out the activity but also learn to use it in meaningful ways. Read aloud through a short selection that you project (or photocopy) for all to follow. Demonstrate for students how to distinguish between important and minor ideas in their reading, how to restate ideas in your own words in column one, and then think aloud about those ideas and jot this thinking, along with other responses, in column two.

2 Following the gradual release pattern, invite students to practice this kind of summarizing and thinking, first as a whole class together and then in pairs or individually, with additional short chunks of reading. After the pair or individual practice, be sure to have the whole class share their jottings together.

3 Once kids are skilled at the base version, feel free to develop multicolumn notes for specific content. Provide these in advance to guide and structure students' reading. Be sure to have kids debrief their notes with partners and/or come back to the whole class to share the range of thinking. This will naturally enable more students to actively participate than is often the case. And it will help make instruction more interactive so that all the work isn't being done only by you, the teacher.

4 Assess the thinking. If you require students to take these notes regularly, you'll probably want to check the notebooks periodically. Stagger the due dates for various classes so you aren't overloaded with paperwork. Skim over and check off the entries quickly and, if you have time, comment on just one or two for each student, perhaps with sticky notes of your own. And if you see limitations in the kinds of summarizing or reflecting that the students are jotting, don't hesitate to model once again to help students grow increasingly effective at the practice. But we'll also warn you: students won't bring high-grade energy to this quite demanding strategy if you do it all year long. Be sure to vary these notes with the many other ways of helping kids through their reading.

VARIATION: Teachers throughout Downers Grove South High School have students employ multicolumn notes in a wide variety of ways, depending on the material being studied and the kind of thinking explored in each class. As reading coach Amy Stoops and science department chair Karen Eder described to us, the most frequently used are three-column versions. In the left column, the teacher may ask students to sketch a picture, jot down a key statement, or note a lab rule. The middle column is for making predictions before the student reads. The right-hand column is devoted to thinking or reflection and may be labeled "So what?" or "What if the variables were different?" or "How would you do the experiment differently next time?" The possibilities for the columns are as wide as the kinds of thinking and learning that we want students to experience. When teachers are helping students develop an argument in a current events unit in a social studies class, for example, an issue might be written in the middle column—"Do you think the government should raise taxes, cut social programs, or both?" Then supporting evidence from the reading is listed on the left and counterarguments on the right. The student's conclusion is written at the bottom. In a math or science class, the left-hand column may feature a graph, the middle column the relevant evidence drawn from the graph, and the right-hand column the inferences or problem solutions that can be drawn. As Amy and Karen explain, "It all depends on the material and the thinking that you're teaching."

EXAMPLE

Name: _____

Directions: For each of the statements below, record evidence from the text or speeches that supports the statement **and** evidence from the text that refutes the statement. You may paraphrase or quote directly from the text. After each piece of evidence, indicate what source it was from: Taft Reading (T), Roosevelt Reading (FDR), Obama Speech (O), or Romney Speech (R).

Evidence Supporting Statement	"So What?" How does the evidence support the statement?	Anticipatory Statement	Evidence Refuting Statement	"So What?" How does the evidence refute the statement?
		A good way to revatilize our country's economy is to encourage independent business opportunities.		
		Providing too much government relief damages people's desire to work.		

Example contributed by Brennan Lazzaretto, history teacher, Downers Grove South High School.

TO LEARN MORE

"Double Entry Journal." 2013. IRA/NCTE ReadWriteThink. www.readwritethink.org/classroom-resources/printouts/double-entry-journal-30660.html.

Paukin, Walter. 2013. *How to Study in College* (11th ed.). Cengage Learning.

STRATEGY: **Sketching My Way Through the Text**

FOCUS: **Visualizing Meaning**

WHEN TO USE: Before Reading **During Reading** After Reading

DESCRIPTION:
We have already shown several ways that kids can stop, think, and react by marking up a text. Drawing simple pictures or diagrams along the way can also help students conceptualize ideas from their reading. In this strategy, they create a sequence of sketches, drawings, or cartoons to illustrate the ideas described in their reading. The sketches may show linear changes over time, a cyclical pattern, or a group of related elements such as the various parts of a plant or elements in its ecosystem. These are not highly refined drawings, but quick and simple representations, so you must emphasize that artistic ability is not the point of the exercise. For visibility and ease of sharing, these sketches are done on 8½" × 11" blank sheets of paper.

Why Use It?

We don't all think in the same way. As researchers on multiple intelligences explain it, words and numbers are just two of the many modes by which people may understand an idea. Drawing is especially powerful for many students because it helps them visualize what they are reading about, and that's one of the most effective thinking strategies that proficient readers employ. A sequence of drawings expands thinking, revealing processes of change and development, or multiple perspectives around a topic. It can be especially useful for understanding subject-area material that involves changes over time—in chemical processes, biological cycles or growth, historical events, literary plots. Students can certainly study diagrams and charts, but as plenty of research shows, they will think through and remember much more when they create their own.

How Does It Work?

1. Show kids how you create your own quick sketches as you read aloud through a piece of text. Even if you were good in art, don't get carried away. Make sure the drawings are rough diagrams and stick figures, so the kids understand they are not meant to reflect artistic merit. If you teach history, the sketches can show a series of important events—but they might also represent the attitudes or concerns of various groups of people: perspectives of various states at the Constitutional

Convention, government versus settlers versus Native Americans, and so on. In math, the drawings can represent steps in the process of solving a complex problem. The example on the next page shows a teacher's modeled sketches for a math lesson.

❷ Now let kids try it out. Depending on the material being read, students can stop at various points in their reading to do their quick sketch. Emphasize that the drawings should be quick and simple, so they don't break the flow of reading for too long or consume all the reading time provided in class (and providing some reading time in class is always a smart idea). If they're working on a math word problem, students may do all the sketches at once, to illustrate their process after they've solved it—or better yet, beforehand, to help them think through *how* they'll solve it.

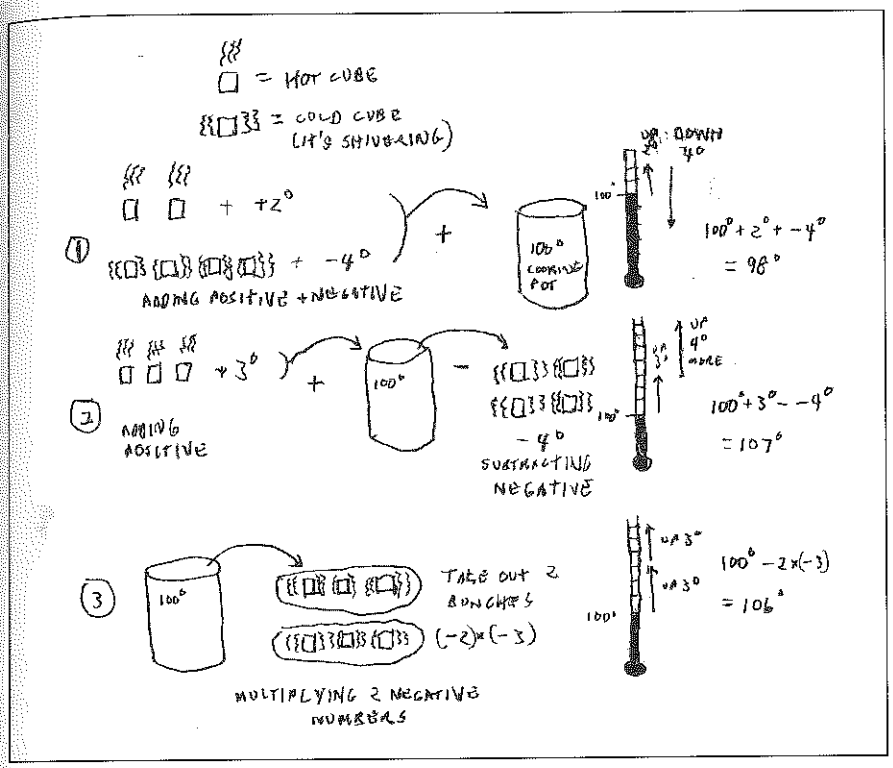
❸ Organize for sharing. Students should make their sketch sequences big enough for classmates to easily compare them and see the many ways an idea might be represented. For physical sharing in your room, students can make their drawings on newsprint and tape them up on the walls. Then in a gallery walk, small groups move from one set of drawings to the next, noticing how people pick up on various aspects of the reading. If your students have tablets or laptops, they can take pictures of and post their series of drawings on GoogleDocs, Edmodo, Padlet, or whatever document-sharing Web tool you use. That way they can view each other's work in an electronic gallery walk. Budget time for comments, responses, and whole-class or small-group discussion. Allowing students to view each other's sketches can easily lead into prompts for discussion, means for students to compare various ways of interpreting material, and aids for review.

VARIATION: Concerned that you don't have time for this strategy along with so many others described in this chapter? Solution: don't hesitate to incorporate one into another. Sketches can go onto Post-it response notes (pages 118–120). They can be featured in mapping (pages 155–158). They can serve as entries in one of the columns in students' multicolumn journals (pages 128–130) or as part of an exit or admit slip (pages 140–142).

EXAMPLE

In the *Interactive Mathematics Program* textbook, the "Chef's Hot and Cold Cubes" activity ingeniously uses the concept of unmeltable ice cubes to represent negative numbers and ever-burning charcoal briquettes to represent positive numbers. As the chef adds or removes cubes from the cooking pot, its temperature goes up or down. The temperature of the pot can be increased one degree by either adding a hot cube (adding a positive number) or removing a cold one (subtracting

a negative number). Thus, students can envision a very understandable meaning for adding and subtracting positive and negative numbers. Multiplication of positive and negative numbers simply means adding or taking out multiple "bunches" of cubes. Here is one set of drawings for several of the chef's actions:



TO LEARN MORE

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