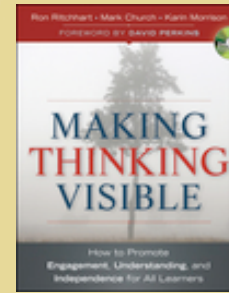




# THE MAIN IDEA

current education book summaries



File: Developing thinking strategies

## Making Thinking Visible: How to Promote Engagement, Understanding, and Independence for All Learners By Ron Ritchhart, Mark Church, and Karin Morrison (Jossey-Bass, 2011)

### S.O.S. (A Summary of the Summary)

*The main ideas of the book are:*

- ~ Currently, many teachers focus more on having their students complete tasks and assignments than on developing their thinking and understanding.
- ~ To promote thinking in their classrooms, teachers must: (1) create opportunities for students to think and (2) make students' thinking visible. This book introduces "thinking routines" that accomplish both of these goals.

*Why I chose this book:*

Currently, too many students work for grades, not for *learning* and *thinking*. I see this in the schools I visit and in my daughters' work habits.

It's not their fault. Many teachers have *not* learned how to teach their students to "think." This is a problem when the Common Core State Standards and the general demands of the 21<sup>st</sup> century require that our students think, and in fact, think more deeply.

The authors of this book clearly present the different types of thinking that students in all disciplines and all grades should be doing. Then they make the case for why teachers need to make student *thinking* – which has often been thought of as an internal and mysterious action – *visible* so both students and teachers can identify it, improve it, and then assess it.

Far from writing a theoretical book, the authors present a detailed approach to help teachers develop student learning. The 21 "thinking routines" outlined in the book show teachers how to regularly engage students in a series of steps that improve thinking.

If you are a school leader, do NOT assume this book isn't for you because it introduces teaching strategies. Do you observe teachers and find your feedback about thinking sounds like, "Your students did not engage in higher-order thinking" or "You need to increase the rigor of your teaching"? Then knowing what it LOOKS LIKE when teachers ARE promoting thinking in their classrooms will help tremendously in providing more specific feedback to teachers on this topic.

Also, this book is about much more than presenting a series of strategies. When implemented regularly, these routines significantly affect teacher practice and student learning even when teachers are not explicitly using the routines. These routines change the way teachers teach by getting them to make *thinking* a much more explicit student goal.

### The Scoop (In this summary you will learn...)

- √ What exactly is "thinking" and what are the 8 foundational thinking skills that cut across all disciplines
- √ The concrete ways teachers can uncover their students' thinking (make it "visible") to know what students understand
- √ How using "thinking routines" regularly is a structured way to help all teachers develop student thinking -- and six specific thinking routines teachers can implement in their classes tomorrow for all subjects and all grades
- √ Professional development suggestions to introduce the ideas in this book to teachers

## Chapter 1 – Unpacking Thinking – What is “thinking”?

All teachers say they want their students to develop their “thinking.” But what do they actually mean? What types of thinking do teachers value and promote in their own classrooms? Many teachers know they want their students to *think* but they have never stepped back to consider what it is exactly they want their students to *do* mentally. If teachers want to improve their students’ ability to think, then they must first become aware of the different forms of thinking *themselves* first.

### Our current approach to teaching about thinking

When you ask teachers to identify the kinds of thinking their lessons help students to develop, they often respond with, “Do you mean Bloom’s taxonomy?” However, there are several problems with using Bloom’s taxonomy as the foundation for teaching thinking skills. First, Bloom’s ideas were just a theory and not based on research. Second, the idea that thinking is hierarchical or sequential does not hold true. Knowledge does not necessarily precede comprehension and comprehension is not always necessary before application. A young child painting is working at the *application* level and when she finds she can produce a new color by mixing colors, she can *analyze* why that might have happened.

Another problem with our current approach to thinking, in addition to starting with Bloom’s taxonomy, is that a lot of our approaches to instruction do *not* require students to think and therefore do not result in understanding. Many educators focus much more of their energy on the completion of tasks and assignments than on the development of understanding. Often a teacher will *tell* students what is important to know and then have students practice that skill or knowledge. In the end, *little thinking* is happening in these classrooms! Many classrooms bustle with activity, and a teacher might play *Jeopardy* rather than provide a worksheet to review for a test, but the thinking necessary to turn all of the activity into *understanding* is often left to chance. For students to develop understanding, they must engage in the actual intellectual work needed to understand the tools and methods of that discipline. Below are some examples of this work:

**Scientists:** making and testing hypotheses, observing closely, building explanations...

**Mathematicians:** looking for patterns, making conjectures, forming generalizations, constructing arguments...

**Historians:** considering different perspectives, reasoning with evidence, building explanations...

**Readers:** making interpretations, connections, predictions...

### The thinking skills needed for understanding across all disciplines

If the current approach to teaching thinking doesn’t work, where can teachers begin? In their research, David Perkins, Shari Tishman, and Patricia Palmer worked to develop a short list of high-leverage thinking moves that would develop understanding in *all* disciplines. These certainly do not encompass *every* type of thinking, but they constitute the types of thinking that are essential to develop *understanding*. These are:

1. Observing closely and describing what’s there
2. Building explanations and interpretations
3. Reasoning with evidence
4. Making connections
5. Considering different viewpoints and perspectives
6. Capturing the heart and forming conclusions

To help make thinking visible, teachers have found it is useful to post this list. Even more useful is when teachers use this list to plan units. Students should be engaged in *all six* of these types of thinking during the course of a unit to develop true understanding. Put another way, if students have *not* been actively building explanations, reasoning with evidence, making connections, or looking at things from more than one perspective, then chances are that there would be significant gaps in their understanding. In addition to posting and planning, this list of six can be useful for teachers to *assess* whether students understand. One teacher turned the six into a rubric. Another decided to have students create a “visible thinking portfolio” and bring in samples of their work that demonstrated each type of thinking. The authors of this book then added two more thinking moves:

7. Wondering and asking questions
8. Uncovering complexity and going below the surface of things

### The importance of student awareness of thinking

In addition to teachers being able to articulate the specific kinds of thinking they would like to promote in their classrooms, students must also develop more of an awareness of the importance of thinking in facilitating their own learning. The authors of this book, along with others, set out to research students’ awareness of their own thinking. They asked students to record their ideas about thinking, “What is thinking? When you are thinking, what is going on in your head?” While there was a huge range of responses, overall they found that students don’t have much knowledge of the strategies they use to facilitate their thinking. This led the researchers to believe that there is a great need to make thinking – both our own as educators as well as students’ – *visible*. By helping students to become more actively aware of thinking processes, this will not only improve their understanding, but it will help them to become more independent and engaged learners. The next chapter will describe *visible thinking* in more detail.

## Chapter 2 – What is “visible” thinking and how can teachers make thinking “visible”?

### Our current, distorted view of teaching vs. placing the learner at the center of teaching

When we talk about what it means for someone to “teach well,” what do we mean? Unfortunately, we currently have a very simplistic view of teaching. We judge teacher effectiveness by how well teachers have a command of the content and use various strategies for delivering that content. However, if we shift our perspective so that we place the *learner* at the center of our thinking about teaching, all of a sudden the role of the teacher changes. Rather than focusing on covering the content, teachers think about how well they *foster students’ engagement with ideas*. This means that teachers will need to identify the core concepts and ideas they want their students to engage with, explore, struggle with, and question so that students develop a deeper understanding.

Currently, we often see learning as a passive taking in of information. Instead, for students to truly understand something they must actively engage in thinking and sense making. With this in mind, teachers must now see their role as creating opportunities for student thinking to occur.

### What is visible learning and why do we need it?

In addition to placing student thinking at the center of what they do, teachers must also have a window into that thinking: what do students understand and how are they understanding it? This is what is meant by “making thinking visible.” It is only once they have this information that teachers can help students move to the next level in their thinking. Currently, by plowing through material, teachers don’t fully know what students understand. Attending to student understanding is time consuming and messy so instead, teachers rapidly cover what is needed for the test and largely keep student thinking *invisible*. By making student learning visible, we help to demystify for our students what thinking and learning is all about. We must model for students what it means to engage with ideas and think, and show them that learning is about much more than memorizing for a test.

In order to create opportunities for student thinking, teachers must first be able to *name* and *notice* when thinking occurs in their classrooms. Teachers must be able to identify when it is that students are putting forth a new point of view, proposing a new theory or conjecture, providing an explanation, making a connection, seeing a pattern, etc. Once teachers become aware of and can name examples of thinking in their classrooms, *then* they can highlight these examples and make thinking visible for their students.

### How we can make thinking visible

So what might it look like to “make thinking visible”? One teacher designed a series of lessons to reveal students’ misconceptions about scientific concepts. She came to class one day and demonstrated what happens when she dropped a large and small candle into two jars of liquid. The shorter candle floated while the larger one sank. Students were asked to record their observations and to put forth their own theories to explain why this might have occurred. Next, the teacher retrieved the candles but this time she dropped them into the other jar. This time the larger candle floated while the smaller one sank. This surprised most students as they again had to record their observations and a new theory of explanation. This led to a deeper discussion about floating and the connection between the object and the liquid. Rather than *providing* students with these explanations, the teacher required students to develop their own understanding and she *exposed* their thinking through writing.

So, after teachers become clear about what thinking is and are able to notice and name it when it occurs, and they create opportunities for students to think in their classrooms, how can they make the largely invisible and internal process of thinking visible? There are three primary ways to make thinking visible, through: (1) questioning, (2) listening, and (3) documenting.

**(1) Questioning** – Teachers have always used questioning, but in an attempt to use Bloom’s taxonomy, sometimes teachers feel that questions are stilted or they simply can’t come up with good questions in the moment. Perhaps teachers can approach questioning differently. Below are three ways teachers can think about questions. They can ask questions that: (a) model our interest in the ideas being explored, (b) help students construct understanding, or (c) help students to clarify their own thinking.

(a) *model our interest in the ideas being explored* – These questions include *authentic* questions for which the teacher does not already have a set answer. For example, “I was wondering if that pattern we looked at yesterday might be present in any of the other situations we have looked at in this unit?” Or, “Amy found an interesting way of approaching the problem, and I was wondering if that would always work?” The larger “essential questions” that get at the heart of a discipline would fit into this category.

(b) *help students construct understanding* – These questions move away from asking review or knowledge-based questions and instead serve to move student understanding forward. In one first grade lesson about the five senses, a teacher had students feel an object in a box. Then she asked, “What do you know just by feeling it?” “What do you *not* know by feeling it?” and “What does it make you wonder?” Without questions that develop understanding, the exercise just becomes a fun game unlikely to develop thinking.

(c) *help students to clarify their own thinking* – Rather than transmit what is already in their own heads, teachers should try to get out what is in their students’ heads. Examples of this type of questioning include, “What makes you say that?” “What do you think you were basing that on?” and “I’m not quite following, can you say what you are thinking in a different way?”

**(2) Listening** – Through listening, we can learn about student thinking, but only if we truly know *how* to listen. In one example in the book, after a master teacher taught a successful lesson, another teacher used the same lesson in his class, but failed. The difference – when students responded with short answers, or seemed to be guessing, the teacher was stumped and just moved the lesson forward. Instead, teachers need to listen for student confusion. As the master teacher said, “It’s one thing to ask good questions, but one also has to *listen for the answers*.” By not listening, it is difficult for teachers to follow up with an appropriate response. Furthermore, listening conveys respect and interest in student thinking which encourage students to share their thinking in the future.

**(3) Documenting** – This is another tool to make student thinking visible. Whether through notes on a whiteboard, photographs of student work, audiotapes of class discussions, or written notes of students’ contributions, there are many ways to capture student thinking. However, it is important to note that in order to *advance* student learning, documentation must include more than simply *capturing* the learning. Students must be able to use the documentation to reflect on and monitor their progress. Sharing this documentation with colleagues can help facilitate a rich discussion about learning and student thinking.

## Chapter 3 – Introduction to Thinking Routines

Just like teachers have routines for students to line up or turn in homework, teachers can use *thinking routines* as a regular way to promote student thinking and make that thinking visible. Research has shown that teachers who are successful in developing their students’ thinking use some type of thinking routines to scaffold and support student thinking. Over time, these routines become habitual and thinking becomes a seamless part of the classroom culture. It is helpful to look at *thinking routines* as: (1) tools, (2) structures, and (3) patterns.

**(1) tools** – In the same way a saw doesn’t work if you need a hammer, different thinking routines are designed to support the different types of thinking outlined in Chapter 1. Therefore, teachers should *first* identify the type of thinking they want students to engage in and *then* choose the appropriate thinking routine to serve as a *tool* to foster the identified types of thinking. These “tools” not only help teachers teach students different thinking skills, but they help students become independent thinkers as well. Once students have internalized the routines, they can use them on their own to support their own thinking even without a teacher present.

**(2) structures** – Each of the thinking routines is made up of a series of steps that help students develop progressively deeper levels of thinking as they proceed. In this way, the thinking routines serve as *scaffolds* that slowly build student thinking.

**(3) patterns** – Unlike *strategies* which are used only occasionally, the thinking *routines* help students develop certain patterns of behavior. These patterns of behavior help students develop their own thinking.

Twenty-one different thinking routines are introduced in this book, a few of which are highlighted in this summary. The thinking routines are organized into three categories:

- (A) Thinking routines useful for **introducing** and **exploring** new ideas – usually used at the beginning of a unit (Chapter 4)
- (B) Thinking routines useful for **synthesizing** and **organizing** new ideas – usually used during a unit (Chapter 5)
- (C) Thinking routines useful for **digging deeper** into ideas – usually used in culminating a unit (Chapter 6)

## Chapter 4 – Routines for Introducing and Exploring Ideas (for the beginning of the unit)

This chapter contains seven different routines teachers can use at the beginning of a unit or lesson to help introduce students to new ideas and allow them to explore these ideas. Because the goal of all of the routines presented in the book is to deepen students’ thinking, it is important that teachers select content that is not only engaging, but may contain some degree of ambiguity, and challenges students to do some deeper thinking. These routines do *not* work with activities that simply ask students to memorize vocabulary or practice multiplying fractions. In addition, these routines do *not* work well if teachers turn them into worksheets to be filled out. Instead, for each routine, students should be given enough time to share their thinking in pairs or small groups. Below are two examples of these routines; see Chapter 4 of the book for the rest.

### 1. See-Think-Wonder (STW)

*Looking at an object or image:*

- What do you see?
- What do you think is going on?
- What does it make you wonder?

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### a. Description of the routine

This routine involves students looking very closely at an object or image, and using this close observation as the foundation to gain insights, make grounded interpretations, build evidence-based theories, and foster curiosity. The steps include:

1. **Set up:** Choose an image/object that involves enough detail for students to spend time observing it for an extended time. The item could be a painting, photo, artifact, video clip, excerpt of a text, political cartoon, chart with data, found object, etc.
2. **See:** Ask students to spend time noticing what they *see*. Sometimes students jump to interpretations, but remind them just to record things they see – their observations. Students can share ideas in pairs.
3. **Think:** This is the step when students do the *interpreting*. Ask students what they think might be going on in the image/object, “Based on what we are seeing and noticing, what does it make us think? What kinds of interpretations can we form based on our observations?” The goal is to build layers of interpretations about the subject, not simply name the object. If students provide a simplistic response, ask, “What else is going on here?” If students provide interpretations that are not grounded in evidence, ask them, “What *do you see* that makes you say that?”
4. **Wonder:** Now ask students, based on their interpretations, what they wonder. This can be difficult to separate from the interpreting step. Students may say, “I wonder if she really is his sister?” or “I wonder if that object in the corner is part of a boat?” Instead, tell them this step is about asking broader questions that push us to look beyond the object. See the example of each step below:  
*See* – I see a lot of black in the image.  
*Interpret* – I think that means it is nighttime.  
*Wonder* – I wonder if the darkness is also reflective of the artist’s mood?
5. **Share the thinking** – This step is in every routine and will only be described here, in the first routine. Students can share their thinking in pairs or small groups for each of the three steps. One idea is to document the thinking by having students record their ideas on large pieces of posted paper around the room or on sticky notes for other students to see and add to. Another idea is to have students work through the three steps in pairs/small groups, and then do a larger share at the end of those three steps.

### b. Assessment

*See* – Look for student observations that go beyond the surface features.

*Think* – To determine how well students are interpreting, check whether their interpretations are supported with evidence.

*Wonder* – To successfully complete this step, students must be able to go beyond writing a sentence that simply contains, “I wonder” and instead must ask broad questions that go beyond basic facts to ask about the larger themes or questions of the discipline.

### c. Tips and Specific Examples

Make sure to give your students enough time with step one, observing, and resist the urge to skip quickly to interpretation. To help, provide examples of interpretations. Don’t be shy about jumping in and providing your own contributions. Also, remember *not* to turn this activity into a worksheet or students will give short shrift to each step and provide only short written responses that lack depth and nuance.

In the book, there is an example of a high school teacher who wanted to teach her students to think more deeply about the representation of women in the Middle Ages rather than lecturing at them with a PowerPoint. So she chose to use this routine by projecting an image of an early medieval painting on a screen and bringing her students through the three steps in the routine. While this book may seem geared to older students who are more capable of “deep” thinking, there are a number of examples throughout the book of using these routines with younger children. For example, one teacher used this routine with *preschoolers* in order to teach them to think more deeply about the stereotypical portrayal of “princesses.” This teacher brought in a wide variety of images of princesses, including nontraditional ones, and engaged her students in the See-Think-Wonder routine to discuss the images. At one point, a group of four-year-olds were able to discuss these images for forty minutes!

## 2. Chalk Talk

*Looking at the topic or questions written on the chart paper:*

- What ideas come to mind when you consider this idea, question, or problem?
- What connections can you make to others’ responses?
- What questions arise as you think about the ideas and consider the responses and comments of others?

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### a. Description of the routine

“Chalk talk” is a silent conversation conducted on paper. This routine ensures that every voice is heard rather than just the voices of the few students raising their hands. This routine teaches students to build understanding in a collaborative way by having all students put forth their ideas, then question one another, and develop those ideas further. Because it is conducted in silence, and somewhat anonymously, this allows certain students to share more ideas and take risks they might not otherwise take. The steps include:



1. Set up – While you can choose a word or a phrase as a prompt, using questions will lead to richer discussions. Consider using questions that will generate different viewpoints and perspectives such as, “What is the relationship between revenge and reconciliation?” or “Should cloning be allowed?” These questions may come from previous class discussions. Quotations are also a good source. Write each prompt on a large piece of chart paper and place them on classroom tables along with markers. Decide if you want students to move as a group from table to table or just wander independently. Choose how much time to spend for each round.
2. Present the Chalk Talk prompt – Invite students to read the prompt, then think about and write their reactions, ideas, and questions on the pieces of chart paper. On subsequent rounds, encourage students to read and add comments to each other’s responses.
3. Circulate – If you are having students rotate in groups or individually, give them 5 minutes to read and respond and then rotate to another table.
4. Share the thinking – Have students return to their original tables and read what others wrote on their “Chalk Talk.” Discuss what were the common issues? What questions arose? How did everyone’s thinking develop as they went from table to table?

**b. Assessment** – The best way to assess student thinking is to look for the *relevance* of student contributions. Do they make contributions related to the big ideas, the heart and substance of the topic, or do they make more surface connections? How successfully do students build on the ideas of classmates?

**c. Tips and Specific Examples**

If you want to track specific students’ responses, then give all students a different color marker. Also, although you may be tempted to keep students at one table and just have them respond to others’ responses at their table, there is something freeing about allowing students to walk around. This movement helps prevent fidgeting and small talk.

In one example of a class learning about outer space, the students watched a documentary. In discussing the documentary, three topics surfaced that most engaged the students: (1) that a monkey was first sent into space, (2) the competition between countries in the space race, and (3) the amount of money spent on space exploration. As a way to *deepen the students’ understanding* of these issues, the teacher decided to use a “Chalk Talk.” She introduced three prompts on different pieces of butcher paper throughout the room and led her students through this routine. The prompts were: What are your ideas, thoughts, questions, and wonderings on... (1) Sending animals before astronauts into space? (2) The government’s spending so much money? and (3) The race into space?

## Chapter 5 – Routines for Synthesizing and Organizing Ideas (to use during the unit)

### 1. Headlines

*Think of the big ideas and important themes in what you have been learning.*

- Write a headline for this topic/issue that summarizes or captures a key aspect that you think is significant and important.

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**a. Description of the routine**

Asking students to create a “headline” that forces them to compose a quick synthesis of what they think are the key ideas being addressed, helps to clarify where each student is in his or her understanding of the big ideas. Sometimes students simply complete activities in a class without ever fully understanding the main objective or key ideas of the activity. By asking students to sum up the larger ideas of the lesson, teachers convey the message that it is *important* to pay attention to the larger concepts and help students develop the habit of looking for deeper understanding. The steps include:

1. Set up – First engage students in enough learning activities so they begin to understand a larger concept. This doesn’t work if you simply ask students to define a few vocabulary words and then ask for a headline.
2. Write a headline – After students have completed the learning experiences, ask them to “Write a headline for this topic/issue that captures an important aspect or core idea we want to remember.” Students can do this individually or in groups.
3. Share the thinking – Students should not only share their headlines with others in pairs or small groups, but they should also explain the reasoning *behind* their thinking that led to this headline. Then students can share as a class and perhaps search for common themes.

**b. Assessment**

In addition to assessing each student’s headline, also look for the reasoning behind each choice. Does the headline actually synthesize and capture the learning or does it focus on more tangential or surface pieces? What does the headline reveal about the student’s understanding of the topic?

### c. Tips and Specific Examples

In one adaptation of this routine, after exploring various literary themes in a novel her students just read, an eighth grade teacher had her students each nominate a song from their MP3 players that would best capture one of those literary themes. Then they had to explain the reasoning behind their choices. Another teacher was even able to introduce the idea of summarizing to his three- and four-year-olds. He called the activity “Story Titles” and after each student shared what he or she had done for the weekend, the teacher would ask, “What title could we give Carla’s story?” and “What else might we call it?”

## **2. Generate-Sort-Connect-Elaborate (GSCE): Concept Maps**

*Generate a concept map of a topic, concept, or issue you have been studying that reveals your understanding.*

- *Generate* a list of ideas and initial thoughts that come to mind when you think about this topic or issue.
- *Sort* your ideas according to how central or tangential they are. Place the central ideas near the center of a piece of paper and the more tangential ideas toward the outside of it.
- *Connect* your ideas by drawing connecting lines between the ideas that have something in common. Write a sentence on these lines explaining how these ideas are connected.
- *Elaborate* on any ideas or thoughts you have written so far by adding new ideas that expand, extend, or add to your initial ideas.

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### a. Description of the routine

This routine was developed because most students don’t create good concept maps that truly reveal their understanding of a topic. By breaking the routine of creating a concept map into several steps, this provides the structure needed to foster better student thinking. The steps of this routine include:

1. *Set up* – Choose a concept with a large scope such as: democracy, habitat, geometry, etc. If students are not familiar with concept maps, introduce them to this structured way of thinking about a topic. Provide learning experiences for the students on the topic.
2. *Generate* – Have students generate a list of words or ideas connected to the topic they are learning about, “Make a list of the key aspects or components of this topic.” This will just be an *initial* list.
3. *Sort* – In pairs or individually, have students sort their ideas based on how central or tangential they are to the overall topic. They can do this by placing more central ideas near the center of a paper, and the more tangential ideas toward the periphery of the paper.
4. *Connect* – Have students connect ideas by drawing lines between them and writing the reason for the connection on each line.
5. *Elaborate* – Ask students to pick a few of their central ideas and elaborate on them and think of subcategories for them.

### b. Assessment

The GSCE concept maps provide a great deal of information to teachers about what students know about the topic and how well they understand the connections between different ideas within the topic. Notice the following: Are students able to understand the difference between key and tangential ideas? Have they identified the *most* important ideas? For the ideas they’ve elaborated upon, how deep does their understanding go?

### c. Tips and Specific Examples

In one high school history class studying the Middle Ages, the teacher wrote the following central topic on a white board, “Jewish Life in the Middle Ages.” She kept all students outside of the classroom and then invited three at a time to enter and write an event, theme, concept or idea on the board. The teacher asked the groups who entered later to read what was written and draw lines connecting the ideas. Once all students were in the room, the teacher asked everyone to contribute additional ideas. This concept map served as a review. Next the teacher asked the students to contribute questions that arose based on what was on the board and when one student asked, “Why do we always consider tragedy and disaster in history more important than happy peaceful times?” this led to an in-depth discussion about turning points in history.

In a twelfth grade English class, after reading a novel, the teacher had his students create individual concept maps about the main character’s mental breakdown. Then, he had students bring their concept maps to small groups to create one collective concept map, but they could only include items on which they had reached consensus. The next day the students had to write an essay on the same topic and the teacher saw that the thinking routine helped students write stronger essays.

## **Chapter 6 – Routines for Digging Deeper into Ideas (to use at the end of a unit)**

### **1. Red Light, Yellow Light (RLYL)**

*As you read, view, or listen to the material before you, consider the following questions:*

- What are the *red lights* here? What parts stop you in your tracks as a reader/observer and make you doubt their truth?
- What are the *yellow lights* here? What things slow you down, give you pause, and make you wonder if they are true or not?

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### a. Description of the routine

This routine helps students learn to critique what they are reading or viewing. Students become more active listeners and readers when they begin to consider the veracity of the material with which they are grappling. Using the metaphor of a traffic light, students develop the habit of considering when they need to stop (*red light*) and question the material they are reading and when ideas are more clearly substantiated and they have the *green light* to forge ahead. The steps in this routine include:

1. *Set up* – Choose material that presents certain claims, conclusions, or generalizations. This could include an opinion piece, a mystery to be solved, or a mathematical proof that contains weaknesses. It helps to choose an issue or controversy that has a number of places where students might question the accuracy of the claim. It might help to keep the source of the material a secret.
2. *Look for red lights and yellow lights* – Individually or in groups have students look for points where there are signs that they should question the truth of the material. They should write *R* in the margins for the red lights – places where there is a glaring bias or untruth. In addition, they should write *Y* in the margins for yellow lights – places to proceed with caution. Everything else would then implicitly fall under the category of *green light* – proceed ahead.
3. *Provide reasons for the light colors* – Students should make sure to provide evidence and reasoning for their decisions to code certain parts *red*, *yellow*, or *green*. They can document these reasons.
4. *Share the thinking* – Have the class look at their thinking by asking, “What have we learned about particular points that suggest we should question the truth here? What have we learned about the red and yellow zones to watch out for?”

### b. Assessment

Notice how easily students are able to identify questionable passages in what they read. Furthermore, it is important to pay attention to the quality of their *reasons* for making their choices. Are students becoming critical consumers of information? Have they internalized these skills and are they using them during class discussions to question the assertions classmates put forth? Do students become better at scrutinizing *their own* arguments by looking for red and yellow lights when those arguments are weak or oversimplified?

### c. Tips and Specific Examples

In addition to discussing *red* and *yellow lights* with students, teachers should also take the opportunity to explore what it means for a passage to be considered a *green light*, that is, how can we tell when a claim is solid and backed by evidence?

In one fifth grade class, the teacher took papers written by former students in which they had resorted to writing generalizations about the slave trade and the Middle Passage without critically examining the evidence. Since her current class had already studied the Middle Passage, she posted these papers with flimsy claims and asked her current students to examine them looking for examples of *red* and *yellow lights*. She then had students look back at their journals to evaluate their *own* early claims on this topic, and students were able to be much more critical. By using this routine regularly, the teacher saw the language of this routine seep into other class discussions as students regularly used the phrases, “What are our *red lights* here? Where are we seeing *yellow lights* in this material?”

## 2. Tug-of-War

Place a line across your desk to represent a tug-of-war rope and work with a dilemma to consider multiple perspectives.

- Identify and frame two opposing sides of a dilemma and use these to label each end of your tug-of-war rope.
- Generate as many “tugs,” or reasons for each side of the issue and write each on a sticky note.
- Determine the strength of each “tug” and place the strongest at the ends of the rope and the weakest toward the center.
- Capture any “What if...?” questions that arise and place them on sticky notes above the rope.

The 8 Fundamental Thinking Skills	
1. Observing closely and describing what's there	5. Considering different viewpoints and perspectives
2. Building explanations and interpretations	6. Capturing the heart and forming conclusions
3. Reasoning with evidence	7. Wondering and asking questions
4. Making connections	8. Uncovering complexity and going below the surface of things

### a. Description of the routine

Not all arguments on both sides of an issue are of equal strength. The tug-of-war metaphor helps students think about the strength of each claim by forcing them to physically order the arguments from weakest to strongest (at the “anchor” position at the tip of the rope). The steps include:

1. *Set up* – Choose an issue with two clearly contrasting sides. These can come from the curriculum or the news. For example, the benefits of taxation versus the provision of government services. Once a dilemma has been introduced, it's important for students to be able to identify the two sides. Then have them draw a line on a paper and name the two ends of the rope with the opposing viewpoints.



2. Consider the “tugs” – Ask students, “On this side of the rope, what are the “tugs” or reasons for supporting this position?” In groups or individually, have students generate as many reasons as possible and write each on a different sticky note so these can be moved around. Then they should do the same for the *other* side of the argument.
3. Place the “tugs” – Now, based on which reasons have the strongest justifications, reasoning, or evidence, have students place the sticky notes on the line with the weakest arguments closest to the center.
4. Ask What if? What about? questions – Have students use different color sticky notes to write questions such as, “What if that’s not legal?” or other “it depends” questions. These should capture concerns that need more exploration.
5. Share the thinking – After sharing students’ tug-of-wars in small groups or as a class, ask students if they still feel the same about the dilemma, and if so, which arguments changed their thinking. Consider asking students to summarize the complexity of each side.

#### b. Assessment

First teachers should note whether students are even able to frame the two sides of the argument. Then, they should look for whether students are able to step outside of their own position and provide reasons for *both* sides of the issue. Finally, how strong are the justifications and reasoning behind each argument? Do they place the “tugs” in appropriate places on the rope?

#### c. Tips and Specific Examples

In one eighth-grade class, the teacher felt her students often jumped to conclusions too quickly in reading *The Giver* by Lois Lowry. To deepen their thinking, she decided to use the “Tug-of-War” routine to explore the pros and cons of the novel’s utopian ideal in which all diversity has been eliminated. When her students finished the novel, she used this routine to address the question, “What would help achieve an ideal world?” in which one side represented the answer, “If we were all the same” and the other, “If we were all different.” She was amazed at her students’ reasoning. Students even considered that there would be no bullying or teasing if we were all the same. She found that repeated use of this routine transformed her class, “Tug-of-War is not just a set of steps or a procedure; it’s a mindset... It transcends so much more than just one activity – it’s truly about perspective taking and reasoning.” She found she used the language of the routine even when she wasn’t using the routine, “What would *tug* us in one direction versus the other?”

## Chapter 7 – Creating a Place Where Thinking is Valued, Visible, and Actively Promoted

### Creating a “Culture of Thinking”

In order to truly transform classrooms where deep thinking is valued and regularly employed, teachers can’t simply introduce the routines in this book once and hope they stick. Instead, they need to regularly use the routines so that students develop *habits of thinking*. Furthermore, teachers must create a “culture of thinking” in which this type of thinking is the norm.

“Cultures of thinking” can be defined as “places where a group’s collective as well as individual thinking is valued, visible, and actively promoted as part of the regular, day-to-day experience of all group members.” There are several important things to note in this definition. First, the inclusion of the *group* reminds us that traditionally thinking has been considered something that happens mysteriously in an individual mind. In fact, our thinking would be severely limited if it remained an individual activity. Furthermore, for it to be *valued*, *visible*, and *promoted*, the thinking must be clearly articulated. Rather than simply saying, “We value thinking here,” we need teachers and leaders to articulate what *kinds* of thinking. They also need to employ practices that make thinking visible such as listening, documenting, and using the thinking routines. Furthermore, to create a “culture of thinking,” students need to be using thinking skills *regularly*, not just in a few isolated activities. Currently, many students see themselves working for *grades* rather than working to *think and learn*. Finally, thinking should not be reserved just for the advanced students. When thinking becomes a daily part of class practice, and teachers value students’ thinking, students once considered to be weaker will begin to excel.

### The Elements That Create a “Culture of Thinking”

The following elements will help educators to actively build a “culture of thinking.”

1. *Expectations* – Teachers often set expectations for student behavior and for the completion of activities. However, these types of expectations frequently result in a culture of compliance and do little to motivate learning. Instead, it needs to be clear that *thinking* is to be the focus, and teachers must clearly articulate the kinds of thinking they expect.
2. *Opportunities* – Opportunities are what allow expectations to become realized. For example, when teachers provide students with *challenging content*, this provides an opportunity for them to use thinking skills. Obviously, challenging content alone will not foster thinking; it also involves what the teacher asks students to *do* with the content (for example, use thinking routines).
3. *Time* – Group thinking takes time. Without time, how can insights and deeper understandings develop? Without time, how can students reflect on their learning? If we require teachers to race through a great deal of content, this limits time. However, by repeatedly using the thinking routines in this book, teachers can help students internalize these routines so ultimately there will be greater autonomy and efficiency during these activities which will eventually save time.
4. *Modeling* – To foster student thinking, teachers must model that they are thinkers and learners, too. This can’t be something they do just for the students’ sake – it must be genuine. Teachers must convey the importance of thinking with their own behavior.

5. *Language* – It is through *language* that teachers name, notice, and highlight thinking in their classrooms. Language helps students become aware of their thinking and talk about their thinking. Language also shapes thinking in more subtle ways as well. Consider the difference between responding to someone’s thinking with, “What you should do is…” versus, “One thing you might consider is…”

6. *Environment* – The way teachers arrange their classroom – in tables aimed at discussion versus isolated seats or rows – can have an impact on how much thinking is supported in the classroom.

7. *Routines* – The book provided descriptions of twenty-one thinking routines. These routines will help in establishing a “culture of thinking” if teachers use them regularly enough that students develop habits of thinking even when the routines are not being used.

## Chapter 8 – Notes from the Field

As researchers, the authors have studied thousands of teachers as they have implemented the thinking routines. Because of this, they have been able to notice certain trends in implementation. They have found that there tends to be a common trajectory of growth as educators grapple with the reality of implementing the routines, and they have also noticed common struggles in implementation.

### Implementing Thinking Routines -- Common Stages of Development

In order to develop student thinking, teachers found they were not able to simply insert a thinking routine here or there. Instead, they needed to use the thinking strategies in an *ongoing* way in order to truly shift both students’ and teachers’ expectations and ideas about “thinking.” Below are three general stages that teachers and students tend to go through as they implement these routines:

*1<sup>st</sup> Stage: Getting Started* – In this stage, teachers tend to stick more closely to the routine’s steps and language. Students may be confused about the expectations and because they are used to worksheets, they may focus more on trying to give the teacher the “right” answer rather than developing their thinking. Many students initially give surface or simplistic responses and they may wonder why they are doing this activity. Teachers can help with these problems by explaining that the purpose is to develop thinking (not simply to engage in the routine). They may want to try the routine themselves with the content to anticipate any stumbling blocks. After conducting the initial routine, it can help for teachers to analyze student responses collaboratively with other teachers.

*2<sup>nd</sup> Stage: Getting Comfortable* – At this stage, both students and teachers become more comfortable with the routines. A common change that teachers report is that they used to plan their lessons by first choosing a thinking routine to implement. *Now* they decide on the type of thinking they want their students to engage in, and then based on this, they choose an appropriate thinking routine. At this stage, students tend to show greater independence and a deeper level of thinking.

*3<sup>rd</sup> Stage: Getting Confident* – At this final stage, teachers are able to move their focus away from implementing individual thinking routines and focus on the larger question of how they are able to create and maintain a culture of thinking in their classrooms. Students’ use of the thinking routines becomes such an ingrained habit that they use these routines to help their thinking even when not prompted by a teacher.

### Implementing Thinking Routines -- Common Pitfalls

A few common struggles that teachers should be aware of include the following. They should avoid going overboard with sticky notes and remember to help students identify the *important* ideas to keep in mind. At the same time, they should not resort to using worksheets with these routines because students often get distracted by filling in the worksheet rather than doing the thinking. When worksheets are involved they often become the goal rather than the thinking. As suggested above, thinking routines should be used as *tools* to help students develop certain kinds of thinking. The routines should *not* be implemented simply for the sake of the routine.

Overall, there is tremendous potential in the power of using the thinking routines to develop student thinking. However, they are simply *tools*, and as tools, they need to be implemented in the appropriate context and require the use of skilled teachers who work thoughtfully to implement them.

## THE MAIN IDEA's PD Suggestions to Help Teachers Develop Student Thinking

### A. Help teachers focus on student “thinking” in their instruction

1. *What do we mean by “thinking”?* – We all say that we want our students to develop their “thinking” – but what does this mean? Have teachers discuss the following in pairs or groups. You may even want teachers to create a concept map with THINKING written in an oval in the center, and then fill in a web of what skills and actions they associate with THINKING.

*Discuss:* When we use the word *think*, what do we mean? When you tell someone you are thinking, what is it you are actually doing? When you ask your students to think, what exactly do you want your students to be doing? What kinds of thinking do you promote in your own classroom?

2. *What types of thinking should teachers focus on?* – There are many different types of thinking, but the authors of the book, based on their research, have outlined *six* types of thinking that develop understanding in all grades and subjects. This list does *not* include every type of thinking; this is just a short list of the highest-leverage thinking moves.

*Discuss:* Discuss the six types of thinking below. Do you agree that these are the most essential thinking skills needed to develop understanding? Do you think you could help your students develop understanding without employing all six below? What are some *specific* examples of how these thinking skills might look in your own classroom?

- |  |  |
|--|--|
| 1. Observing closely and describing what's there | 4. Making connections                                |
| 2. Building explanations and interpretations     | 5. Considering different viewpoints and perspectives |
| 3. Reasoning with evidence                       | 6. Capturing the heart and forming conclusions       |

3. *Did teachers focus on thinking in today's lesson plan?* -- Have teachers bring in a lesson plan from today. Discuss how many of us fall into the trap of thinking about covering material or having students complete activities. Ask teachers to *individually reflect*: Which parts of your lesson focused on coverage or activity completion? Which parts of the lesson got students to think? What types of thinking did this lesson get the students to do? If time, plan your next lesson now to incorporate more of these 6 types of thinking.

4. *How might teachers use the list of 6 thinking skills to assess student thinking?* – The list of 6 thinking skills is useful to help teachers plan units. It is also useful in helping teachers to *assess* student thinking. *Brainstorm:* In pairs, have teachers brainstorm what “proficient” for each thinking skill might look like in their own classes.

Thinking Skill	What might Level 3 (Proficient) for this skill look like in a rubric (1 to 4)?
1. Observing closely and describing what's there	
2. Building explanations and interpretations	
3. Reasoning with evidence	
4. Making connections	
5. Considering different viewpoints and perspectives	
6. Capturing the heart and forming conclusions	

### B. Help teachers make thinking “visible” in their classrooms

1. *How can teachers make their students aware of their own thinking?* -- The first step in helping students to strengthen their thinking skills is making them aware of their thinking – in other words, making their thinking *visible* to them. *Brainstorm:* Do a large group brainstorm – What are some ways we can make our students aware of their own thinking? Then have teachers follow up in smaller groups to create a concrete plan to begin to make students more aware of their own thinking (often referred to as *metacognition*). Give them the following suggestions and then have them work in groups to come up with their own ideas:

#### Ideas to help students become aware of their own thinking

One way to begin to develop your students' awareness of thinking is by doing a poll of your students to see how much they know about thinking. Ask them, “What is thinking? When you tell someone you are thinking, what kinds of things might actually be going on in your head?” Provide students with a few examples: “Making a mental picture of things” and “Comparing one thing with another.” You can have students draw a concept map with THINKING written in the center and then create branches off of it for what they consider to be the different components of thinking. You can also have a discussion about the importance of thinking skills in developing their understanding and independence as learners.

2. *Help teachers develop their abilities to “name” and “notice” student thinking* -- In order for teachers to “make thinking visible” in their classrooms, they must first be able to identify, or as it says in the book, “name” and “notice” examples and types of student thinking that occur in the classroom. In pairs, have teachers find 10-15 minutes to view each other's classrooms. Observers should record examples they believe demonstrate thinking. After, the pair should discuss and compare notes – are these examples of student thinking? What kinds of student thinking did each observe? Were any of the 6 high-leverage thinking skills used?

3. *Have teachers analyze student thinking with colleagues* -- Another way to make student thinking visible is to document it – through notes, audiotapes of class discussions, or simply through student writing. To help improve teacher understanding of student thinking, have teachers bring in copies of student work that reflects student thinking. Teachers can follow a step-by-step protocol for analyzing the piece of work (see p.263 for the Looking At Students’ Thinking (LAST) Protocol). However, you can also have more informal discussions about student thinking by having teachers, in pairs or groups, look at the student work and discuss:

*Where in the work do you see student thinking?*

*What types of thinking do you observe?*

*What aspects of the assignment provide insight into student thinking?*

*How could the assignment have been structured differently to extend and build on student thinking?*

*At this point, how can you encourage students to reflect on their thinking and monitor their progress?*

### **C. Help teachers experience the “Thinking Routines” firsthand**

In order for schools to become places of thinking and learning for students, they must also be places of thinking and learning for the *adults*, too. As a school leader, you can use the 21 Thinking Routines introduced in the book to structure PD activities that help teachers *think* about their practice and examine student learning.

The *best* way to introduce the Thinking Routines from the book to your teachers so they will begin to use them in their classrooms is to have teachers *actively participate in going through the steps of the routines* the same way their students will. Rather than practicing using the Thinking Routines with useless content, take the opportunity to engage teachers in meaningful staff development topics. Briefly introduce the steps of a particular routine, then dive in! Below are a few examples:

#### **ROUTINE: See-Think-Wonder**

Use this routine as a way to promote peer observations and discussions about practice. Have pairs of teachers observe each other’s classes and go through the 3 steps in the routine:

- What do you see?
- What do you think is going on?
- What does it make you wonder?

Remind teachers that they should spend a good deal of time simply recording what they *see* before jumping to interpretation (e.g. very few students were engaged). The last step should address a larger question about teaching, “I wonder if breaking up students into heterogeneously mixed groups is the best way to meet all students’ needs?”

#### **ROUTINE: Chalk Talk**

Remember this routine consists of a silent conversation on paper. It’s a great way to make sure every voice is heard. One idea for a PD activity using this routine would be to have teachers examine a newly worded mission statement you would like to introduce. You can place several copies of the newly proposed mission statement on large pieces of butcher paper throughout a room and have groups of staff write comments about the mission right on each paper. Then have staff move to other tables and write new responses to other staff members’ written comments. At the end, discuss the following: What were the common issues? What questions arose? How did everyone’s thinking develop and/or change as they went from table to table?

#### **ROUTINE: Headlines**

As a way to quickly check what your staff has gotten out of a professional development discussion, after the discussion ask everyone to write a headline for the topic of discussion that summarizes or captures a key aspect that they think is significant. For example, after introducing the importance of making student thinking visible and several of the routines, ask teachers to write a headline summarizing the following: *Why it is important to make student thinking visible* or *How “thinking routines” will impact teaching and learning*.

### **D. Help teachers self-assess their ability to create a “Culture of Thinking” in their classrooms**

The goal is to develop “Cultures of Thinking” at your school, by using the Thinking Routines, over time. Have teachers discuss the following definition of “Cultures of Thinking” which can be defined as “places where a group’s collective as well as individual thinking is valued, visible, and actively promoted as part of the regular, day-to-day experience of all group members.” Then choose several times throughout the year when the leader can assess whether there is a “culture of thinking” among staff and when teachers can assess if there is a “culture of thinking” in their classrooms. The chart below can help with that self-assessment:

Aspects of a “culture of thinking”	How are we doing? (Rate from 0 to 5)
There are substantial opportunities for <i>group</i> as well as <i>individual</i> thinking.	
Deep thinking is valued here.	
Thinking is frequently made visible here – through questioning, speaking, and writing.	
Thinking is promoted on a daily basis.	