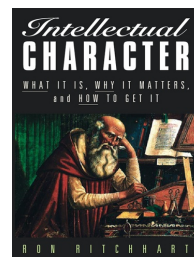


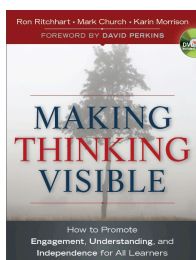
MAKING THINKING VISIBLE: USING THINKING ROUTINES IN THE CLASSROOM

Learning is a consequence of thinking. Understanding, and even memory, of content are enhanced greatly when learners think through and work mentally with the concepts and information they are studying. This is a hallmark of contemporary constructivist views of learning, as well as inquiry and problem-based learning. And yet, thinking is pretty much invisible. To be sure, sometimes people explain the thoughts behind a particular conclusion, but often they do not. Mostly, thinking happens under the hood, within the marvelous engine of our mind-brain. How can we make students' thinking visible so that their individual and collective understanding, as well as our understanding of students' understanding, is enhanced?

The Visible Thinking Routines developed at Project Zero, Harvard Graduate School of Education, provide ways of making students' thinking visible to students, their peers, and to the teacher. The use of thinking routines first emerged through Ron Ritchhart's study of teachers who were adept at developing students' thinking dispositions (see *Intellectual Character*, 2002). What he observed was that these teachers did not "teach thinking" or rely on "thinking programs" but rather leveraged the use of routines and structures on a regular basis that allowed students to grow into their thinking. These routines became a part of the fabric of the classroom.



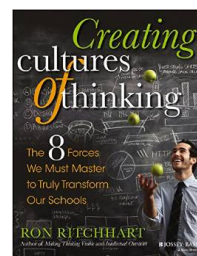
As teachers work with the routines, they often notice that students become more engaged by ideas and come to manage their thinking better for learning and other purposes. Thinking routines are simple structures; for example, a set of questions or a short sequence of steps that can be used across various grade levels and content areas. What makes them routines, versus merely strategies, is that they get used over and over again in the classroom so that they become part of the fabric of the classroom's culture. The routines become the ways in which students go about the process of learning.



Thinking routines are not activities so much as they are vehicles through which to explore content. Their power rests in their use with strong, worthwhile, and appropriate content. You can think of a routine as a container that must be filled with good content. You choose the right container to go with the content being explored. Through the routines, students mentally engage with the content through offering their ideas, explanations, justifications, interpretations, reasons, evidence, perspectives, alternatives, and questions. In doing so, they find more meaning in the subject of study and more meaningful connections between school and everyday life. As this happens, they begin to display the sorts of attitudes toward thinking and learning we would most

like to see in young learners -- not closed-minded but open-minded, not bored but curious, neither gullible nor sweepingly negative but appropriately skeptical, not satisfied with "just the facts" but wanting to understand. You can read more about how teachers from around the world have used thinking routines in the book *Making Thinking Visible* (2011).

When Thinking Routines are used alongside the other cultural forces in classrooms, students are in a position to be more metacognitive, to think about their thinking. When thinking is visible, it becomes clear that school is not about memorizing content but exploring ideas (see *Creating Cultures of Thinking*, 2015 to learn more). Teachers benefit when they can see students' thinking because misconceptions, prior knowledge, reasoning ability, and degrees of understanding are more likely to be uncovered. Teachers can then address these challenges and extend students' thinking by identifying where they are and building on from there.



Ron Ritchhart
Senior Research Associate and Principal Investigator
Project Zero, Harvard Graduate School of Education

I USED TO THINK..., BUT NOW I THINK...

A routine for reflecting on how and why our thinking has changed

Remind students of the topic you want them to consider. It could be the ideal itself—fairness, truth, understanding, or creativity—or it could be the unit you are studying. Have students write a response using each of the sentence stems:

- I used to think....
- But now, I think...

Purpose: What kind of thinking does this routine encourage?

This routine helps students to reflect on their thinking about a topic or issue and explore how and why that thinking has changed. It can be useful in consolidating new learning as students identify their new understandings, opinions, and beliefs. By examining and explaining how and why their thinking has changed, students are developing their reasoning abilities and recognizing cause and effect relationships.

Application: When and where can it be used?

This routine can be used whenever students' initial thoughts, opinions, or beliefs are likely to have changed as a result of instruction or experience. For instance, after reading new information, watching a film, listening to a speaker, experiencing something new, having a class discussion, at the end of a unit of study, and so on.

Launch: What are some tips for starting and using this routine?

Explain to students that the purpose of this activity is to help them reflect on their thinking about the topic and to identify how their ideas have changed over time. For instance:

When we began this study of _____, you all had some initial ideas about it and what it was all about. In just a few sentences, I want to write what it is that you used to think about _____. Take a minute to think back and then write down your response to “I used to think...”

Now, I want you to think about how your ideas about _____ have changed as a result of what we've been studying/doing/discussing. Again in just a few sentences write down what you now think about _____. Start your sentences with, “But now, I think...”

Have students share and explain their shifts in thinking. Initially it is good to do this as a whole group so that you can probe students' thinking and push them to explain. Once students become accustomed to explaining their thinking, students can share with one another in small groups or pairs.

DEFINING THINKING ROUTINES

- Tools used over and over again in the classroom, that support specific thinking moves such as,
 - Making connections
 - Describing what's there
 - Building explanations
 - Considering different viewpoints and perspectives
 - Capturing the heart and forming conclusions
 - Reasoning with evidence
- Structures, through which students collectively as well as individually initiate, explore, discuss, document, and manage their thinking. These structures are:
 - Explicit: They have names to identify them
 - Instrumental: They are goal directed and purposeful
 - A few steps: Easy to learn, and easy to remember
 - Individual as well as group practices
 - Useful across a variety of contexts
 - Help to reveal students' thinking and make more visible
- Patterns of behavior adopted to help one use the mind to form thoughts, reason, or reflect. We see these patterns emerging as the routines:
 - Are used over and over.
 - Become engrained in us both teachers and students.
 - Flexibility emerges.

**CONSIDER DIFFERENT
VIEWPOINTS**

What's another
angle on this?

**REASON WITH
EVIDENCE**

Why do you
think so?

MAKE CONNECTIONS

How does this fit what
you already know?

WONDERING

What are you curious
about here?

The
UNDERSTANDING
Map

**UNCOVERING
COMPLEXITY**

What lies beneath the
surface of this?

**DESCRIBE WHAT'S
THERE**

What do you
see and notice?

BUILD EXPLANATIONS

What's really going
on here?

**CAPTURE THE HEART
& FORM CONCLUSIONS**

What's at the core or
centre of this?

Sourced from: The Cultures of
Thinking project at Project Zero,
Harvard Graduate School of
Education.

Understanding Map – ‘Peeling the Fruit’

Throughout:
Reason with Evidence
What makes you say that?



Getting Under the Skin
Mysteries
What puzzles and questions come up?

Understanding Map

'Peeling the Fruit' – A Map for Tracking and Guiding Understanding

1. Put some version of the map up in a convenient location or give learners copies. See example below and notes about different ways of using the map.
2. Briefly state that the group will be tracking progress and planning with the map from time to time. Note how the map uses the metaphor of 'peeling the fruit', getting familiar with the surface of something, seeking puzzles and mysteries to investigate, and pursuing these in various ways to arrive at core understandings.
3. Refer to the map to choose next steps and mark progress from time to time during the exploration of a topic (no need to do everything every time). Use it as a way of thinking about what routines to use or simply what kind of conversation or other activity to have.
4. When the map is used collectively by a class, you may want to invite students to put up Post-its on the map over time to mark insights associated with any of the map elements.

Purpose: Why use this map?

We often want to develop learners' understanding of a complex topic over days or weeks. This map can help. It's not a routine but a way of planning and tracking over time the exploration of a topic. It can help in choosing good routines too.

Application: When and where can I use this map?

Whenever there's a topic that calls for a broad and rich understanding and learners have enough time to look at it in different ways – anything from a single long lesson to several lessons or a unit. You can use it with students collectively, to help them maintain a bird's eye view of progress through a topic and to make with them good choices about what to do next. You can use it yourself, to plan topics and to track progress. You can also give copies to students for their individual self-management in pursuing a general class topic or individual projects.

Launch: What are some tips for starting and using this thinking map?

Explain that the map is for tracking and guiding the exploration of the topic. Explain the metaphor briefly. Invite learners to help chart progress by using the map.

You can create a giant version of the map to put on the wall of a classroom (see diagram below), or just put labels up for the categories if it's easier to organize on the wall, or personalize the process in some other way. If you're tracking two or three topics at the same time or multiple groups you might: have two or three wall maps, color code paths on a single map, give learners page-size copies to track their own progress, or invent something else. Whatever works! The main idea is to make visible the developing understanding to mark progress and choose next steps.

It usually makes sense to start with the 'skin' and go to 'getting under the skin' with mysteries and then on from there to 'substance' and toward the 'core'. You need not use all of the 'substance' approaches – whatever fits – and there's no fixed order. You can go back to something and add at any time of course!

Leaving Identity Issues to Other Folks

As heard on NPR's All Things Considered, July 11, 2005.

Standing in the rain waiting to go up the steps to the balcony of the Grand Theater I gripped Mama's hand and watched the little blond kids enter the lobby downstairs. It was the '50s, I was "colored" and this is what I believed: My place was in the balcony of the downtown theater, the back of the bus and the back steps of the White Dove Barbecue Emporium. When I asked Mama why this was so, she smiled and said, "Baby, people do what they do. What you got to do is be the best that you can be."

We got our first television in the '60s and it brought into my living room the German shepherds, snapping at a young girl's heels. It showed children just like me going to school passing through throngs of screaming, angry folks, chanting words I wasn't allowed to say. I could no longer be "colored." We were Negroes now, marching in the streets for our freedom -- at least, that's what the preacher said. I believed that, even though I was scared, I had to be brave and stand up for my rights.

In the '70s: beat-up jeans, hair like a nappy halo and my clenched fist raised, I stood on the downtown street shouting. Angry young black men in sleek black leather jackets and berets had sent out a call from the distant shores of Oakland, Calif. No more non-violence or standing on the front lines quietly while we were being beaten. Simple courtesies like "please" and "thank you" were over. It was official: Huey, H. Rap, and Eldridge said so. I believed in being black and angry.

By the '80s, fertility gods lined the walls and crammed the display cases of all my friends' houses. People who'd never been closer to Africa than a Tarzan movie were speaking broken Swahili. The '80s made us hyphenated: African-American. Swaddled in elaborately woven costumes of flowing design, bright colors and rich gold I was a pseudo-African, who'd never seen Africa. "It's your heritage," is what everybody said. Now, I believed in the elusive promise of the Motherland.

In the '90s, I was a woman whose skin happened to be brown, chasing the American dream. Everybody said that the dream culminated in stuff. I believed in spending days shopping. Debt? I didn't care about no stinkin' debt. It was the '90s. My 401(k) was in the mid-six figures and I believed in American Express. Then came the crash, and American Express didn't believe in me nearly as much as I believed in it.

Now, it's a brand new millennium and the bling-bling, video generation ain't about me. Everything changed when I turned 50. Along with the wrinkles, softened muscles and weak eyesight came the confidence that allows me to stick to a very small list of beliefs. I'll leave those identity issues to other folks. I believe that I'm free to be whoever I choose to be. I believe in being a good friend, lover and parent so that I can have good friends, lovers and children. I believe in being a woman -- the best that I can be, like my Mama said.

Phyllis Allen has sold yellow pages advertising for 15 years. She spends about half her working hours in her car covering her territory around Dallas and Fort Worth, Texas. When she retires, she hopes to get rid of her car and telephone books and pursue her first passion, writing.

www.thisibelieve.org

CSI: Colour, Symbol, Image Routine

A routine for distilling the essence of ideas non-verbally

As you are reading/listening/watching, make note of things that you find interesting, important, or insightful. When you finish, choose 3 of these items that most stand out for you.

- For one of these, choose a colour that you feel best represents or captures the essence of that idea.
- For another one, choose a symbol that you feel best represents or captures the essence of that idea.
- For the other one, choose an image that you feel best represents or captures the essence of that idea.

With a partner or group first share your colour and then share the item from your reading that it represents. Tell why you choose that colour as a representation of that idea. Repeat the sharing process until every member of the group has shared his or her Colour, Symbol, and Image.

Purpose: What kind of thinking does this routine encourage?

This routine asks students to identify and distill the essence of ideas from reading, watching or listening in non-verbal ways by using a colour, symbol, or image to represent the ideas.

Application: When and where can it be used?

This routine can be used to enhance comprehension of reading, watching or listening. It can also be used as a reflection on previous events or learnings. It is helpful if students have had some previous experience with highlighting texts for important ideas, connections, or events. The synthesis happens as students select a colour, symbol, and image to represent three important ideas. This routine also facilitates the discussion of a text or event as students share their colours, symbols, and images.

Launch? What are some tips for starting and using this routine?

After the class has read a text, you might ask the class to identify some of the interesting, important, or insightful ideas from the text and list these on the board. Write CSI: Colour, Symbol, Image on the board. Select one of the ideas the class from the text the class has identified. Ask students what colour might they use to represent the essence of that idea? What colour captures something about that idea, maybe it is the mood or tone. Select another idea and ask the class what symbol they could use to represent that idea. *You might define a symbol as a simple line representation or uncomplicated drawing, such as two crossed lines to denote an intersection of ideas or a circle to represent wholeness or completeness.* Then pick another idea from the list and ask students what image they might use to represent that idea. *You might define an image as a visual image or metaphor that is more complex and fully developed than just a symbol.*

Generate, Sort, Connect, Elaborate: Concept Maps

A routine for organizing one's understanding of a topic through concept mapping

Select a topic, concept, or issue for which you want to map your understanding.

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

Continue generating, connecting, and elaborating new ideas until you feel you have a good representation of your understanding.

Purpose: What kind of thinking does this routine encourage?

This routine activates prior knowledge and helps to generate ideas about a topic. It also facilitates making connections among ideas. Concept maps help to uncover students' mental models of a topic in a non-linear way.

Application: When and where can it be used?

This routine can be useful as a pre-assessment before beginning of a unit of study if students already have a lot of background information about the topic. Conversely, it can also be useful as a post or ongoing assessment to see what students are remembering and how they are connecting ideas. Individual maps can be used as the basis for construction of a whole classroom map. Maps can also be done progressively, with students adding to their maps each week of the unit.

Launch? What are some tips for starting and using this routine?

Depending on how much familiarity students have with concept maps, you may need to demonstrate making a concept map using this routine with the whole class. However, if students are relatively familiar with the idea of concept maps, you can launch right into the routine explaining that students will be making concept maps but in a structured way. Give time for students to complete each step of the routine before moving on to the next step. It isn't necessary that students generate an exhaustive list of all their ideas initially, but make sure they have time to generate a rich and varied list before moving on. Tell students that at any point they can add new ideas to their list and incorporate them into their map. If you are adding to a map over time, you might want to have students use a different color pencil each time they make additions. Explaining and discussing maps with partners helps students to consolidate their thinking and gain other perspectives.

3-2-1 BRIDGE

A routine for activating prior knowledge and making connections

Your initial responses
to the topic

3 Thoughts/Ideas

2 Questions

1 Metaphor/Simile

Your new responses
to the topic

3 Thoughts/Ideas

2 Questions

1 Metaphor/Simile

Bridge:

Explain how your new responses connect to your initial responses?

Purpose: What kind of thinking does this routine encourage?

This routine asks students to uncover their initial thoughts, ideas, questions and understandings about a topic and then to connect these to new thinking about the topic after they have received some instruction.

Application: When and where can it be used?

This routine can be used when students are developing understanding of a concept over time. It may be a concept that they know a lot about in one context but instruction will focus their learning in a new direction, or it may be a concept about which students have only informal knowledge. Whenever new information is gained, bridges can be built between new ideas and prior understanding. The focus is on understanding and connecting one's thinking, rather than pushing it toward a specific outcome.

Launch: What are some tips for starting and using this routine?

This routine can be introduced by having students do an initially 3, 2, 1 individually on paper. For instance, if the topic is "democracy," then students would write down 3 thoughts, 2 questions, and 1 metaphor. Students might then read an article, watch a video, or engage in an activity having to do with democracy. Provocative experiences that push students thinking in new directions are best. After the experience, students complete another 3,2,1. Students then share their initially and new thinking, explaining to their partners how and why their thinking shifted. Make it clear to students that their initial thinking is not right or wrong, it is just a starting point. New experiences take our thinking in new directions.

CLAIM / SUPPORT / QUESTION

A reasoning routine

- | | | |
|--|---|---|
| 1. Make a claim about the topic | → | Claim: An explanation or interpretation of some aspect of the topic. |
| 2. Identify support for your claim | → | Support: Things you see, feel, and know that support your claim. |
| 3. Ask a question related to your claim | → | Question: What's left hanging? What isn't explained? What new reasons does your claim raise? |

Purpose: What kind of thinking does this routine encourage?

The routine helps students develop thoughtful interpretations by encouraging them to reason with evidence. Students learn to identify truth claims and explore strategies for uncovering truth.

Application: When and where can I use it?

Use *Claim Support Question* with topics in the curriculum that invite explanation or are open to interpretation.

Launch: What are some tips for starting and using this routine?

The routine can work well for individuals, in small groups and for whole group discussions. Begin by modeling the routine: Identify a claim and explore support and questions in a whole group discussion. On the board make one column for SUPPORT and one column for QUESTIONS. Ask the class for evidence that either supports a claim, or questions the claim and write it in the appropriate column. Take turns using the routine so that each student makes a claim, identifies support and asks a question.

Following each person's report, take a moment as a group to discuss the topic in relation to the claim before moving on to the next person. Be patient as students take a few moments to think. You may need to probe further by asking: What are some other questions you might want to ask about this statement? or Can you think of reasons why this may be true? Encourage friendly disagreement – once a student comes up with an alternative perspective about a claim, encourage other students to follow. The questions can challenge the plausibility of the claim, and often lead to a deeper understanding of the reasoning process. Let students know it is fine to disagree with one another's reasons and encourage them to come up with creative suggestions for support and questioning.

After everyone has had a turn, reflect on the activity. What new thoughts do students have about the topic?

COMPASS POINTS

A routine for examining propositions

1. E = Excited
What excites you about this idea or proposition? What's the upside?
2. W = Worrisome
What do you find worrisome about this idea or proposition? What's the downside?
3. N = Need to Know
What else do you need to know or find out about this idea or proposition? What additional information would help you to evaluate things?
4. S = Stance or Suggestion for Moving Forward
What is your current stance or opinion on the idea or proposition? How might you move forward in your evaluation of this idea or proposition?

Purpose: Why use this routine?

To help students flesh out an idea or proposition and eventually evaluate it.

Application: When and where can I use this routine?

This routine works well to explore various sides and facets of a proposition or idea prior to taking a stand or expressing an opinion on it. For instance, the school may be considering the idea of a dress code, a teacher might present the class with idea of altering the room arrangement, a character in a book might be confronted with making a choice, a politician might be putting forth a new way of structuring taxes, and so on.

Launch: What are some tips for starting and using this routine?

The routine needs to be modeled with the whole group initially with responses recorded for the entire class to see. This enables students to build on each other's ideas. You might record responses using the directions of a compass to provide a visual anchor. That is, draw a compass in the center of the board and then record responses corresponding the appropriate direction: E, W, N, or S. It is generally easiest for students to begin with what is exciting or positive about the idea or proposition and then move to worrisome and need to know. Students might be asked to write down their individual stance or suggestion for moving forward after the initial group discussion.

You can also ask students to make an initial judgment or evaluation of the idea or proposition before doing the compass points and then ask them how their thinking has changed after discussion using the compass points routine.

10 Suggestions for Getting Started with Thinking Routines in Early Childhood Classrooms

1. Have great expectations. Young children surprise us with their connections, ideas, and the multiple languages they use to make their thinking visible.
2. Do the routines pretty much as they are initially without trying to change them. At the beginning it may feel uncomfortable but wait to see what you learn from using them as they are before adapting them.
3. Match the routines with provocative topics and projects that are significant to the children. The routines aren't the content; they are vehicles for exploring the content.
4. Model the language for younger and less language able students. Build up the language over time and by modeling your own thinking. Be part of the routine with the assistant or someone else in the class to facilitate the modeling.
5. Use the language of thinking as often as you can. Name children's actions: "you made a connection" or "I find your point of view very interesting," and so on.
6. Document students' thinking. It sends a clear message of how much we value students, their thoughts, and work; and it allows revisiting, reflecting on and re-enforcing the topics later.
7. Give yourself permission to be learner and try the routines in a variety of ways to get a feel for them and then try to incorporate them in their daily routines and language.
8. Understand this is a process that takes time. Be patient, consistent and take some risks. Just by trying you will be making a difference already.
9. Focus on the thinking you want to promote and why it is important. Use it as a tool not an activity. This will help you attend to students' thinking as it emerges because you will know what you are looking for.
10. Include parents in the process, they are your allies and it is amazing how they become advocates for the use of thinking language at home.