MAKING THINKING VISIBLE:

UNDERSTANDING, TRUTH, FAIRNESS & CREATIVITY **ROUTINES**

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The Idea of Thinking Routines

Visible Thinking makes extensive use of learning routines that are thinking rich. These 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. 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 classroom' culture. The routines become the ways in which students go about the process of learning.

UNDERSTANDING ROUTINES

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CONNECT EXTEND CHALLENGE:

A ROUTINE FOR CONNECTING NEW IDEAS TO PRIOR KNOWLEDGE.

CONNECT: How are the ideas and information presented CONNECTED to what you aready knew?

EXTEND: What new ideas did you get that EXTENDED or pushed your thinking in new directions?

CHALLENGE: What is still CHALLENGING or confusing for you to get your mind around? What questions, wonderings or puzzles do you now have?

Purpose: What kind of thinking does this routine encourage?

The routine helps students make connections between new ideas and prior knowledge. It also encourages them to take stock of ongoing questions, puzzles and difficulties as they reflect on what they are learning.

Application: When and Where can it be used?

The natural place to use the Connect-Extend-Challenge routine is after students have learned something new. It doesn't matter how much they have learned – it can be a lesson's worth, or a unit's worth. The routine is broadly applicable: Use it after students have explored a work of art, or anything else in the curriculum. Try it as a reflection during a lesson, after a longer project, or when completing a unit of study. Try using it after another routine!

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

This routine works well with the whole class, in small groups or individually. Keep a visible record of students' ideas. If you are working in a group, ask students to share some of their thoughts and collect a list of ideas in each of the three categories, or have students write their individual responses on Post-it notes and add them to a class chart. Keep students' visible thinking alive over time: Continually add new ideas to the lists and revisit the ideas and questions on the chart as students' understanding around a topic develops.

EXPLANATION GAME:

A ROUTINE FOR EXPLORING CASUAL UNDERSTANDING.

Purpose: What kind of thinking does this routine encourage?
This is a routine for understanding why something is the way it is. This routine can get at either causal explanation or explanation in terms of purposes or both.

Application: When and Where can it be used?
You can apply it to almost anything: a pencil, cell phones, forms of government, historical documents, and events. Students can work in pairs or groups of larger size, even a whole class. The explanation game can also be used solo. The first time the routine is used, the teacher may need to take an active role in scaffolding the conversation and modeling how to ask questions of explanation and clarification if others. Over time, students can begin to emulate the conversational moves and questioning they have seen modeled.

Launch: What are some tips for starting and using this routine?
Begin with something "on the table" – an object like a cup or a compass, a document like a poem, a picture, an historical event, a scientific theory, etc. The first person (this might be the teacher initially) points out an interesting feature of the object: "I notice that... That's interesting. Why is it that way? or "Why did it happen that way?" (or some similar why question). The other people in the group try to answer the question or at least to propose possible explanations and reasons. As these students share their ideas, the person asking the original question follows up by asking, "What makes you think so?" The group works together to build explanations rather than merely deferring to an outside source, the teacher or a textbook, to provide an answer.

Student questions and explanations become visible to the class as they are shared. Responses to the routine also can be written down and recorded so that there is a class list of evolving ideas. A few key issues or puzzles might then be chosen for further investigations. A conversation could also be recorded as a chart with four columns representing the key structures of the conversation: 1) the Observation that is initially made, 2) the Question that comes out of that observation, 3) the various Explanations/Hypotheses that the rest of group puts forth, 4) the Reasons / Justifications that are given in support of the explanations.

The routine focuses first on identifying some interesting things about an object or idea:
"I notice that..."

And then following that observation with the question:
"Why is it that way?"
or
"Why did it happen that way?"

HEADLINES:

A ROUTINE FOR CAPTURING ESSENCE.

This routine draws on the idea of newspaper type headlines as a vehicle for summing up and capturing the essence of an event, idea, concept, topic, etc.

The routine asks one core question:

1. If you were to write a headline for this topic or issue right now that captured the most important aspect that should be remembered, what would that headline be?

A second question involves probing how students' ideas of what is most important and central to the topic being explored have changed over time:

How has your headline changed based on today's discussion? How does it differ from what you would have said yesterday?

Purpose: What kind of thinking does this routine encourage?

This routine helps students capture the core or heart of the matter being studied or discussed. It also can involve them in summing things up and coming to some tentative conclusions.

Application: When and where can I use it?

This routine works especially well at the end of a class discussion or session in which students have explored a topic and gathered a fair amount of new information or opinions about it.

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

The routine can be used quite effectively with think-pair-share. For example, at the end of a class the teachers can ask the class, "Think about all that we have been talking about today in class. If you were to write a headline for this topic or issue right now that captured the most important aspect that should be remembered, what would that headline be?" Next, the teacher tells students, "Share your headline with your neighbor." The teacher might close the class by asking, "Who heard a headline from someone else that they thought was particularly good at getting to the core of things?"

Student responses to the routine can be written down and recorded so that a class list of headlines is created. These could be reviewed and updated from time to time as the class learns more about the topic. The follow-up question, "how has your headline changed or how does it differ from what you would have said? can be used to help students reflect on changes in their thinking.

SEE THINK WONDER:

A ROUTINE FOR EXPLORING WORKS OF ART AND OTHER INTERESTING THINGS.

What do you see?

What do you think about that?

What does it make you wonder?

Purpose: What kind of thinking does this routine encourage?
This routine encourages students to make careful observations and thoughtful interpretations. It helps stimulate curiosity and sets the stage for inquiry.

Application: When and Where can it be used?
Use this routine when you want students to think carefully about why something looks the way it does or is the way it is. Use the routine at the beginning of a new unit to motivate student interest or try it with an object that connects to a topic during the unit of study. Consider using the routine with an interesting object near the end of a unit to encourage students to further apply their new knowledge and ideas.

Launch: What are some tips for starting and using this routine?
Ask students to make an observation about an object – it could be an artwork, image, artifact or topic – and follow up with what they think might be going on or what they think this observation might be. Encourage students to back up their interpretation with reasons. Ask students to think about what this makes them wonder about the object or topic.

The routine works best when a student responds by using the three stems together at the same time, i.e., “I see..., I think..., I wonder....” However, you may find that students begin by using one stem at a time, and that you need to scaffold each response with a follow up question for the next stem.

The routine works well in a group discussion but in some cases you may want to ask students to try the routine individually on paper or in their heads before sharing out as a class. Student responses to the routine can be written down and recorded so that a class chart of observations, interpretations and wonderings are listed for all to see and return to during the course of study.

I USED TO THINK, NOW I THINK

A ROUTINE FOR REFLECTING ON HOW & 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 ex- plaining 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 sentenes 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.

QUESTION STARTS:

A ROUTINE FOR CREATING THOUGHTFUL QUESTIONS.

Purpose: What kind of thinking does this routine encourage?
This routine provides students with the opportunity to practice developing good questions that provoke thinking and inquiry into a topic. It also helps students brainstorm lots of different kinds of questions about a topic. The purpose of asking deep and interesting questions is to get at the complexity and depth of a topic. The purpose of brainstorming varied questions about a topic is to get at the breadth, and multi-dimensionality of a topic.

Application: When and Where can it be used?
Use "Question Starts" to expand and deepen students' thinking, to encourage students' curiosity and increase their motivation to inquire. This routine can be used when you are introducing a new topic to help students get a sense of the breadth of a topic. It can be used when you're in the middle of studying a topic as a way of enlivening students' curiosity. And it can be used when you are near the end of studying a topic, as a way of showing students how the knowledge they have gained about the topic helps them to ask ever more interesting questions. This routine can also be used continuously throughout a topic, to help the class keep a visible, evolving list of questions about the topic that can be added to at anytime.

Launch: What are some tips for starting and using this routine?
Before using "Question Starts," you might want to ask students what they think makes a good question. Then, when you show the Question Starts, explain that this routine is a tool for asking good questions. Start the routine by providing a topic – Stockholm, a compass, the Equator, good sportsmanship. Ask them to use the Question Starts to generate a list of questions about the topic. Initially, it's best to work together as an entire group. Once students get the hang of the routine, you can have them work in small groups, or even solo. Or mix it up. For example, do step 1 as a whole class, do step 2 in pairs, and step 3 as a whole class again.

1. Brainstorm a list of at least 12 questions about the topic, concept or object. Use these question starts to help you think of interesting questions:
Why...? How would it be different if...?
What are the reasons...? Suppose that...? What if...?
What if we knew...? What is the purpose of...?
What would change if...?

2. Review the brainstormed list and star the questions that seem most interesting. Then, select one or more of the starred questions to discuss for a few moments.

3. Reflect: What new ideas do you have about the topic, concept or object that you didn't have before?

THINK, PAIR, SHARE

A ROUTINE FOR ACTIVE REASONING AND EXPLANATION.

Think Pair Share Involves posing a question to students, asking them to take a few minutes of thinking time and then turning to a nearby student to share their thoughts.

Purpose: What kind of thinking does this routine encourage?
This routine encourages students to think about something, such as a problem, question or topic, and then articulate their thoughts. The Think Pair Share routine promotes understanding through active reasoning and explanation. Because students are listening to and sharing ideas, Think Pair Share encourages students to understand multiple perspectives.

Application: When and Where can it be used?
Think Pair Share can be applied at any given moment in the classroom. For example, when approaching a solution, solving a math problem, before a science experiment, or after reading a passage or chapter of a book you may ask students to take a moment to think about a particular question or issue and then turn to their neighbor and share their thoughts. Sharing can also be done in small groups. Some times you will want to have pairs or groups summarize their ideas for the whole class.

Launch: What are some tips for starting and using this routine?
When first introducing the routine, teachers may want to scaffold students' paired conversations by reminding them to take turns, listen carefully and ask questions of one another. One way to ensure that students listen to each other is to tell students that you will be calling on individuals to explain their partners thinking, as opposed to telling their own thoughts.

Encourage students to make their thinking visible by asking them to write or draw their ideas before and/or after sharing. Journals can also be useful. Student pairs can report one another's thoughts to the class and a list of ideas can be created in the classroom.

This routine is adapted from Frank Lyman: Lyman, F. T. (1981). The responsive class- room discussion: The inclusion of all students. In A. Anderson (Ed.), Mainstreaming Di- gest (pp. 109-113). College Park: University of Maryland Press.

UNDERSTANDING ROUTINES

THINK, PUZZLE, EXPLORE

A ROUTINE FOR THAT SETS THE STAGE FOR DEEPER INQUIRY.

Purpose: What kind of thinking does this routine encourage?
To help students connect to prior knowledge, to stimulate curiosity and to lay the groundwork for independent inquiry.

Application: When and Where can it be used?
Use Think/Puzzle/Explore when you are beginning a topic and when you want students to develop their own questions of investigation.

Launch: What are some tips for starting and using this routine?
Begin by giving students a few quiet moments to consider the topic at hand. Then, work as a whole class or in small groups and brainstorm ideas in the three areas. Make sure to give adequate time between each question for students to think about and articulate their ideas.

When beginning to use this routine it is sometimes best to do the Think and Puzzle questions together first. In some cases, you may want to have students do this part of the routine individually on paper or in their heads before sharing ideas in a group. Return to the Explore question after sharing ideas and puzzles. It may be helpful to a think about what makes an interesting question, or puzzle, and then discuss strategies for exploring selected questions.

Note that it is common for students to have misconceptions about a topic at this point – include them on the list so all ideas are available for consideration after further study. Students may at first list seemingly simplistic ideas and questions. Include these on the whole class list but push students to think about things that are truly puzzling or interesting to them.

Keep a visible record of students' ideas. If you are working in a group, ask students to share some of their thoughts and collect a broad list of ideas about the artwork or topic on chart paper. Or students can write their individual responses on Post-it notes and later add them to a class list of ideas.

1. What do you think you know about this topic?

2. What questions or puzzles do you have?

3. How can you explore this topic?

WHAT MAKES YOU SAY THAT?

A ROUTINE FOR INTERPRETATION WITH JUSTIFICATION.

1. What's going on?

2. What do you see that makes you say that?

Purpose: What kind of thinking does this routine encourage?
This routine helps students describe what they see or know and asks them to build explanations. It promotes evidential reasoning (evidence-based reasoning) and because it invites students to share their interpretations, it encourages students to understand alternatives and multiple perspectives.

Application: When and where can I use it?
This is a thinking routine that asks students to describe something, such as an object or concept, and then support their interpretation with evidence. Because the basic questions in this routine are flexible, it is useful when looking at objects such as works of art or historical artifacts, but it can also be used to explore a poem, make scientific observations and hypothesis, or investigate more conceptual ideas (i.e., democracy). The routine can be adapted for use with almost any subject and may also be useful for gathering information on students' general concepts when introducing a new topic.

Launch: What are some tips for starting and using this routine?
In most cases, the routine takes the shape of a whole class or group conversation around an object or topic, but can also be used in small groups or by individuals. When first introducing the routine, the teacher may scaffold students by continually asking the follow-up questions after a student gives an interpretation. Over time students may begin to automatically support their interpretations with evidence with out even being asked, and eventually students will begin to internalize the routine.

The two core questions for this routine can be varied in a number of ways depending on the context: What do you know? What do you see or know that makes you say that? Sometimes you may want to precede students' interpretation by using a question of description: What do you see? or What do you know?

When using this routine in a group conversation it may be necessary to think of alternative forms of documentation that do not interfere with the flow of the discussion. One option is to record class discussions using video or audio. Listening and noting students' use of language of thinking can help you see their development. Students words and language can serve as a form of documentation that helps create a rubric for what makes a good interpretation or for what constitutes good reasoning.

Another option is to make a chart or keep an ongoing list of explanations posted in the classroom. As interpretations develop, note changes and have further discussion about these new explanations. These lists can also invite further inquiry and searches for evidence. Other options for both group and individual work include students documenting their own interpretations through sketches, drawings, models and writing, all of which can be displayed and revisited in the classroom.

3-2-1 BRIDGE

A ROUTINE FOR ACTIVIATING PRIOR KNOWLEDGE AND MAKING CONNECTIONS.

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 initial 3, 2, 1 individually on paper. For instance, if the topic is "democracy," then students would write down 3 thoughts, 2 questions, and 1 analogy. 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 initial 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.

YOUR INITIAL RESPONSE TO THE TOPIC	YOUR INITIAL RESPONSE TO THE TOPIC
3. THOUGHTS/IDEAS	3. THOUGHTS/IDEAS
2. QUESTIONS	**2. QUESTIONS**
1. ANALOGY	1. ANALOGY

BRIDGE:
EXPLAIN HOW YOUR NEW RESPONSES CONNECT TO YOUR INITIAL RESPONSES

COLOUR, SYMBOL, IMAGE

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 color 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 color and then share the item from your reading that it represents. Tell why you choose that color as a representation of that idea. Repeat the sharing process until every member of the group has shared his or her Color, 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 color, 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 color, symbol, and image to represent three important ideas. This routine also facilitates the discussion of a text or event as students share their colors, 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: Color, Symbol, Image on the board. Select one of the ideas the class has identified. Ask students what color might they use to represent the essence of that idea? What color 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

A ROUTINE FOR ORGANISING ONE'S UNDERSTANDING OF A TOPIC THROUGH CONCEPT MAPPING.

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 nonlinear way.

Application: When and where can it be used?
This routine can be useful as a pre-assessment before the 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.

Select a topic, concept, 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.

PEEL THE FRUIT

A MAP FOR TRACKING & 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. 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.

19 PEEL THE FRUIT CONT'D

Purpose: Why use this map? (see example below)

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, or just put labels up for the categories if it's easier to organize on the wall, or personalise 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!

CLAIM SUPPORT QUESTION:

EXPLORING TRUTH CLAIMS

1. Make a **claim** about a topic. >>> **Claim**: An explanation or interpretation of some aspect of the topic.

2. Identify **support** for your claim. >>> 2. **Support**: Things you see, feel and know that support your claim.

3. Ask a **question** related to your claim. >>> 3. **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 it be used?
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?

TRUTH ROUTINES

Younger children may respond better to concrete situations, like a playground fight or an event in the news, than to abstract topics like nuclear energy. This routine makes thinking visible by helping students to see thinking opportunities – "thinking hotspots" – in situations. In particular, it helps students become more alert to situations where they might think more deeply about the truth of something.

Here are the key steps to the routine:

1. Teacher or student identifies a topic or situation.
2. Students identify ideas about the topic or situation as clearly TRUE, clearly FALSE, or uncertain and somewhere in the middle. And as more or less important to figure out.
3. Place ideas on a continuum. First, decide where to place the idea on the continuum between true and false. Then use a vertical axis to indicate importance, according to the student's judgment. The teacher asks something like, "What makes this idea this way?" and draws out characteristics that put an idea "in the middle" rather than plainly true or false or make it important or not so important. The teacher does all this for several ideas from the class.
4. NOTE: Some students may reveal misinformation or misunderstandings at this stage. As with other thinking routines, while the students are thinking together it is not your role to correct them. Students may correct misinformation or misunderstandings themselves during the discussion or as they pursue a topic in the last step, or you may provide better information upon coming back to the topic later. Right now, you are functioning as a facilitator, not a source of information.
5. Teacher and students discuss disagreements about true-false and importance and place ideas on the chart, in more than one place if necessary. You do not have to resolve these disagreements, just acknowledge them. The goal is to raise consciousness of uncertainty and the reasons for it. Some disagreements may get resolved in the last step.
6. If lopsided, say with only some uncertain ideas in the middle or only important ideas, the teacher prompts to fill out the chart a little more. Example: "What are some ideas we are sure of?"
7. Teacher and students select "thinking hotspots" to investigate further, maybe right away or maybe later, perhaps using other routines.

HOT SPOTS:

NOTICING WHEN TRUTH IS AT ISSUE

Key Prompts:

1. Identify a topic or situation. Is this idea clearly true, or false, or where between the two?
2. What makes it so uncertain? (or almost certainly true or false)
3. How important is it? What makes it important? (important or not so important)

Purpose: What kind of thinking does this routine encourage?

A key part of thinking is spotting situations that need more thought, and where more thought is worthwhile. This spotting routine asks learners to spot "thinking hotspots" about truth within a topic or situation that might be worth more attention. It thus helps them to be more alert to truth hotspots in the future. Also, asking "What makes this idea this way?" draws from learners characteristics that make an idea more or less uncertain and more or less important. This greater awareness helps them to spot truth hotspots in the future.

Application: When and Where can it be used?

Spotting truth hotspots can be used on almost any topic or situation. It can be used to introduce a topic, to draw out students' initial thoughts. It can be used to review a topic, to look back at something students have studied, in the middle of a topic to take stock. It can be used to get students started on identifying projects or identifying isues for discussion in small groups or to launch a whole-class discussion.

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

The spotting hotspots routine is best used for a topic or situation where students have some knowledge already. They may not have studied it formally, but at least they have some common knowledge. Otherwise, almost everything would come out "uncertain" and with little basis for judging its importance.

STOP LOOK LISTEN

CLARIFYING CLAIMS AND SOURCES

The routine follows a simple 3-step structure:
STOP: Be clear about the claim. Define your question from your list of facts and uncertainties.

LOOK: Find your sources. Where will you look? Consider obvious and non-obvious places.

LISTEN: Hear what the sources tell you with an open mind. Is it possible for your source to be biased and how does it affect your information?

TRUTH ROUTINES

Purpose: What kind of thinking does this routine encourage?
The Stop Look Listen routine helps students investigate truth claims and issues related to truth. It allows students to stand back and think about ways to obtain information when trying to find out about the truth of something. Students are encouraged to think critically about sources. It helps students appreciate the deeper complexity of truth situations by addressing issues of bias and objectivity

Application: When and Where can it be used?
This routine invites students to think carefully about the process of initiating truth investigations. It can be used in any situation in which students need to find out more about a truth claim. It helps students step back and take questioning stance in order to clarify a claim. Use the routine when you want students to be open minded and to think broadly about sources of information.

Launch: What are some tips for starting and using this routine?
Begin by helping students to pin down a claim about a topic. Students may have a good idea about a question or claim they would like to investigate. Help them take stock of what they know by creating a list of facts and uncertainties around their claim. Students may need to redefine or restate their claim. Once a clear claim has been identified, ask students what they can do to investigate it. Brainstorm source by encouraging students to think broadly about different kinds of information available to them. Consider having students make a mind map of sources that can provide information about their claim. Document students' ideas by creating a chart of identified sources, the perspectives of the source and potential biases they might represent. Display the chart on the wall and add comments as each source is investigated. Keep this chart accessible so students can return to it during the investigation of future truth claims. Track the instances or types of bias that students identify and use it as a way to further conversations about new situations in the classroom.

TRUE FOR WHO?

EXPLORING TRUTH CLAIMS FROM DIFFERENT PERSPETIVES

Purpose: What kind of thinking does this routine encourage?
The True for Who routine helps students cast a wide net for facts and arguments by imagining how an issue looks from different points of view. The routine also helps students see how different viewpoints and situations might influence the stances people are likely to take.

Application: When and Where can it be used?
What we think is true often depends on what we see and care about from our own perspective. Like the Circle of Viewpoints routine in the Fairness Ideal, this routine helps students consider the roles of context and perspective in shaping what people believe. It can be used at any point in the process of puzzling about truth, once the truth-claim has been clarified.

Launch: What are some tips for starting and using this routine?
Begin the discussion by clarifying a claim and imagining various perspectives on the topic. After the brainstorm, ask each student to choose one of these viewpoints to embody. Give them time to prepare to speak about the topic from that perspective and to elaborate on the viewpoint using the three sentence stems to structure what he or she says. Taking turns, students can go around the circle and speak briefly about their chosen viewpoint. The circle of viewpoints can be graphically documented on the board or on a poster using the formatted sheet on the next page. After many different viewpoints are dramatized, ask students to step out of their role playing and reflect on the issue. What do they think about the claim now? What are some questions about the claim now?

1. Discuss. What kind of situation was the claim made in? (Who made it? What were the people's interests and goals? What was at stake?)

2. Brainstorm: make a list of all the different points of view you could look at this claim form.

3. Dramatize. Choose a viewpoint to embody and imagine the stance a person from this viewpoint would be likely to take. Would he or she think the claim is true? False? Uncertain? Why?
Go around in a circle and dramatically speak from the viewpoint. Say:
-My viewpoint is...
-I think this claim is true/false/uncertain because...
-What would convince me to change my mind is ...

4. Stand back. Step outside of the circle of viewpoints and take everything in- to account: What is your conclusion or stance? What new ideas or questions do you have?

TUG FOR TRUTH

EXPLORING EVIDENCE ON MULTIPLE SIDES OF A CASE

1. Identify a question of truth – a controversial claim that something is true or false – where you know there is some evidence on both sides that students can bring forward.

2. Ask students if they have an opinion about it (it's okay not to have one).

3. Draw a tug of war diagram on the board (or tape a piece of rope on the wall and use Post-its to make it more dramatic). Explain that students can add two kinds of things. One is evidence – tugs in the Yes, True direction or the No, False direction. The other thing to add is a question about the tug of war itself, a question that asks for more information or about "what if" we tried this or we tried that, what would the results be?

4. Finish the lesson by asking students what new ideas they have about the question of truth. Can we decide now? Do some people lean one way and some the other? Is the best answer in a "gray area" – most of the time true but not always, or half the time? How could we settle it if we had to?

Purpose: What kind of thinking does this routine encourage?
It encourages students to reason carefully about the "pull" of various factors that are relevant to a question of truth. It also helps them appreciate the deeper complexity of matters of truth that can appear black and white on the surface.

Application: When and Where can it be used?
It can be used in any situation in which questions of truth come up, and there is evidence to be considered, evidence from common knowledge or from information resources like newspapers or encyclopedias or the Internet. Questions of truth can come from school subjects or everyday life. Newspaper headlines are full of claims from politicians and others that can be evaluated. Science brings many issues like whether genetically engineered foods are dangerous or how old the universe is. History comes with endless controversies, for instance about who really started a particular war or what everyday life was like at various times in the past. Many works of literature create suspense by offering only bits and pieces of information until the end: Before the end, can you the reader figure out who the culprit really is or what secret from the past the heroine is hiding?

Launch: What are some tips for starting and using this routine?
This is a routine that builds on children's familiarity with the game of Tug of War to help them understand the complex forces that "tug" at either side of a question of truth (there is also a Tug of War for fairness dilemmas with the same basic structure). The routine uses a rope or a diagram to represent pulls toward true or false in evaluating a claim. The tug of war is between True and False. Help students think about the various factors that tug at one side of the rope or the other, as well as other considerations related to the issue. A natural follow-up to the activity is to have students investigate facts related to the ques- tions written above the Tug of War.

COMPASS POINTS

EXAMINING PROPOSITIONS

Purpose: What kind of thinking does this routine encourage?
To help students flesh out an idea or proposition and eventually evaluate it.

Application: When and Where can it be used?
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.

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?

RED LIGHT, YELLOW LIGHT FOR TRUTH

FOCUSING STUDENTS ON SIGNS OF PUZZLES OF TRUTH

1. Identify a source or range of experiences to investigate, e.g. the editorial page, a political speech, a pop science source, rumors on the playground.

2. Students look there for "red lights" and "yellow lights," specific moments with signs of a possible puzzle of truth, like sweeping generalizations, blatant self-interest.

3. Round up students' observations. Make a list of specific points marked R for red or Y for yellow with the sign (see sample chart). Also, ask students to identify "red zones" and "yellow zones," whole areas that tend to be full of red or yellow lights. Write them on the board in circles.

4. Ask: What have we learned about particular signs that there could be a problem of truth? What have we learned about zones to watch out for?

Red light, Yellow light only identifies potential issues of truth. You may want to go on to some other truth routines to dig into a couple of the issues.

Purpose: What kind of thinking does this routine encourage?

In the general clutter of everyday life, moments that need deeper thinking tend to be invisible. Students have to learn to see them. This routine focuses students on signs of puzzles of truth, and also on typical red zones and yellow zones where such puzzles are common. To build up this sensitivity, use the routine often in deliberately different ways.

Application: When and Where can it be used?

Wherever there might be interesting puzzles of truth: a text that might have questionable claims, the daily paper, TV news, political speeches, a mystery story, a math proof that might have weaknesses, playground activities and conversations, home life, pop science, potentially risky behaviors, self-critique of something one has written, etc. For settings outside of school, students can keep logs over a day to a week. Typical red zones are the editorial pages of newspapers, political speeches, playground arguments, because so many red lights occur within them. The source should be large enough to take some time, like a chapter or keeping track of rumors for a few days. That way, students have to keep alert in a sustained way, which practices their skills of noticing puzzles of truth.

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

Explain that "red lights" are specific moments with signs of a possible puzzle of truth, signs like sweeping statements, one-sided arguments, obvious self-interest, etc. See the sample chart for others. Yellow lights are milder versions of the same thing. Naturally students may disagree on what"s red vs. yellow vs. green in particular cases. Have students explain the signs and their judgments briefly, but mainly the routine is for detecting potential puzzles of truth. The real way to investigate a couple of the more important red or yellow lights is to dig further into the issue with another truth routine.

things seem black and white. The routine can be used to open discussions about dilemmas and other controversial issues.

Launch: What are some tips for starting and using this routine?
After identifying a topic, ask students to brainstorm various viewpoints about this topic. This can be done solo, or as a class, but make sure to give the initial brainstorm enough time for students to really stretch and explore diverse ideas. If students need help thinking of different viewpoints, try using the following prompts: How does it look from different points in space and different points in time? Who (and what) is affected by it? Who is involved? Who might care?

After the brainstorm, ask each student to choose one of these viewpoints. Give them time to prepare to speak about the topic from that perspective and to embody the viewpoint using the script skeleton to structure what he or she says. Once students have prepared their "characters", the class should be ready to go around the circle and act out their various perspectives. Taking turns, ask students to speak briefly about their chosen viewpoint using the script skeleton. Invite them to stand up and use gestures and movement if necessary. The discussion at this point might move fairly quickly, capitalizing on the immediacy of the experience as each student goes through the script and presents a perspective. The array of responses will hopefully be broad and distinct, as each student should strive to produce a unique viewpoint. If some students choose the same character, encourage them to perform differently. For example, if several students choose the viewpoint of an explorer, one may be trying to seek out wealth through trade, another explorer might be adventurous or want to become famous. Ask them to raise different questions in order to elaborate their viewpoints.

Viewpoints connect to the idea of physical perspective taking and you may notice that your students interpret this literally at first by naming and describing what their characters see. While it is fine to help students get started with concrete examples, try to move your students to consider thoughts and feelings of characters, rather than describing a scene or object.

As students perform their viewpoint in the circle, their ideas can be recorded or written on the board so that a class list of perspectives is created. The last question of the routine asks students to think of a question they might have from their chosen viewpoint. Collect these questions or ask students to write them down and answer them as they think more about the topic as it is studied in class. Once everyone in the circle has spoken, the teacher can lead a discussion by asking: "What new ideas do you have about the topic that you didn"t have before?" and "What new questions do you have?

CIRCLE OF VIEWPOINTS

A ROUTINE FOR EXPLORING DIVERSE PERSPECTIVES

Brainstorm a list of different perspectives & then use this script skeleton to explore each one:

1. I am thinking of (*the topic*) from the point of view of (*the viewpoint you've chosen).*

2. I think *(describe the topic from your viewpoint)*.

Be an actor – take on the character of your viewpoint.

3. A question I have from this viewpoint is *(ask a question from this viewpoint)*.

Wrap up: What new ideas do you have about the topic that you didn't have before? What new questions do you have?

Purpose: What kind of thinking does this routine encourage?
This routine helps students consider different and diverse perspectives involved in and around a topic. Understanding that people may think and feel differently about things is a key aspect of the Fairness Ideal.

Application: When and Where can it be used?
This routine can be used at the beginning of a unit of study to help students brainstorm new perspectives about a topic, and imagine different characters, themes and questions connected to it. It can be used after reading a book or chapter. Provocative topics and issues are encouraged and the routine also works especially well when students are having a hard time seeing other perspectives or when

HERE NOW THERE THEN

A ROUTINE FOR CONSIDERING PRESENTIST ATTITUDES

1. Identify a controversial issue or fairness topic that has changed significant- ly over time and uncover student's basic knowledge about the topic. Column A: List present stances, values and judgments about the topic.

2. Ask kids to imagine they could travel back to a time when the attitudes about the fairness of this topic were different. Column B: List past stances, values and judgments about the topic.

3. Compare the past and present perspectives in Columns A and B. Why do you think things have changed? Why did people in the past not think the way we do today?

4. Close the discussion. How could we find out more about the way people thought back then?

FAIRNESS ROUTINES

Purpose: What kind of thinking does this routine encourage?
The routine encourages students to consider past perspectives and develop a better understanding of how thinking changes over time and across cultures. It helps students acknowledge that we have strong stances regarding controversial issues, and that our stances are influenced by social and historical context. It is also helps to uncover stereotypical perceptions as well as ethnocentric and presentist judgments.

Application: When and Where can it be used?
The routine works best when dealing with issues that at one point in time or in a different culture were considered controversial. It can be used with topics about which we have strong stances that are not necessarily shared by people from other cultures or people in the past. Examples of these topics might include: slavery, holocausts, genocide, human rights, women's rights, child labor, war, and so on. This routine works well when students have had some experience with the topic and have at least a basic knowledge of its historical development.

Launch: What are some tips for starting and using this routine?
This routine works well as a whole class discussion. Use the idea of the time traveler to help students think about fairness issues and values that have changed significantly over time or place. When comparing past and present stances acknowledge that certain issues may not be controversial to us today. List how we think about it presently and ask students to step back and consider how people thought about the topic during another place and time. What was their reasoning? Make these ideas visible. Explore the possible reasons for our shifts in thinking about this topic. Why do we view it differently? How could we find out more information?

MAKING IT FAIR: NOW THEN LATER

A ROUTINE FOR FINDING ACTIONS

Purpose: What kind of thinking does this routine encourage?
This routine is about identifying and evaluating specific actions that might make a situation fair. This routine involves students in generating and evaluating options. Initially the focus should be on an open generation of ideas without evaluation. Later, students evaluate their ideas and justify them. This routine helps students see that fairness and unfairness are not merely judgments that one makes but that these situations also invite direct actions by finding ways to repair, prevent, or preclude unfairness.

Application: When and Where can it be used?
This routine can be used to with issues of fairness that naturally arise in the classroom, around issues of fairness that have been studied, or as a way of closing a discussion of fairness that you may have had using one of the other routines.

Launch: What are some tips for starting and using this routine?
Present and clarify the dilemma to the class. Everyone should agree that the situation was not fair, at least from some perspectives. To facilitate openness in the brainstorming portion, you might want to have students think in terms of "I wonder might happen if..." As students talk, record their ideas on the board or chart paper. You may want to label the paper "I wonder might happen if ..." to further encourage students to think about possibilities. When you begin to sort students' ideas, if there is a category where are not many ideas, have students generate additional ideas for that category.

1. Frame the task. Present and clarify an issue of fairness. The class will be thinking about things to do to make the situation more fair: now, in the future, or to change the situation so it would have been fair in the past.

2. Brainstorm. Ask students to brainstorm ideas for things they might do to "make it fair."

3. Sort. Sort the list into actions that relate to making the situation fair in the past, now, or for the future.

4. Evaluate. Ask students to pick one idea from the list that they think has the most merit and expand on it, either verbally or in writing.

FAIRNESS ROUTINES

REPORTER'S NOTEBOOK

A ROUTINE FOR SEPARATING FACT & FICTION

1. Identify a situation, a story or dilemma for discussion.
2. Ask students to identifying the Facts and Events of the situation. As students name them, ask if these are clear facts, or if they need more information about them.
3. Ask students to then name the Thoughts & Feelings of the characters/participants involved in the story. As students name them, ask if these are clear facts, or if they need more information about them.
4. After a discussion, ask to make their best judgment of the situation, based on the information at hand.

FAIRNESS ROUTINES

Purpose: What kind of thinking does this routine encourage?
This routine is about distinguishing facts from thoughts and judgments. It helps organize ideas and feelings in order to consider a situation where fairness may be at stake. It promotes the fine discernment of information and perspective taking in order to clarify and make a tentative judgment.

Application: When and Where can it be used?
Students can use the reporter's notebook in any number of situations: when discussing imagined or real moral dilemmas, topics from history, literature, or science; after reading a chapter, watching a video or performance; or when thinking about actual events from their own life, etc. This routine is most useful "mid-investigation", after some information about a given situation has already been put on the table. Maybe things are getting convoluted, there are disagreements, or perhaps when opinions are taken as facts, or when things are getting "messy." Use the routine to go deeper into an issue to clarify thoughts about it OR to even clarify what the issue is.

Launch: What are some tips for starting and using this routine?
Students are asked to imagine they are a newspaper reporter in order to differentiate the facts of a given event or topic from involved characters' thoughts and feelings. The stance of a reporter helps students clarify issues and points of agreement and disagreement by getting distance from their own perspective or initial understanding of a given situation. Draw a 4x4 grid. Along the top write "Clear" and "Need to Check." Down the side write Facts & Events and Thoughts & Feelings. List responses in the appropriate portion of the grid. Make sure kids talk about the characters, not their own thoughts or feelings. Once the notebook is completed, routine asks the students to make an informed judgment.

TUG OF WAR

A ROUTINE FOR EXPLORING THE COMPLEXITY OF DILEMMAS

Purpose: What kind of thinking does this routine encourage?
This is routine builds on children's familiarity with the game of tug of war to help them understand the complex forces that "tug" at either side of a fairness dilemma. It encourages students to reason carefully about the "pull" of various factors that are relevant to a dilemma of fairness. It also helps them appreciate the deeper complexity of fairness situations that can appear black and white on the surface.

Application: When and Where can it be used?
This routine can be used in any situation where the fairness dilemma seems to have two obvious and contrasting ways of being resolved. Dilemmas can come from school subjects or everyday life: testing of medicine on animals, adding people to a game once it has started, censoring a book in a library, and so on.

Launch: What are some tips for starting and using this routine?
The routine works well as a whole class activity. Present the dilemma to the class. Draw or place a rope with the two ends representing the opposing sides of the dilemma and ask students to think about what side of the dilemma they would be on and why. Students can write their justifications on Post-it notes. Encourage students to think of other reasons or "tugs" for both sides of the dilemma, and then have students add their Post-it notes to the rope.
Stand back and ask students to generate "What if's:" questions, issues, factors or concerns that might need to be explored further to resolve the issue. Write and post these above the rope. Finish the lesson by asking students to reflect on the activity. What new ideas they have about the dilemma? Do they still feel the same way about it? Have they made up minds or changed their minds?
The display of the tugs and What if's? on the rope helps to make students' thinking visible. Most importantly, their ideas are displayed in a way that shows their interconnectedness. The collaborative thinking process of the group as a whole is represented through the "action" of the tug of war. This is a key point about making thinking visible: It shows the dynamic interaction of people's thoughts in a context of a shared inquiry. Documenting thinking and making it visible in the classroom can facilitate this interaction in order to make the inquiry richer.

1. Present a fairness dilemma.

2. Identify the factors that "pull" at each side of the dilemma. These are the two sides of the tug of war.

3. Ask students to think of "tugs," or reasons why they support a certain side of the dilemma. Ask them to try to think of reasons on the other side of the dilemma as well.

4. Generate "what if?" questions to explore the topic further.

CREATIVE HUNT

A ROUTINE FOR LOOKING AT PARTS, PURPOSE & AUDIENCE

Key Prompts:

What"s the main purpose here?
What are the parts and their purposes?
Which are especially smart or creative? – star them!
Who is the audience for this?

Purpose: What kind of thinking does this routine encourage?

An important part of creativity is recognizing how creative things around us are. This is often inspiring. Because we are to used to things, we do not appreciate their creativity. It is also often practical: we see better the limitations of things and how they might be improved. It's also a good way of understanding things better, by looking into what they are for, how they work, and who their audiences are. Thus, this creativity routine has an "understanding bonus."

Application: When and Where can it be used?

This routine makes thinking visible by helping students to find the creative thinking behind ordinary things – doorknobs, pencils, newspapers, toys. It can also be applied to more important things and more abstract things, like forms of government or hospitals or schools. The routine helps students to appreciate creativity and be more alert to creative opportunities.

The creativity hunt is a good way to awaken students to the creativity in ordinary objects around them. You can use it on everyday classroom objects, like a blackboard, a ballpoint pen, a paintbrush, an article of clothing. You don't have to stick to concrete physical objects. You can use it on more abstract things, like the 24-hour day, or recess, or a sport or game. Besides the things around us, you can easily use it to connect to the subject areas. Here are some tips about picking a good object:

Pick something that comes from human beings and human creativity, like a telescope or a form of government or a means of communication.

Pick something relevant to the subject matter you are teaching. For instance, a cannon or a musket or a military formation would be a good choice if you are teaching military history. A particular tax or policy might be a good choice if you are teaching about government. A sextant or telescope might be a good choice if you are teaching about science. You can pick concrete things like a sextant or telescope but also abstract things like a particular tax or policy.

Pick something that the students know enough about so that they can think some about what it's for and how it works and who its audience is. For instance, you would not pick a telescope if students didn't know much about telescopes, but you might if you could bring one in and students could try it out and examine it. You would not pick an import duty if students had just heard the name but did not know how it worked, but if they had read and discussed it in general you might.

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

Here are some basic steps for starting the routine:

1. Identify something for students to think about – something ordinary like a ballpoint pen or larger and more abstract like a hospital. It is natural to pick something from a subject matter being taught.
2. Set up the target diagram (see example of telescope on next page) and label the key elements: main purpose, parts & purposes, audience. Say something like this: "Let's look at this from a creative viewpoint. Creative things have jobs to do. They need to hit their target. So here is the target. Let's explore how this thing hits its target."
3. Lead students in filling out the target diagram. Let them suggest main purposes (sometimes there is more than one), particular parts and the purposes they serve, and who the audience is. Also, invite them to star (*) any part they think is particularly smart or creative. You can conduct this as a general conversation, but another good way is to ask students to fill out Post-its individually or in small groups and stick them up on the diagram.
4. Sum up by looking for what's creative. Go over the *s and invite more. Emphasize how this clever object or idea hits its target.

CREATIVE QUESTIONS

A ROUTINE FOR GENERATING & TRANSFORMING QUESTIONS

Purpose: What kind of thinking does this routine encourage?
Formulating and exploring an interesting question is often as important than finding a solution. This routine encourages students to students create interesting questions and then imaginatively mess around with them for a while in order to explore their creative possibilities. It provides students with the opportunity to practice developing good questions that provoke thinking and inquiry into a topic.

Application: When and Where can it be used?
Use Creative Questions to expand and deepen students' thinking, to encourage students‟ curiosity and increase their motivation to inquire. This routine can be used when you are introducing a new topic to help students get a sense of the breadth of a topic. It can be used when you're in the middle of studying a topic as a way of enlivening students' curiosity. And it can be used when you are near the end of studying a topic, as a way of showing students how the knowledge they have gained about the topic helps them to ask ever more interesting questions. This routine can also be used continuously throughout a topic, to help the class keep a visible, evolving list of questions about the topic that can be added to at anytime.

Launch: What are some tips for starting and using this routine?
Before using Creative Questions you might want to ask students what they think makes a good question. Then, when you show the Creative Questions, explain that this routine is a tool for asking good questions. Start the routine by providing a topic, concept or object– Sudan, medieval punishment, a stethoscope, genetic engineering. Ask them to use the Creative Questions to generate a list of questions about the topic or object. Initially, it's best to work together as an entire group. Once students get the hang of the routine, you can have them work in small groups, or even solo.
After students finish generating questions, ask them to pick one of the questions to investigate further. Encourage students to explore it by imaginatively playing out its possibilities. Writing a story or essay, drawing a picture, creating a play or dialogue, inventing a scenario, conducting an imaginary interview, or conducting a thought experiment are just some of the possible ways for students to find out about their questions. At the end of the exploration process be sure to take time to reflect on new insights and ideas about the topic, object or concept.

1. Pick an everyday object or topic and brainstorm a list of questions about it.

2. Look over the list and transform some of the questions into questions that challenge the imagination. Do this by transforming questions along the lines of:
- What would it be like if...
- How would it be different if...
- Suppose that ...
- What would change if ...
- How would it look differently if ...

3. Choose a question to imaginatively explore. Explore it by imaginatively playing out its possibilities. Do this by: Writing a story or essay, drawing a picture, creating a play or dialogue, inventing a scenario, conducting an imaginary interview, conducting a thought experiment.

4. Reflect: What new ideas do you have about the topic, concept or object that you didn't have before?

CREATIVITY ROUTINES

DOES IT FIT?

A ROUTINE FOR THINKING CREATIVELY ABOUT OPTIONS

1. Fit your options to the Ideal Identify what the Ideal solution would look like and then evaluate each option against it. **Ask yourself: How well does each option fit with the ideal solution?**

2. Fit your options to the Criteria Identify the criteria or attributes that feel are important for you to consider in this situation and then evaluate each option against those. **Ask yourself: How well does each option fit the criteria?**

3. Fit your options to the Situation Identify the realities and constraints of your situation, such as resources and time, and then evaluate each option against them. **Ask yourself: How well does each option fit the realities of the situation?**

4.Fit your options to you Personally Try out each option by running a "mental movie" in which you imagine yourself carrying out the option and try to get a sense of what it would feel like. **Ask yourself: Which option just feels like the best fit for me?**

Purpose: What kind of thinking does this routine encourage?

To help students more effectively flesh out and evaluate options, alternatives, and choices in a decision-making situation.

Application: When and Where can it be used?

This routine is part of an overall decision-making process that begins with the generation of options, choices, or alternatives for solving the problem or satisfying the needs of a situation. Once options are identified, they need to be evaluated in order to make a choice. Use this routine whenever students need to make a thoughtful and reasoned decision: the choice of a final project; direction for an investigation; making a group or whole-class decision on how to allocate time, money, or resources; electing a group leader or spokesman; choosing among possible classes, and so on.

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

The four different "fits" represent four distinct approaches to evaluating options rather than a multi-layered routine. The first part of the routine involves making a choice as to which of the "fits" is best for the situation at hand. Then, that particular "fit" is carried out. To make this initial choice, students need some practice and discussion of each of the "fits" to see in what kinds of situations each works best. You might introduce this routine by briefly discussing each one and then have the whole class try out one of fits to make a decision. Initially, you might choose which of the four "fits" is best for a given situation and then gradually involve students in this process once all the fits have been practiced on several occasions.

OPTIONS DIAMOND

A ROUTINE FOR EXPLORING THE TENSIONS OF DECISION MAKING ROUTINE

Purpose: What kind of thinking does this routine encourage?
This routine fosters creative thinking. It helps to explore decision making situations where a tradeoff makes it hard to find a really good option. It focuses on resolving opposites. Sometimes, but not always, there are options that partly bring the opposites somewhat together. All this is also relevant to understanding. It helps in understanding situations even when you are not the real decision maker.

Application: When and Where can it be used?
The options diamond helps with personal or classroom decision making when different factors pull strongly in opposite directions. It"s also a useful way of exploring and understanding such situations in the news, history, or literature or science or medical policy, etc. For example, US President Harry Truman in deciding to drop the atomic bomb on Nagasaki and Hiroshima struggled with this tradeoff: Kill many thousands of Japanese but shorten the war versus let the war and its casualties continue. He chose to use the bomb. But what compromise options were there? And were there any options that might combine the opposites and end the war quickly without killing thousands of Japanese?

Launch: What are some tips for starting and using this routine?
Remember, the left and right points of the diamond are not options themselves. They are the gains and losses that pull in opposite directions. You then write options near the left and right corners that go with one pull or the other; then the lower corner gets compromise options and the top corner gets any options that partly combine the opposites. In many classroom situations the point is to use creative thinking to understand the situation better. Step 3 is the payoff and a final choice among the options may not matter. You can decide whether to go on to another routine for choosing among the options. Or you can just take a quick vote on some of the likely options. If you want, you can do this before step 3, to give students a little more to discuss in step 3.

1. Identify a couple of obvious options. Usually there are tradeoffs or tensions between them that make the decision hard: Choose one and you get X but lose Y; choose the other and you lose X but get Y.

2. Make a diamond diagram, putting at the left and right corners the one or two main tradeoffs (the X"s and Y"s) pulling in opposite directions.

3. Now have students brainstorm one to three solutions for each corner of the diamond. Left side: go with that tradeoff. Right side: go with that tradeoff. Bottom: compromise between them. Top: clever solutions that combine the seeming opposites and get the best of both.

4. Ask: What have we learned about the situation from finding these options? This is a way of understanding the situation better.

OPTIONS EXPLOSION

A ROUTINE FOR CREATIVE DECISION MAKING

1. List the obvious options. There would not be a decision unless there were at least two or three obvious options.

2. Now brainstorm all sorts of different options to find the "hidden" options. Often there are hidden options that are the real best choices. Be imaginative! Piggyback on ideas already up, combine ideas to get new ones, look for ideas of a very different kind, imagine you are in dif- ferent roles and suggest ideas from the perspective of those roles, etc.

3. Ask: What have we learned about the situation from finding these options? This is a way of understanding the situation better. You may want to go on to a routine for comparing and choosing among options.

Purpose: What kind of thinking does this routine encourage?
This routine fosters creative thinking. It helps explore "hidden" options in a decision making situation. Often people don"t make good decisions because they miss the hidden options. It is also relevant to understanding. It helps in building an understanding of decision-making situations even when you are not the real decision maker.

Application: When and Where can it be used?
Students can use it for personal decision making or you and students can use it for classroom decision making. Also, you can use it with students as a way of exploring and understanding important decisions in the news or history or literature or science policy or medical policy, etc. You can ask students to make the decision personal by role playing, imagining that they were in the situation.

Launch: What are some tips for starting and using this routine?
Emphasize that maybe there are good hidden options, maybe not – we have to find out by looking. Put the ideas on the blackboard or have students write them on Post-its and stick them up. Use an explosion-like diagram with radiating lines instead of a list if you want to emphasize the spirit, but a list is okay too. Remember, crazy ideas are okay – they are just part of the mix and they may lead to something else by piggybacking.

In many classroom situations the point is to use creative thinking to understand the situation better, as in step 3. You don"t need a final decision. You can decide whether it's a good idea to go on to another routine for choosing among the options. Or you can just take a quick vote on some of the likely options. If you want, you can do this before step 3, to give students a little more to discuss in step 3.

STEP INSIDE: PERCEIVE, KNOW, CARE ABOUT

A ROUTINE FOR GETTING INSIDE PERSPECTIVES

Three core questions guide students in this routine:

1. What can the person or thing perceive?
2. What might the person or thing know about or believe?
3. What might the person or thing care about?

Purpose: What kind of thinking does this routine encourage?

This routine helps students to explore different perspectives and viewpoints as they try to imagine things, events, problems, or issues differently. In some cases this can lead to a more creative understanding of what is being studied. For instance, imagining oneself as the numerator in a fraction. In other settings, exploring different viewpoints can open up possibilities for further creative exploration. For example, following this activity a student might write a poem from the perspective of a soldier's sword left on the battlefield.

Application: When and Where can it be used?

This routine asks students to step inside the role of a character or object – from a picture they are looking at, a story they have read, an element in a work of art, an historical event being discussed, and so on – and to imagine themselves inside that point of view. Students are asked to then speak or write from that chosen point of view. This routine works well when you want students to open up their thinking and look at things differently. It can be used as an initial kind of problem solving brainstorm that open ups a topic, issue, or item. It can also be used to help make abstract concepts, pictures, or events come more to life for students.

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

In getting started with the routine the teacher might invite students to look at an image and ask them to generate a list of the various perspectives or points of view embodied in that picture. Students then choose a particular point of view to embody or talk from, saying what they perceive, know about, and care about. Sometimes students might state their perspective before talking. Other times, they may not and then the class could guess which perspective they are speaking from.

In their speaking and writing, students may well go beyond these starter questions. Encourage them to take on the character of the thing they have chosen and talk about what they are experiencing. Students can improvise a brief spoken or written monologue, taking on this point of view, or students can work in pairs with each student asking questions that help their partner stay in character and draw out his or her point of view.

This routine is adapted from Debra Wise, Art Works for Schools: A Curriculum for Teaching Thinking In and Through the Arts (2002) DeCordova Museum and Sculpture Park, the President and Fellows of Harvard College and the Underground Railway Theater.

ME YOU SPACE TIME - The MYST Routine:

A ROUTINE TO HELP TEACHERS PREPARE & REFLECT ON MAKING THINKING VISIBLE

Me: How do I make my own thinking visible?

You: How do I make my students‟ thinking visible?

Space: How is space in the classroom organized to help facilitate thinking?

Time: How do I give thinking time? How does thinking develop over time?

One way to structure reflection on your efforts to make thinking visible in your classroom is to step into the MYST: Me, You, Space, Time.

Ask yourself the following questions:

How am I (Me) making my own thinking visible for students? How and when do I display the habits of mind and thinking dispositions I want students to develop? How is the thinking of students (You) made visible to me and the rest of the class? When and where do students share their thinking? Do I have a sense that I know what students' thinking is on our current topic of study? Am I able to see their thinking develop? How can I get more access to this thinking? As a class, do we examine and discuss the thinking of others?

How is thinking displayed in the physical setting of my classroom (Space)? Could a visitor to my classroom see students' thinking? What artifacts of thinking do I put up on the wall? What records of thinking to I keep? Who has access to these records? Are the ideas and issues we are exploring and our efforts at developing understanding on display in the classroom? How can I use the space to make my thinking and that of students visible for examination, discussion, and reflection?

What are the opportunities for thinking in my classroom (Time)? How much time do students really spend in meaningful thought around the issues and topics we are exploring? Are homework assignments and class work infused with opportunities for thinking? How can I increase their thoughtfulness?

LOOKING AT STUDENTS' THINKING (LAST) PROTOCOAL

COLLABORATIVELY LOOKING AT STUDENTS' THINKING

I. Getting started (5 minutes)

The group chooses a facilitator who will make sure the group stays focused on the particular issue addressed in each step. The group also chooses a documenter who will capture the groups' thinking and process. This can be done on chart paper, by taking notes, or through video. The presenting teacher or teachers briefly explain the task and review the types of thinking the activity was meant to reveal. For example, in the Think-Puzzle- Explore routine students are bringing forth prior knowledge and possible misconceptions, displaying curiosity and the ability to make connections through questions, and exhibiting what they know about conducting and carrying out inquiry. The presenting teachers pass out the collection of selected work or show a short video clip from a classroom episode. The participants observe or read the work in silence, perhaps making brief notes about aspects of it that they particularly notice.

II. Describing the work (5 minutes)

The facilitator asks the group, "What do you see?" Group members respond without making interpretations or evaluations about the quality of the work, or statements of personal preference. If evaluations or interpretations emerge, the facilitator asks the person to describe the evidence on which those comments are based.

III. Speculating about students' thinking (10 minutes)

Facilitator asks the group, "Where in the work do you see insights into students' thinking? What does this reveal about how students are collectively and individually making sense of ideas, putting information together, organizing thoughts, reasoning, and so on?

IV. Asking questions about the work (10 minutes)

The facilitator asks the group, "What questions does this work raise for you?" Group members state any questions they have about the work, the child, the assignment, the circumstances under which the work was carried out, and so on. Individuals may want to make notes about these questions; however it is not necessary to respond to the questions at this time. The focus should remain on generating questions and identifying issues.

V. Discussing implications for teaching and learning (10 minutes)

The facilitator invites all participants, including the presenting teacher, to share any thoughts they have about their own teaching, students‟ learning and thinking or ways to support these particular students in future instruction. A possible question to ask is, "Where might this work go next to build on and extend students' thinking?"

VII. Reflecting on the LAST Protocol (5 minutes)

The group reflects together on their experiences of or reactions to the protocol as a whole or to particular parts of it. To the extent it is appropriate, the group may look over the documentation that was done throughout the protocol or the documenter may present highlights to the group. The group may make decisions about and recommendations for their next meeting. The group should determine who will present at the next session. The documentation of the group process should remain available to members of the group for review and reflection.

VIII. Thanking the presenting teacher

The session concludes with acknowledgment of and thanks to the presenting teacher.

MAKING THINKING VISIBLE:

This resource book is compiled from the **Visible Thinking** website with some modifications and additions. You can find that website at:
http://www.pz.harvard.edu/vt/

Another valuable resource is the **Artful Thinking** website, which particularly emphasizes the integration of the arts into subject matter instruction along with thinking:
http://pzweb.harvard.edu/tc/

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