



Visible Thinking Routines to Encourage Thinking Dispositions and Empower Student Learning

Sara Ducey & Angela Lanier

Fall 2018 Professional Day

In groups,
examine the
photo on the
wall near your
section of the
room.

What do you **see**?

What do you **think** about that?

What does it make you
wonder?



SEE / THINK / WONDER

A routine for exploring works of
art and other interesting things

Project Zero | <http://www.pz.harvard.edu/>
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Outcomes

Identify

- Identify what kind of thinking disposition(s) you wish to encourage

Select

- Select a routine to spur that type of thinking

Adopt or adapt

- Adopt or adapt at least one thinking routine for one of your courses

Choose

- Choose documentation methods that extend student learning beyond the thinking routine

The Thinking Dispositions



What type
of thinking
do you
want to
spur?

- REASONING
- EXPLORING VIEWPOINTS
- FINDING COMPLEXITY
- QUESTIONING AND INVESTIGATING
- OBSERVING AND DESCRIBING
- COMPARING AND CONTRASTING



PROJECT ZERO
THINKING ROUTINES

[Play video](#)

THINKING DISPOSITIONS

What Kind of Thinking Do I Want Students to Do?

THINKING ROUTINES & PROMPTS

How Do I Get Them There?
(Artful Thinking Palette video)

<ul style="list-style-type: none">• REASONING	<ul style="list-style-type: none">• What Makes You Say That?• Claim/ Support/ Question• “What do you think about that?”
<ul style="list-style-type: none">• EXPLORING VIEWPOINTS	<ul style="list-style-type: none">• Step Inside• Circle of Viewpoints
<ul style="list-style-type: none">• FINDING COMPLEXITY	<ul style="list-style-type: none">• Part/ Purposes/ Complexities• Complexity Scale
<ul style="list-style-type: none">• QUESTIONING AND INVESTIGATING	<ul style="list-style-type: none">• Think/ Puzzle/ Explore• Creative Questions• See/ Think/ Wonder• “What do you wonder about?”
<ul style="list-style-type: none">• OBSERVING AND DESCRIBING	<ul style="list-style-type: none">• Beginning/ Middle/ End• Looking: Ten Times Two• Listening: Ten Times Two• Colors/ Shapes/ Lines• The Elaboration Game
<ul style="list-style-type: none">• COMPARING AND CONTRASTING	<ul style="list-style-type: none">• I Used to Think...Now I Think• Connect/ Extend/ Challenge




**The Importance
of Documenting**

Adapting the Routines @ MC: Samples from the classroom and professional development workshops

ENCOURAGING REASONING: PACKING FOR A DAY HIKE – THAT LASTS AN UNEXPECTED 24 HOURS

<http://www.oztools.org/thinktrack/public/NighQ204>

List your food items and put them into your day pack (folder)



Student groups reported out their lists and exchanged ideas with those on other teams.

Students present their packing list with others--

"You don't have a can opener for that canned food."

"The Life Straw on one team's list evoked a "that's cool!"

"The bananas will crush."

STUDENTS CONCLUDED THAT WORKING TOGETHER THEY CONSIDERED NEEDS MORE EFFECTIVELY THAN THEY WOULD ALONE.

Notice/Like/Wonder

Let's take a gallery walk

Outcome: To integrate interactive elements into a syllabus

Description: In this workshop, Co-Instructional With Your Syllabus, faculty first learn about different elements of an interactive syllabus. During a 10-15-minute gallery walk, they explore examples of syllabi that integrate interactive elements (see photos below, right) and write down what they Notice, what they Like, and what they Wonder on the handout to the right. After the gallery walk, we debrief and discuss the findings (see chart below). This routine will help faculty identify which interactive elements will work best with their syllabi. The last 20 minutes of the session, faculty map out an interactive page of their syllabus.

Thinking Dispositions: Observing and Describing, Questioning and Investigating, Compare and Connect

Notice	Like	Wonder
<ul style="list-style-type: none"> Color Table of contents Newsletter Infographic File chart for grade distribution Hyperlink QR Codes 	<ul style="list-style-type: none"> Table of Contents Cartoons C.I.A. Notes to self Color (tagging) Illustrations/layout 	<ul style="list-style-type: none"> How much color? What is too much? ADA Compliance How to get the hyperlinks? What info to put in link versus on paper (environmentally friendly)?

1 | Page

What Do We Know About the Atom?
A Concept Map Activity

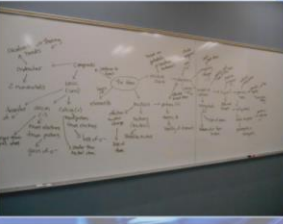
Description: After completing several chapters dealing with the complex structure of the atom (and resulting physical and chemical properties), the entire class participated in the construction of a concept map linking together the different topics and information. Since this was the first time students were asked to draw a concept map, the instructor led the discussion, gathered responses from students, and then wrote the resulting map on the board.

Key Thinking Moves: summarizing and distilling, connection making, identifying key concepts, reflecting, organizing

Outcome: In the beginning, students were very unsure of how to proceed, but once they picked up on the process they made good progress. Since it was their first time performing this type of activity, they required a lot of guidance and probing from the instructor.

Several students immediately saw the benefit of this routine and proceeded to make additional concepts maps for numerous other topics that were discussed in class.

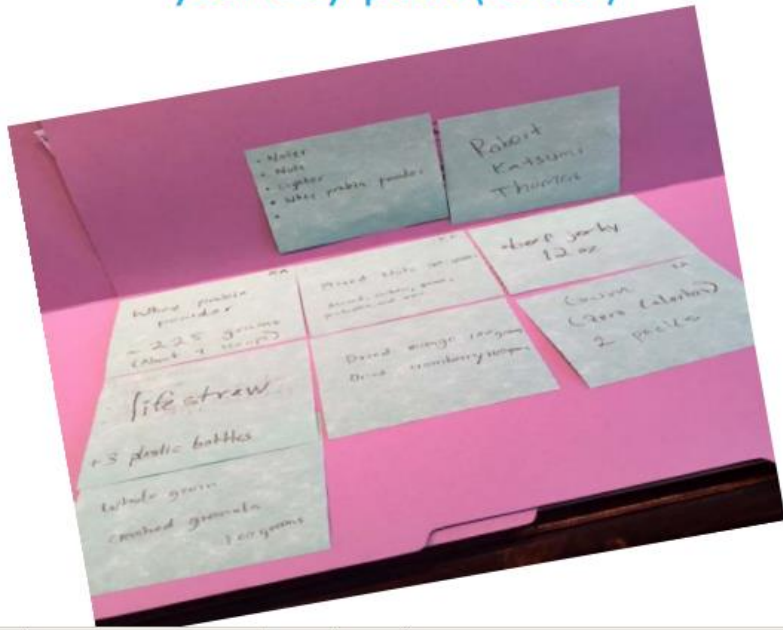
While this was a great activity, it did consume a large amount of class time. Ideally, it is a routine that, once introduced, can be done outside of class.



ENCOURAGING REASONING: PACKING FOR A DAY HIKE — THAT LASTS AN UNEXPECTED 24 HOURS

<http://www.pztools.org/thinktrack/public/NjdhO204>

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Notice / Like / Wonder

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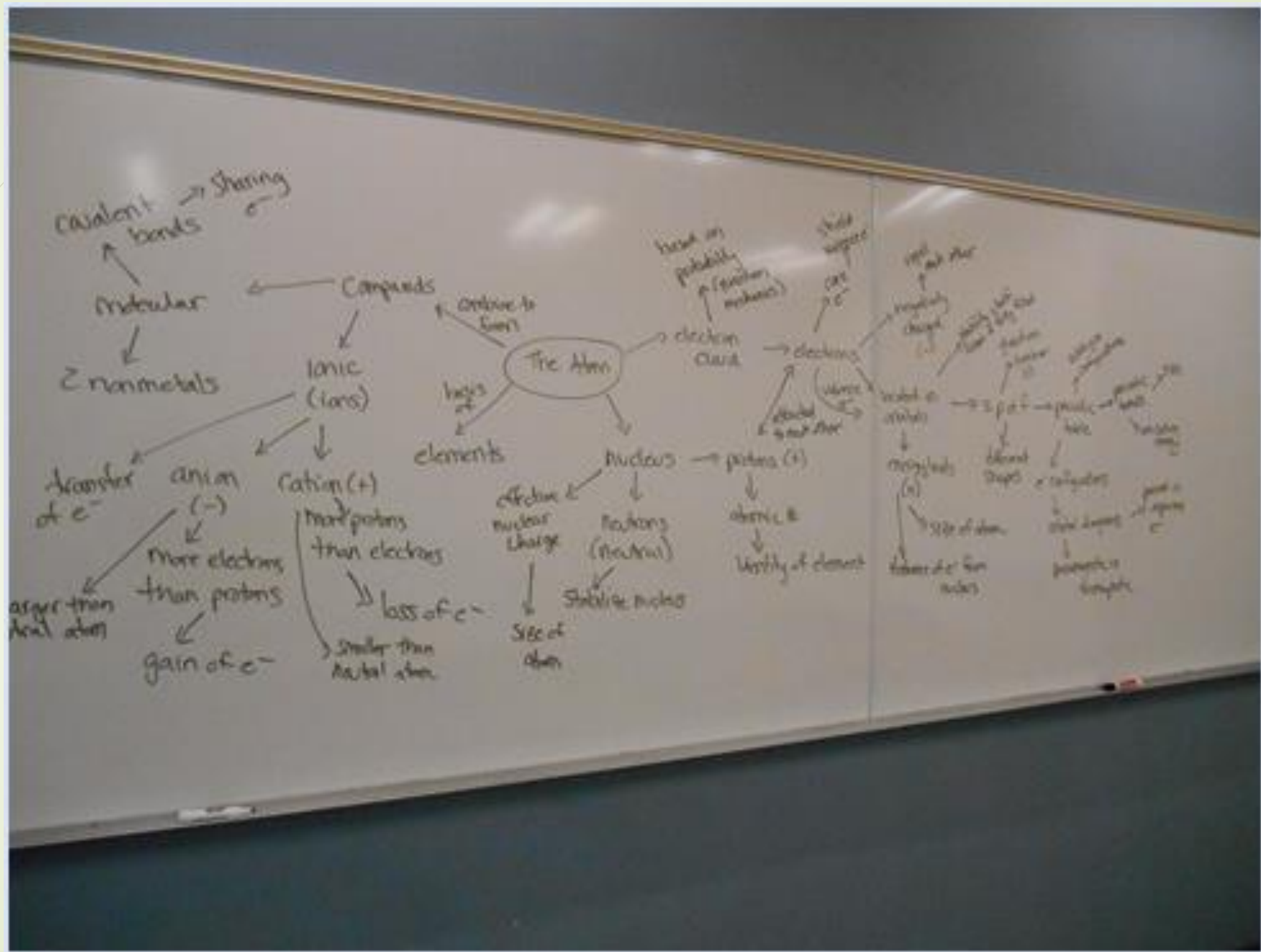
Description: In this workshop, *Go Interactive! With Your Syllabus*, faculty first learn about different elements of an interactive syllabus. During a 10-15-minute gallery walk, they explore examples of syllabi that integrate interactive elements (see photos below, right) and write down what they **Notice**, what they **Like**, and what they **Wonder** on the handout to the right. After the gallery walk, we debrief and discuss the findings (see chart below). This routine will help faculty identify which interactive elements will work best with their syllabi. The last 20 minutes of the session, faculty map out an interactive page of their syllabus.

Thinking Dispositions: Observing and Describing, Questioning and Investigating, Compare and Connect

Let's take a Gallery Walk




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A stylized graphic of a newspaper page. At the top left, the word "NEWS" is written in a large, bold, sans-serif font. To its right is a hamburger menu icon consisting of three horizontal lines. Below the header, there are several horizontal lines representing text columns. In the center, there is a large rectangular area containing a landscape illustration with green hills and a blue sky. Above this illustration, there are four small colored circles (blue, purple, blue, purple) and a dashed line, suggesting a browser window or a specific layout element. The entire graphic is set against a light green background.

NEWS ≡

Let's Make Headlines!

A solid red arrow pointing to the right, positioned between the newspaper graphic and the text below.

Write a headline that
captures the meaning of
visible thinking.

So, I've tried a routine. Now what?

Repetition


Have students practice the routine several times with different concepts so that it becomes a habit

Reflection

Have students reflect on the thinking represented in their documentation

Application

Now that students' thinking is visible, have them apply it to a new context & extend their learning



NEWLY ADDED THEME 'NUTRITION FOR SPACE EXPLORATION'

Since 2010 my sections of NUTR101 have offered students a theme-based approach, exploring the relationships between the environment, human nutrition and evolution. We also tour the Smithsonian's National Museum of Natural History as a part of that work.

This semester I added a new theme, that of Nutrition for Space Exploration. This turned out to complement the nutrition and evolution work really well.

I scaffolded the exercises so that students had to consider the food/nutrient requirements on earth for a day and for 21 days with restricted access to food. Then they had several activities that prepared them to consider nutrition for space travel, with no access to food. The culminating project was an essay on nutrition in space, including reflection on whether they would be willing to travel to Mars.

- Activities to Support New Theme:
- -Calculate Nutrient Needs for 24 Hours (Existing)
- -VT: Pack Food for Extended Day Hike (New)
- -Diet for a 21 Day-long Quarantine (Existing)
- -The Right Question Institute™ prompt: "Nutrition for Exploration" (New)
- -VT: Sentence-Phrase-Word: NASA report, "*Human Adaptation to Spaceflight: The Role of Nutrition.*" (New)
- -VT: Connect/Extend/Challenge: Nutrition Requirements for Space (New)
- -Reflective Essay: "Nutrition for Space" (New)

THINKING DISPOSITIONS What Kind of Thinking Do I Want Students to Do?	Where in my course would this type of thinking benefit students?	THINKING ROUTINES & PROMPTS How Do I Get Them There? (Artful Thinking Palette video)
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Reflection

On a note card, take a few minutes to complete the following reflection regarding Visible Thinking

I used to think....Now I think...



Resources

Visible Thinking Resources

- http://www.visiblethinkingpz.org/VisibleThinking_html_files/VisibleThinking1.html
- http://ronritchhart.com/ronritchhart.com/MTV_Videos.html
- <http://pjsibpyp.weebly.com/thinking-routines-and-protocols.html>
- <http://www.pz.harvard.edu/resources/making-thinking-visible-how-to-promote-engagement-understanding-and-independence>

Citations for Images from See/Think/ Wonder Activity

- Image 1: Serl, J. "Texas Scene." *Smithsonian Learning Lab*, Smithsonian Center for Learning and Digital Access, 10 Aug. 2018. learninglab.si.edu/q/ll-c/1aK3yUkDWztJgD8W#r/462102. Accessed 15 Aug. 2018.
- Image 2: O'Leary, National Museum of the American Indian, Smithsonian Institution. (2018, May 13). Smithsonian Learning Lab Resource: Painting. Retrieved August 15, 2018.
- Image 3: Mora, F. Luis. Smithsonian Learning Lab Resource: Kitchen Scene [Painting] / (Photographed by Peter A. Juley & Son)." *Smithsonian Learning Lab*, Smithsonian Center for Learning and Digital Access, 10 Aug. 2018. learninglab.si.edu/q/ll-c/1aK3yUkDWztJgD8W#r/462097. Accessed 15 Aug. 2018.
- Image 4: Elder, J. A. Smithsonian Learning Lab Resource: Prison Scene." *Smithsonian Learning Lab*, Smithsonian Center for Learning and Digital Access, 10 Aug. 2018. learninglab.si.edu/q/ll-c/1aK3yUkDWztJgD8W#r/462098. Accessed 15 Aug. 2018.
- Image 5: Johnson, W. H. "Family Scene." *Smithsonian Learning Lab*, Smithsonian Center for Learning and Digital Access, 10 Aug. 2018. learninglab.si.edu/q/ll-c/1aK3yUkDWztJgD8W#r/462099. Accessed 15 Aug. 2018.
- Image 6: Choshun, M. "Theater Scenes." *Smithsonian Learning Lab*, Smithsonian Center for Learning and Digital Access, 10 Aug. 2018. learninglab.si.edu/q/ll-c/1aK3yUkDWztJgD8W#r/462100.



Please complete the
session evaluation form.