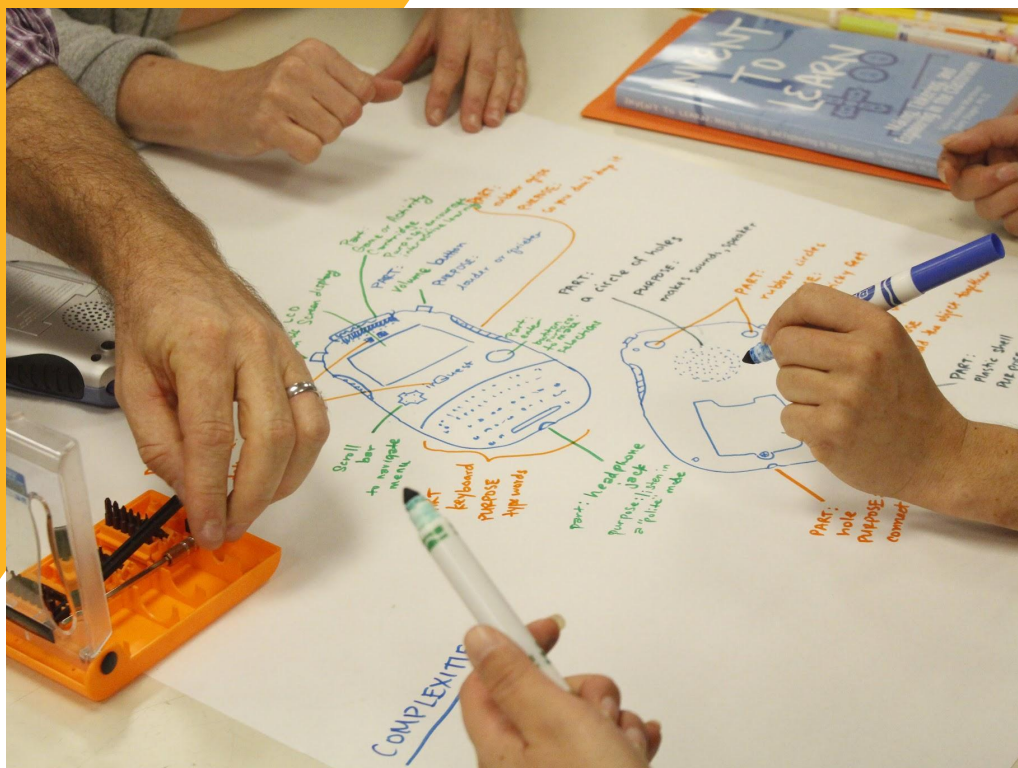# creativity lab

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THINKING ROUTINES

A Guide from the Creativity Lab

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Based on
Agency by Design (AbD)
Thinking Routines

Maker-Centered Learning

About This Project

Thinking Routines, like the ones from **Agency by Design** shown in this guide, are a way we integrate design thinking in core classes like Humanities, Science and Physics. These routines have been created to help understand the designed nature of the world around us.

From the Agency by Design website:

[...] Thinking routines are short, engaging, two-or-three-step patterns of intellectual behavior that are highly transferable across contexts. They are designed to be easy to use, easy to remember, easy to transfer, and to be vividly effective when used on a wide variety of topics. The idea is that when classroom instruction includes the frequent use of thinking routines across a range of subjects and contexts, students will become habituated to using these routines as a matter of course. [...]"

This guide will illustrate in-classroom examples and will give suggestions as how to use different thinking routines from Agency by Design with different classes.

Our Story

We use thinking routines across most of our curriculum, including making classes, humanities, Physics and science. Ed Crandall, the Science, Making and Robotics Teacher from Lighthouse Community Charter School, described thinking routines as a powerful tool **(if used routinely)** for shifting the way our students engage with ideas.

Classes have used Agency by Design thinking routines to research desegregation, food systems, and the criminal justice system, as some examples.

Guiding Questions

1. How do maker educators and leaders in the field think about the benefits and outcomes of maker learning experiences?

2. What are some of the key characteristic of environments in which maker-centered learning thrives?

3. What kinds of educational interventions can we develop that support thoughtful reflection around maker-centered learning and the made dimensions of our world?

TIME: 1-2 classes, depending on routine

Context: Before we make...

Maker-Centered Learning: Dispositional Behavior

In the book [Maker-Centered Learning](#), a dispositional behavior is said to be made from three key elements: ability, inclination, and sensitivity. People often don't activate dispositional behaviour because they don't notice the opportunity to do so. Addressing in particular the issue of **sensitivity**, it helps to remember that dispositions are habits of mind. Project Zero researchers have leveraged the idea of routine behaviors and developed a set of practices called thinking routines, which are short, engaging, two or three-step patterns of intellectual behavior that are **highly transferable across contexts**. The idea is that when classroom instruction includes the frequent use of thinking routines across a range of subjects and contexts, students will become habituated to using these routines as a matter of course.

Artful and Visible Thinking

Research Group Project Zero from Harvard created several programs linked around the common theme of [Visible Thinking](#). Visible Thinking is a framework developed for giving structure and depth to classroom learning.

When thinking is visible, it becomes clear that school is not about memorizing content but exploring ideas. Teachers benefit when they can see students' thinking because misconceptions, prior knowledge, reasoning ability, and degrees of understanding are more likely to be uncovered.

[Artful Thinking](#), also from Project Zero, helps teachers use works of visual art and music in their curriculum in ways that strengthen student thinking and learning. The program focuses on experiencing and appreciating art, rather than making art.

[Artful Thinking Routines - Project Zero](#)
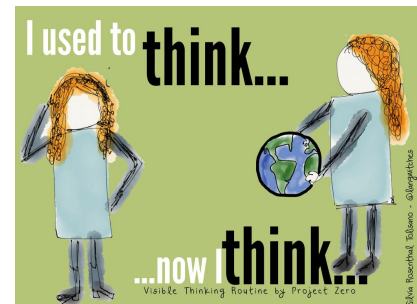
[Visible Thinking Routines - Illustration by Silvia Tolisano](#)

Material Management

Materials

Printed Articles (for Parts, People, Interactions)
Poster Paper
Markers
Physical Objects (for Parts, Purposes, Complexities)

Resources

[Thinking Routine Matrix](#)
[EL Education](#)

Parts, Purposes, Complexities

Parts, Purposes and Complexities is a thinking routine that helps students slow down and make careful, detailed observations by encouraging them to look beyond the obvious features of an object or system. This thinking routine helps stimulate curiosity, raises questions, and surfaces areas for further inquiry. An Agency by Design Oakland fellowship member used PPC to analyze colonial methodologies persistent in STEM curriculum.

MAKING, ART AND DESIGN

In Making classes, students observed their own hand, to then create a cardboard grabber.

They analysed parts, purposes and complexities by taking apart a mechanical pen, or "design object" (unused phones, cameras, bike, game controllers, musical cards).

YOGA AND PHYSICS

In Yoga, students chose a yoga pose and analysed the parts (muscles and bones), purposes (benefits) and complexities (how and why once does that yoga pose).

In physics, students took apart electronic devices (ie toasters, blenders, hair-dryers) to learn about electricity and electrical components.

Learning Targets

- I can look closely.
- I can explore complexity.
- I can document a system.
- I can perceive and analyze work.
- I can relate ideas and works with societal, cultural, and historical context to deepen understanding.
- I can document my work process and use this documentation to deepen/enrich my creative process.

Guiding Questions

Choose an **object or a system** and ask:

What are its **parts**?
What are its various pieces or components?

What are its **purposes**? What are the purposes for each of these parts?

What are its **complexities**? How is it complicated in its parts and purposes, the relationship between the two, or in other ways?

Parts, People, Interactions

Parts, People, Interactions is a thinking routine that helps students slow down and look closely at a system. In doing so, young people are able to situate objects within systems and recognize the various people who participate — either directly or indirectly — within a particular system. Students also notice that a change in one aspect of the system may have both intended and unintended effects on another aspect of the system.

Before starting this activity (and the guiding questions), it is best to first define with students or participants what is a system.

CLASSROOM EXAMPLES

In Elementary, students used a Parts, People, Interactions routine to analyse branches of government and to identitfy "changemakers" in the community. With our VISTA members, in 2017 we created a PPI poster to explore our school system and how it relates to individuals and organizations.

In middle school, students used PPI for different food production types, supported by Michael Pollan's book, *The Omnivore's Dilemma* (Young Reader's Edition).

PROFESSIONAL DEVELOPMENT

During Designing Making Experiences workshops in the Creativity Lab, attendees use PPI to analyse a news article.

Learning Targets

- I can gain insight into users and their needs by using tools and strategies that promote **empathy**.
- I can perceive and analyze work.
- I can interpret intent and meaning in work.
- I can relate ideas and works with societal, cultural, and historical context to deepen understanding.
- I can document my work process and use this documentation to deepen/enrich my creative process.

Guiding Questions

What are the **parts** of the system?

Who are the **people** connected to the system?

How do the people in the system **interact** with each other and with the parts of the system?

How does a **change** in one element of the system **affect** the various parts and people connected to the system?
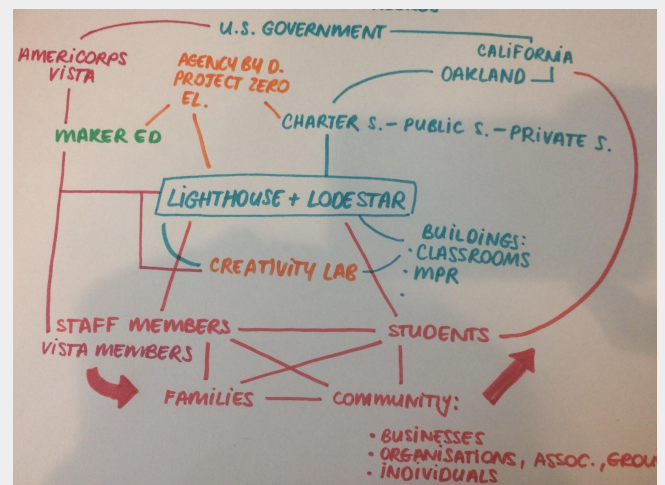
Think, Feel, Care

Think, Feel, Care is a thinking routine that promotes empathy, where students consider various perspectives of people interacting in a system. Here, we want to emphasize that different people feel differently about things even if they're in the same system. This routine fosters perspective taking, raises questions, and surfaces areas for further inquiry. In fact, envisioning different perspective will deepen understanding of larger systems.

This routine leverages the natural human capacity for empathy by encouraging students to imagine the experience of people other than themselves.

Before starting this activity (and the guiding questions), it is best to first define with students or participants what is a system.

As Maker-Centered Learning suggests, *"it is important to remember that empathy is a powerful cognitive tool that has its perils and must be carefully exercised"*. None of us can fully claim to know how someone else feels, and we must regard empathy as suggestion, never assuming to grasp people's feelings and thoughts. This can lead to over-generalization and stereotypes.

CLASSROOM EXAMPLES

Students in Elementary school used a Think, Feel, Care thinking routine as a warm-up activity in support of then designing a backpack for their classmates.

Learning Targets

- I can gain insight into users and their needs by using tools and strategies that promote **empathy**.
- I can perceive and analyze work.
- I can interpret **intent and meaning** in work.
- I can relate ideas and works with societal, cultural, and historical context to deepen understanding.
- I can document my work process and use this documentation to deepen/enrich my creative process.

Guiding Questions

Think: How does this person understand this system and their role within it?

Feel: What is this person's emotional response to the system and to their position within it?

Care: What are this person's values, priorities, or motivations with regard to the system? What is important to this person?

Students design backpacks for their peers

Imagine If...

Imagine If… is a thinking routine that focuses on finding opportunity, encouraging student imagination, and pursuing new ideas. Here, students think about creative possibilities for objects or systems; these can range from improvements on water bottle designs and chairs to creating more efficient food delivery systems. Classes can choose to focus on one or all of the guiding questions, or develop some of their own.

Before starting this activity (and the guiding questions), it is best to first define a system with students or participants
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MAKING, ART AND DESIGN

In the middle school Making, Art, & Design class at Lodestar, Mr. C led his class in the Imagine If… thinking routine. He wanted to increase student agency, so the class imagined what supports they could use if Mr. C didn't exist. At the end of this activity, there was a poster of resources the class could turn to before asking Mr. C.

PROFESSIONAL DEVELOPMENT

At a workshop for the Agency by Design Oakland teacher fellowship, educators participated in an Imagine If… activity focused on the food system surrounding McClymonds High School in Oakland, CA. They interviewed students on the available food options both at the school and surrounding it. They then explored the area, trying to buy lunch with $5.

In small groups, teachers then brainstormed solutions for more healthy and accessible food.

Learning Targets

- I can look **closely**.
- I can explore **complexity**.
- I can gain insight into users and their needs by using tools and strategies that promote **empathy**.
- I can imagine next steps in making a piece.
- I can envision **unique possibilities**.
- I can generate many potential solutions to a defined problem.
- I can relate ideas and works with societal, cultural, and historical context to deepen understanding.

Guiding Questions

In what ways could it be made to be more **effective**?

In what ways could it be made to be more **efficient**?

In what ways could it be made to be more **ethical**?

In what ways could it be made to be more **beautiful**?