project zero THINKING ROUTINES

Parts, People, Interactions (For Exploring Complexity)

A routine for exploring systems.

Identify a system and ask the following 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?

PURPOSE

What kind of thinking does this routine encourage?
This routine helps students slow down and look closely at systems, with special emphasis on the various ways people engage with or are implicated in systems. Like the other routines that begin with identifying parts, the routine encourages students to make careful observations. It also encourages them to identify various kinds of causal interactions, and to consider the numerous ways that people affect and are effected by systems.

APPLICATION

When and where can I use it?
This thinking routine can be used to explore the human side of almost any kind of system. There are systems at work in virtually every aspect of our lives—environmental, governance, financial, workflow, logistical, distribution, mechanical, medicine, etc. The routine can be used on any kind of system, large or small, in which people figure in some way.

LAUNCH

What are some tips for starting and using this routine?
Before introducing the routine, it can be helpful to discuss the concept of systems with students. A good way to begin is to ask students what they think the word 'system' means, and encourage them to brainstorm several ideas and examples. A common definition of a system is: A group of interacting or interrelated elements that form a complex whole. While this definition is accurate, it isn't very illuminating unless it is accompanied by concrete examples, e.g., subway systems, town recycling systems, the lunch line system at school, etc. Since systems are everywhere, it can also be helpful to discuss what isn't a system. For example, a random heap of stuff, such as you might find in the back of a closet, isn't typically a system.

A good way to identify a system on which to use this routine is to begin with a concrete object or activity and then situate it within a broader system. For example, a postage stamp can be situated within a broader postal system and a bicycle helmet can be situated within a broader transportation system. A walk to school can be situated in a broader system of transportation. Brushing one's teeth can be situated in a broader system of health maintenance.

Systems are made up of subsystems, and are themselves parts of broader systems. In order to avoid going down the rabbit hole of everything is connected to everything, it may be helpful to encourage students to define the boundaries of their system. For example, if you are exploring the system of making an apple pie, you might limit it one particular pie; if you are exploring a recycling system, you might limit it to a geographical area.

How can students' thinking be made visible while using this routine? Working in groups, it is helpful for students to begin by making a list of all of the parts and people involved in a system, and then to map out their system on chart paper to make the interactions between all of the parts and people in their system visible.

FACILITATION

This activity is recommended for the following learner age ranges:

- Preschool
  - 15-30 minutes
  - Heavily facilitated by peer/teacher/caregiver
- Elementary School
  - 15-30 minutes
  - Lightly facilitated by peer/teacher/caregiver
- Middle School
  - 15-30 minutes
  - Lightly facilitated by peer/teacher/caregiver
- High School
  - 15-30 minutes
  - Lightly facilitated by peer/teacher/caregiver

This thinking routine was developed as part of the PZ Connect project at Project Zero at the Harvard Graduate School of Education. Explore the full PZ Thinking Routine Toolbox at *pz.harvard.edu/thinking-routines*.