## OSU_COE_horizontal_2C_O_over_B.epsLesson Description

Zoom!

Systems Thinking Skills

## Levels

Grades 6-8

## Content Areas

Systems Thinking

## Lesson Time

45 minutes

## Next Generation Science Standards

SEP-8: Obtaining, Evaluating, and Communicating Information  
CC-1: Patterns

## Learning Objectives

## Define the systems thinking concept of a perspective

## Describe the key elements of a given perspective

## Compare different perspectives to identify relationships between perspectives

## Materials

* “Zoom” activity cards
* “Re-Zoom” activity cards
* Student worksheets

This lesson introduces students to the systems thinking skill of describing, sharing, and relating different perspectives through a lesson paired with an interactive group activity. The lesson defines the idea of a “perspective” and teaches students how to describe a perspective and identify relationships between perspectives. In the activity, students are given images at different levels of “zoom” of a series of scenes and work together to arrange their images in the proper order.

The lesson consists of three parts: an initial activity where they are challenged to order the images with no prior instruction, then a lesson teaching them about perspectives and a method for describing and comparing perspectives, and finally a second round of the activity where they apply the method they have learned.

## Using This Lesson

This lesson can be used as a part of the Systems Thinking Skills series, utilizing and building upon the skills developed in the other lessons, or it can be taught as a standalone lesson. It could be useful to teach students about the differing perspectives in our world through a non-controversial, fun activity. For example, it could be used in the context of lessons on climate change, civil rights issues, or other subject matter where there are many differing perspectives.

## Importance of This Lesson

Whenever a group of people is working on something, everyone brings a different perspective. We aren’t able to see things from other people’s perspectives directly, so to work together it is necessary to communicate our own perspective and understand the perspectives of others and how they relate to our own.

## References

(citations, ISBN# for Zoom and Re-Zoom books)

# Content Background

## Systems Thinking Overview

What is systems thinking? Systems thinking is the method of thinking used to think about systems. It is based in four basic rules, described below with their accompanying co-implication:

* **Distinctions Rule:** Any idea or thing can be distinguished from the other ideas or things it is with (thing-other).
* **Systems Rule:** Any idea or thing can be split into parts or lumped into a whole (part-whole).
* **Relationships Rule:** Any idea or thing can relate to other things or ideas (action-reaction).
* **Perspectives Rule:** Any thing or idea can be the point or the view of a perspective (point-view).

These four rules (abbreviated to DSRP) are applied in parallel in systems thinking and can be found as the basis for practically all forms of thinking and methodologies related to systems.

Zoom!

# Materials List

* 1 set of “Zoom” activity cards (30 cards)
* 1 set of “Re-Zoom” activity cards (31 cards)
* Student worksheets (1 copy per student)
* Computer and projector for PowerPoint presentation

# Preparation Instructions

1. Print copies of student worksheet for every student in the class
2. Set out the appropriate number of Zoom and Re-Zoom cards
   1. Zoom has 30 cards, Re-Zoom has 31 cards
   2. If number of students is less than the number of cards, use the “Zoom and Re-Zoom Reference Numbers” tables at the end of this document to determine which pictures are at the beginning or end and set aside enough so the number of cards matches the number of students
   3. If number of students is greater than the number of cards, students can be paired to share some cards.
3. Shuffle the cards out of order (note that the numbers on the cards ***do not*** indicate the correct order, they are a random reference)
4. Clear a space in classroom for students to line up next to each other in order. Designate one end of the space as the “zoomed in” end, and the other end as the “zoomed out” end.
5. Load lesson PowerPoint presentation

# Lesson Outline

## Hook

Ask students to raise their hand if they’ve been on a team before. (you can be more specific as well: Sports team? School project? Choir? Theater show? Other club?

Whenever you work on a team with other people, you can do things you can’t do on your own. But working with other people also brings challenges of communicating, working effectively with each other. Today we’re going to do an activity where we will see some of those challenges, and also learn how to work better on a team.

## Introduction

The initial introduction to the activity should be brief – just enough to describe to the students the logistics and goal of the “Zoom” activity:

* We have a set of pictures that tell a story as they progressively zoom out
* Everybody gets 1 picture
* *You cannot show your picture to anyone else*
* Put yourselves in order based on the pictures
  + *(The numbers on the back are random and don’t mean anything)*
* 5 minute time limit
* Line up in order as best you can when the time is up

## Ordering Activity – “Zoom”

*Desired Outcome: Students have experience in a situation where they must work with people who have different perspectives but are only able to communicate using words. Allow the students to struggle as a group, creating a desire to learn and improve.*

1. Pass out the pages to students face-down
2. Instruct students to look at their own picture without showing anyone else. (They should hold it against their chest, with their arms crossed)
3. Indicate where the students should line up in order
4. When students are ready, start the timer in the slides.
5. During the activity, observe students and, if needed, help encourage them. Note that this round of the activity is intended to be a struggle – the rest of the lesson will help the students figure out a more effective way to do the activity together.
6. Give students a 1-minute and 30-second warning as the time nears the end.
7. When the timer runs out, go to the “time’s up” slide, and students to stand in one line in order as best they can.
8. Gauge students’ experience of the activity by having them show on a scale from thumbs up to thumbs down how well they think they did.
   1. Use the reference table on the slides to have students check if they have the correct numbers next to them
   2. Emphasize that they should not move into the correct order – only check with the two people next to them if they’re correct.
   3. They should find their number in the top row of the table, and the two numbers below should be the people before and after them if they are in the correct order
9. Poll students to see how they did – how many have 2 right? 1 right? 0 right?
10. Collect the cards and have students return to their seats.
11. Play the 35 second video in the slides showing the correct progression of the “story” told by the book.

## Discussion of Ordering Activity

*Desired Outcome: Students recognize that it is hard to work together when you can’t see another person’s perspective, and that it can be difficult to communicate your own perspective to someone else.*

1. Pass out worksheets to students
2. Put students in groups of 3-4.
3. Have them answer the two questions in the first section by discussing with their groups.
4. Allow 3-5 minutes to discuss.
5. Bring the class back together and discuss the questions with the whole group.

## Mini-lesson on perspective taking and sharing

*Desired Outcome: Students can use the term “perspective” and give examples of different perspectives. Students learn a way to describe, share, and relate different perspectives.*

1. Today, we’re going to learn about perspectives. What do you think a perspective is?
   1. 1 minute pair share of their definition of perspective
2. **Perspective** – a lens through which we look at something. Can be a thing, an event, a person, a place, or an idea.
3. Examples of perspectives
   1. Vase/2 faces
      1. Ask: How many of you see a vase? How many of you see two faces?
      2. It’s one image, but can be seen in two totally different ways
   2. Maps
      1. What can be seen in the 2-D map view, but not in the 3d map view?
         1. Names of forests, roads, more names of cities, etc…
      2. What can be seen in the 3-D map view, but not the 2-D one?
         1. Elevation, types of foliage, shape of different landmarks, etc…
      3. In what applications would you use each of these maps?
         1. 2-D: Navigation, etc.
         2. 3-D: checking climates, looking for elevation changes, etc...
   3. Ask some students to share their examples of different perspectives
4. Perspective Taking and Sharing Process: 3 steps
   1. Describe your perspective
      1. What things do you see?
   2. Encounter a different perspective
      1. Ask someone else to describe their perspective
   3. Compare the perspectives
      1. What is shared?
      2. What is different?
5. Walk through of process with examples
   1. Step 1: Describe your perspective
      1. Show students the image and give them an example of identifying the central parts and background of the image
      2. Show students the second image and have them work in their groups to identify the central parts and the background (on worksheet)
   2. Step 2: Encounter another perspective
      1. First, describe the Perspective #1 image to students succinctly
      2. Then, ask them to describe the Perspective #2 image based on their group discussions
      3. Reveal the descriptions of Perspective #2 on the slide after the groups have shared
   3. Step 3: Compare the perspectives
      1. Have students work together in groups to compare the perspectives, answering the two questions on the worksheet
         1. *What parts do the two perspectives have in common?*
         2. *Describe the parts the two perspectives share.*
      2. Have the students share as a class their answers to these questions. Then, reveal the descriptions on the slide.
      3. Discuss the third question on the side: what can we conclude about the relationship between these two perspectives?
         1. The main conclusion is that #2 is a zoomed-out version of #1

## Develop strategy for 2nd round of activity

*Desired Outcome: Develop a strategy to approach the activity based on the perspectives taking process taught in the lesson.*

1. Ask students for ideas of how the activity can be done better the second round.
2. Present the steps in the slides based on the method taught in the mini-lesson:
   1. *Identify the central parts of your picture*
   2. *Find other people with the same parts*
   3. *Talk with them and describe in more detail to determine the correct order*
      1. *How do the sizes of the parts your pictures have in common compare?*

## Activity 2nd round

*Desired Outcome: Students practice the perspective taking and sharing process they learned in the lesson.*

1. Pass out the pages to students face-down
2. Instruct students to look at their own picture without showing anyone else. (they can hold it close to themselves)
3. Indicate where the students should line up in order
4. When students are ready, start the timer in the slides.
5. During the activity, observe students and, if needed, help encourage them. Note that this round of the activity is intended to be a struggle – the rest of the lesson will help the students figure out a more effective way to do the activity together.
6. Give students a 1-minute and 30-second warning as the time nears the end.
7. When the timer runs out, go to the “time’s up” slide, and students to stand in one line in order as best they can.
8. Gauge students’ experience of the activity by having them show on a scale from thumbs up to thumbs down how well they think they did.
   1. Use the reference table on the slides to have students check if they have the correct numbers next to them
   2. Emphasize that they should not move into the correct order – only check with the two people next to them if they’re correct.
   3. They should find their number in the top row of the table, and the two numbers below should be the people before and after them if they are in the correct order
9. Poll students to see how they did – how many have 2 right? 1 right? 0 right?
10. Collect the cards and have students return to their seats.
11. Play the 35 second video in the slides showing the correct progression of the “story” told by the book.

## Discussion and wrap-up

*Desired Outcome: Students recognize how applying the systematic method for describing, sharing, and relating perspectives helps them to better work together to order the images.*

1. Have students discuss the final two questions on the worksheet in their groups.
2. Allow 3-5 minutes to discuss.
3. Bring the class back together and discuss the questions with the whole group.
4. Share the final slide about the relevance of perspectives in life:
   1. *Work better in groups*
      1. *Every person has a different perspective*
   2. *Solve problems more effectively*
      1. *Sometimes you have to change your perspective to solve a problem*
      2. *Some problems can only be solved by combining multiple perspectives*

Zoom! – Student Worksheet

**Your Name:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Team Member Names:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Team Name:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Group Discussion – Round 1

What was your initial reaction to this activity? Have you done anything like this before? How did you approach it?

How did you work with others to find your correct place? What obstacles did you face in finding your correct place? (Describe what you were thinking, saying, and/or doing)

# Describing and Sharing Perspectives

Step 1: Describe the perspective.   
What are the central parts? What is in the background?

Step 3: Compare the perspectives  
What parts do the two perspectives have in common?

Describe the parts the two perspectives share.

# Group Discussion – Round 2

How did your approach change in the second round compared to the first? (Describe what you were thinking, saying, and/or doing)

Imagine you are part of a team designing a new middle school building.

What different perspectives can you take?   
Why is it important to look at this problem from different perspectives?

# Zoom and Re-Zoom Activity Reference Numbers

The tables below present the correct order of the cards for the Zoom and Re-Zoom activities. The columns are as follows:

* **Order**: The position of the card in the sequence
* **Ref #**: The reference number printed on the card

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Zoom** | | |  | **Re-Zoom** | |
| **Order** | **Ref #** |  | | **Order** | **Ref #** |
| 1 | 20 |  | | 1 | 24 |
| 2 | 32 |  | | 2 | 16 |
| 3 | 26 |  | | 3 | 27 |
| 4 | 13 |  | | 4 | 37 |
| 5 | 23 |  | | 5 | 18 |
| 6 | 39 |  | | 6 | 31 |
| 7 | 33 |  | | 7 | 34 |
| 8 | 10 |  | | 8 | 26 |
| 9 | 25 |  | | 9 | 11 |
| 10 | 36 |  | | 10 | 22 |
| 11 | 15 |  | | 11 | 35 |
| 12 | 16 |  | | 12 | 29 |
| 13 | 24 |  | | 13 | 19 |
| 14 | 30 |  | | 14 | 12 |
| 15 | 19 |  | | 15 | 21 |
| 16 | 34 |  | | 16 | 10 |
| 17 | 38 |  | | 17 | 28 |
| 18 | 17 |  | | 18 | 30 |
| 19 | 29 |  | | 19 | 33 |
| 20 | 27 |  | | 20 | 14 |
| 21 | 31 |  | | 21 | 39 |
| 22 | 21 |  | | 22 | 25 |
| 23 | 11 |  | | 23 | 36 |
| 24 | 18 |  | | 24 | 15 |
| 25 | 37 |  | | 25 | 20 |
| 26 | 12 |  | | 26 | 23 |
| 27 | 28 |  | | 27 | 13 |
| 28 | 14 |  | | 28 | 38 |
| 29 | 22 |  | | 29 | 40 |
| 30 | 35 |  | | 30 | 32 |
|  |  |  | | 31 | 17 |