



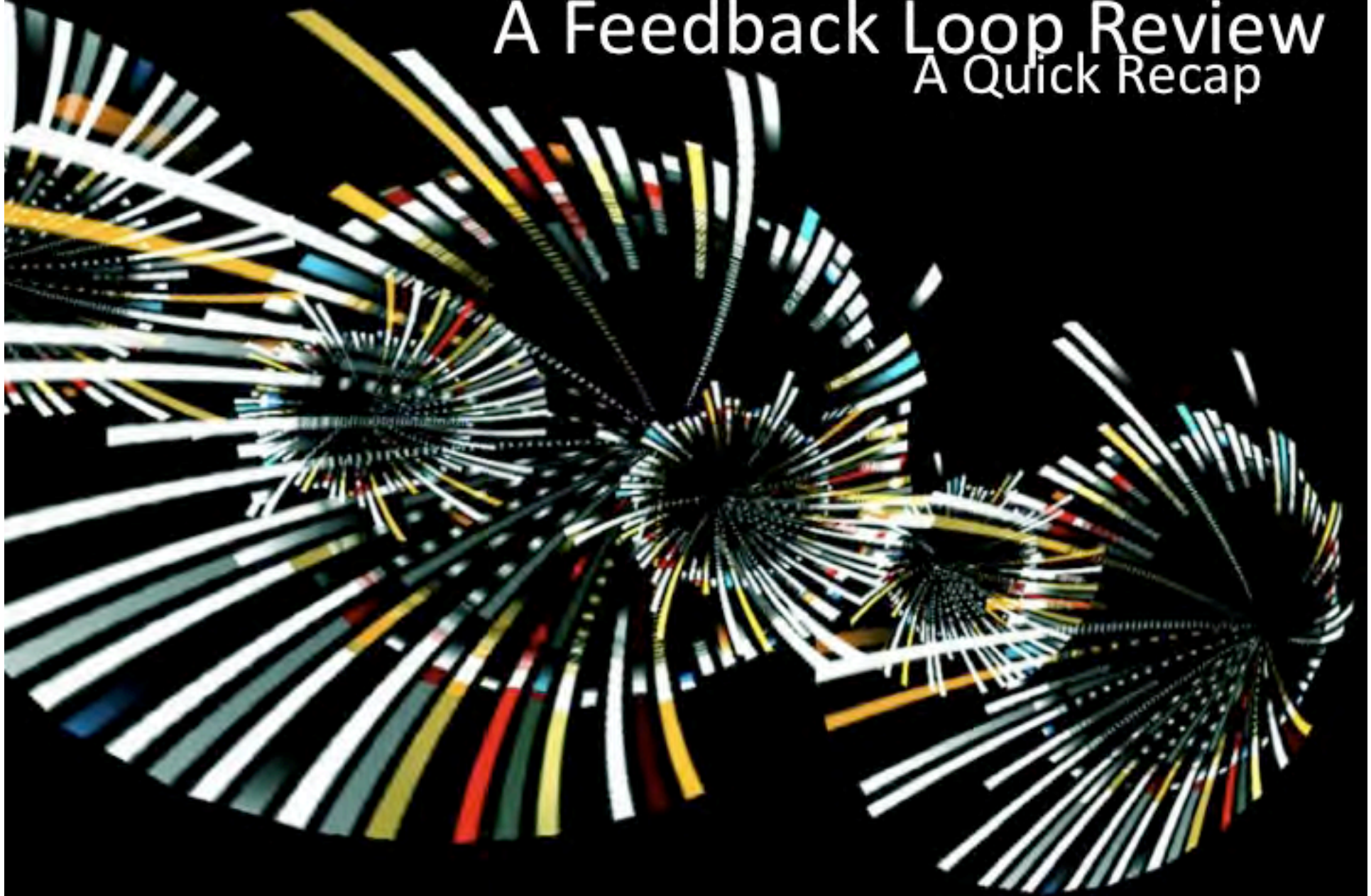
# Welcome and Good Morning Systems Thinking School Leaders

After getting some breakfast and finding a seat, please sit at an “Archetype table” and begin to review the colored sheets of your packet.



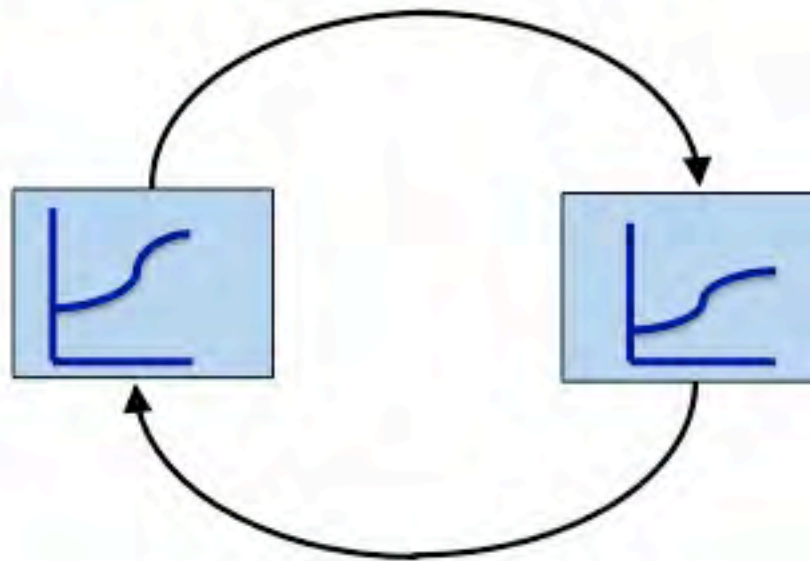
# A Feedback Loop Review

## A Quick Recap





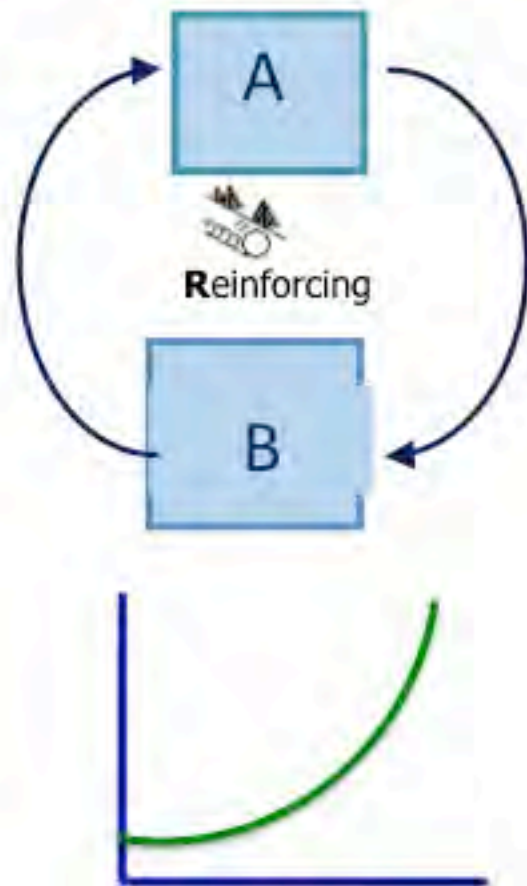
Causal Loop Diagrams (CLDs) show circular causal relationships (feedback) within a system. CLDs can show “how” and “why” a system operates the way it does.



There are two basic types of feedback:  
**Reinforcing** Feedback and **Balancing** Feedback

# Reinforcing Feedback

## Reinforcing Feedback



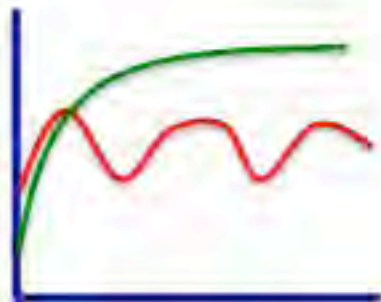
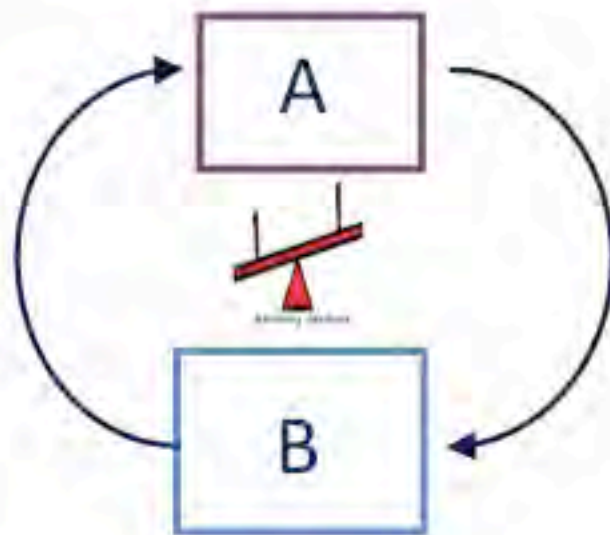
- “Things are getting out of control!”
- “I can’t keep up!”
- “We are really on a roll now!”
- “It’s spreading like wild fire!”

# Examples of Reinforcing Feedback

- Rumors: “I told only one person, but soon everyone knew!”
- Avalanche: “It was like a snowball gathering mass and momentum.”
- Virus: “Only few had the virus at first, but soon it became an epidemic.”
- Fads: “That fashion fad caught on quickly because soon everyone had to have it.”
- Success breeds success: “I just observed systems thinking strategies in my colleague’s school. I was so impressed with the way children were communicating their thinking! We need to learn more and implement.”

# Balancing Feedback

## Balancing Feedback



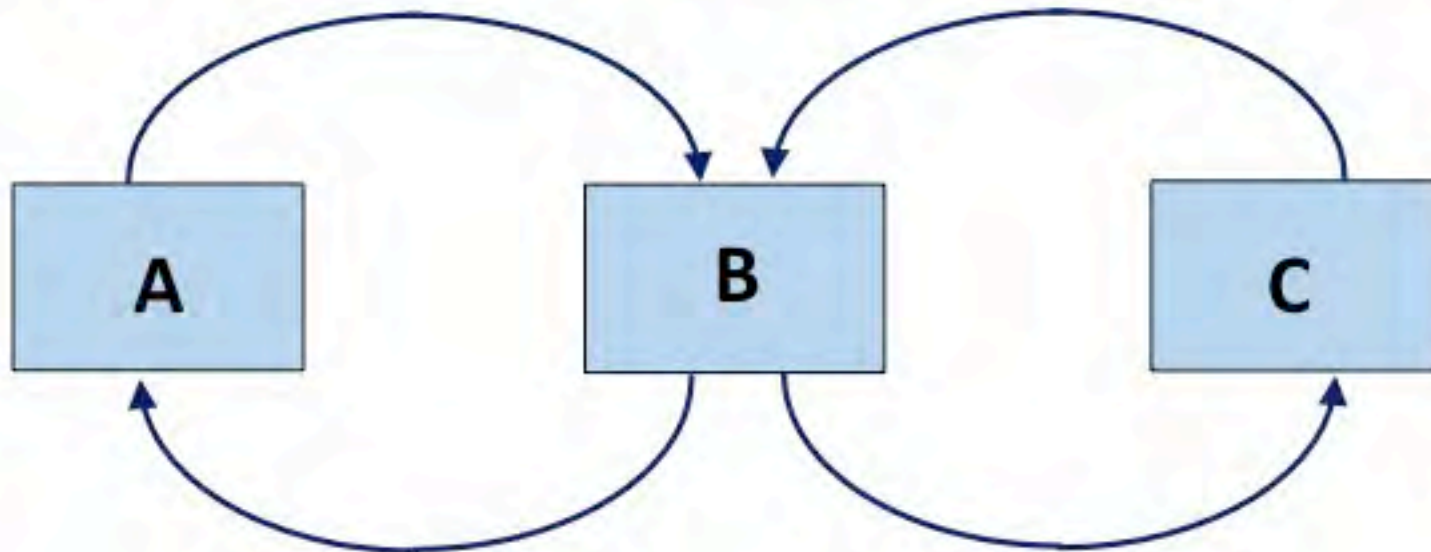
- “We are experiencing some subtle ups and downs.”
- “I can sense that things are beginning to settle down.”
- “We seem to be achieving balance and stability.”
- “Our system is close to reaching our goals.”



# Examples of Balancing Feedback

- Room temperature: “When the thermostat is working, the room temperature tends to be constant when it is hot outside.”
- Exercise: “When I play basketball, my cardiovascular system and muscles are working very hard. I appreciate timeouts that give me short rest, and then I am able to get back in the game and play hard again.”
- Supply and demand: “When fewer items are available, the price can be high, but when many are available, they tend to go on sale.”
- Television volume: “Sometimes I have to turn the volume down during commercials to keep the volume at a constant rate.”
- Achieving a goal: “We are working hard to achieve our goal by providing professional development to members of our school staff.”

## Systems Thinking Archetypes tell stories using both reinforcing and balancing feedback



**System Archetypes** use causal loop diagrams to show generic stories - common patterns or structures that show up again and again in different settings. They can help identify the effects of action and potential consequences.



# Causal Connections

- When you see a “+” or a “-” at an arrowhead, it indicates the nature of the causal relationship.
- A “+” means that the cause amplifies or adds to the effect in the same general direction.
- A “-” means that the cause slows down or subtracts from the effect and in many cases, in the opposite direction.



# Habits of a Systems Thinker

Seeks to understand the big picture



Observes how elements within systems change over time, generating patterns and trends



Recognizes that a system's structure generates its behavior



Identifies the circular nature of complex cause and effect relationships



Changes perspectives to increase understanding



Surfaces and tests assumptions



Considers an issue fully and resists the urge to come to a quick conclusion



Considers how mental models affect current reality and the future



Uses understanding of system structure to identify possible leverage actions



Considers both short and long-term consequences of actions



Finds where unintended consequences emerge



Recognizes the impact of time delays when exploring cause and effect relationships



Checks results and changes actions if needed: "successive approximation"





# Archetype Jigsaw

- Each table is responsible for reviewing and learning a different systems thinking archetype. The colored sheets of your packet indicate the archetype of which your table is responsible:
  - **Fixes that Backfire (Blue)**
  - **Limits to Success (Purple)**
  - **Shifting the Burden (Pink)**
  - **Drifting Goals (Melon)**
  - **Escalation (Yellow)**
  - **Success to the Successful (Green)**
- Table groups have 15 minutes to review your assigned archetype and discuss it at your table. Be prepared to tell the story of the archetype and provide at least 1 or 2 examples of where it might apply to school leadership.
- At approximately 8:10, we will physically jigsaw by moving to the table designated by the colored paper clip on your archetype packet (white, blue, green, yellow, pink, or red). The silver clips are wild cards—sit where you like.
- Each person will facilitate a mini-lesson of his/her archetype.  
(10 minutes each)





# The Bean Game



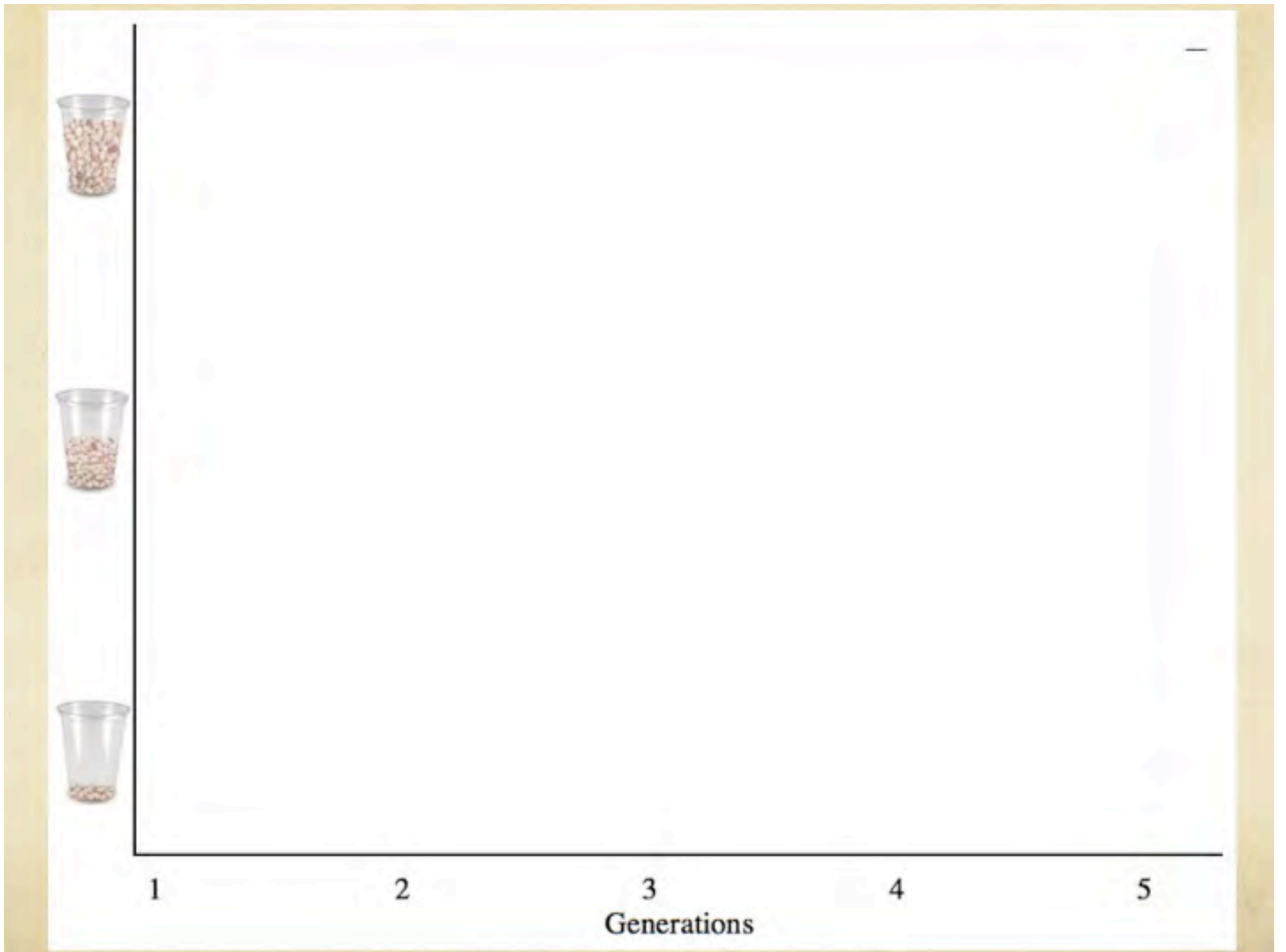
A Role-play simulation

# Activity Details

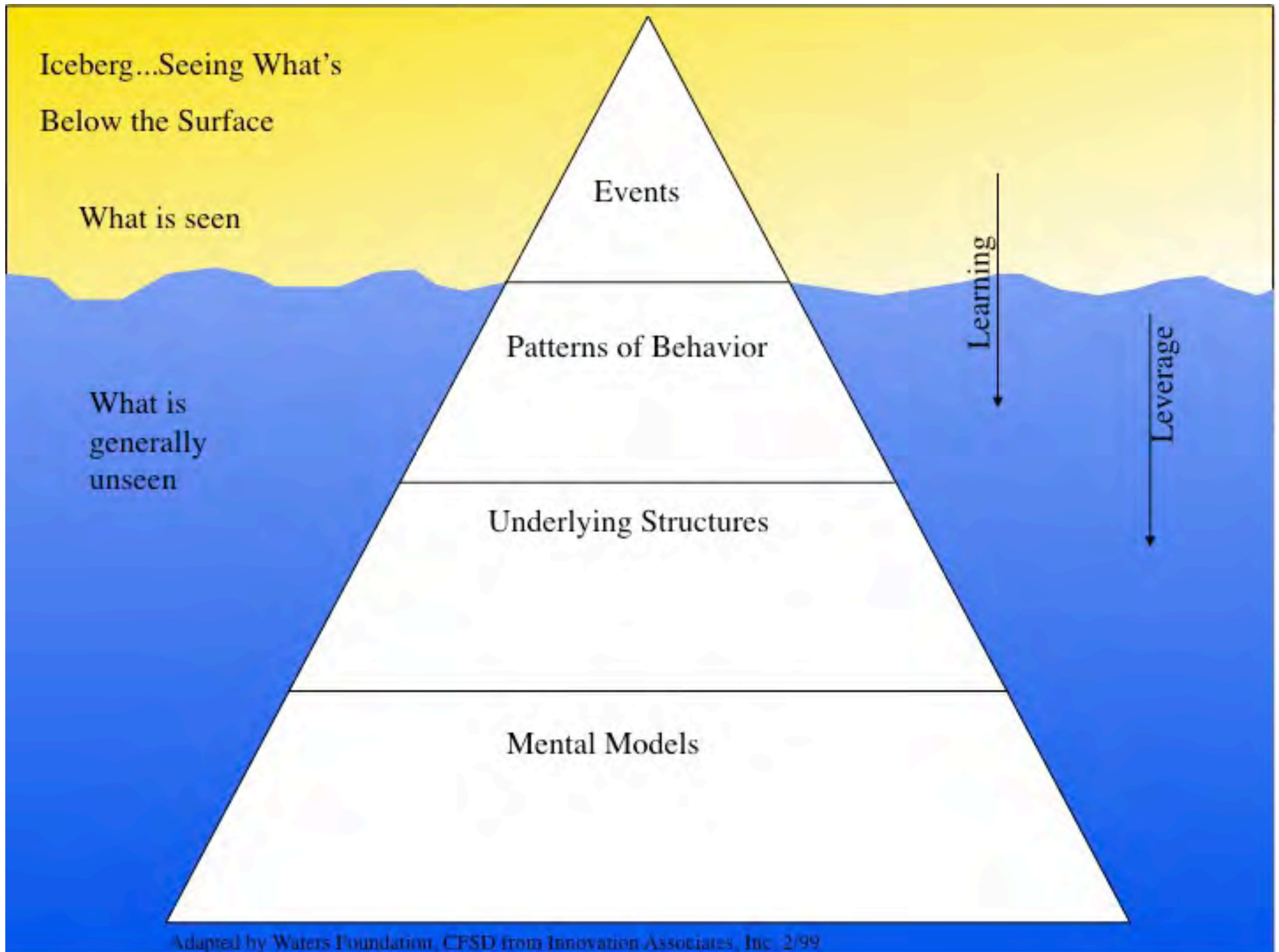
- 5 people per table/group with each person representing a different generation (Great great grandparent, Great grandparent, Grandparent, parent, child)
- Large tub with beans representing natural resources needed for survival
- Utensil for your family

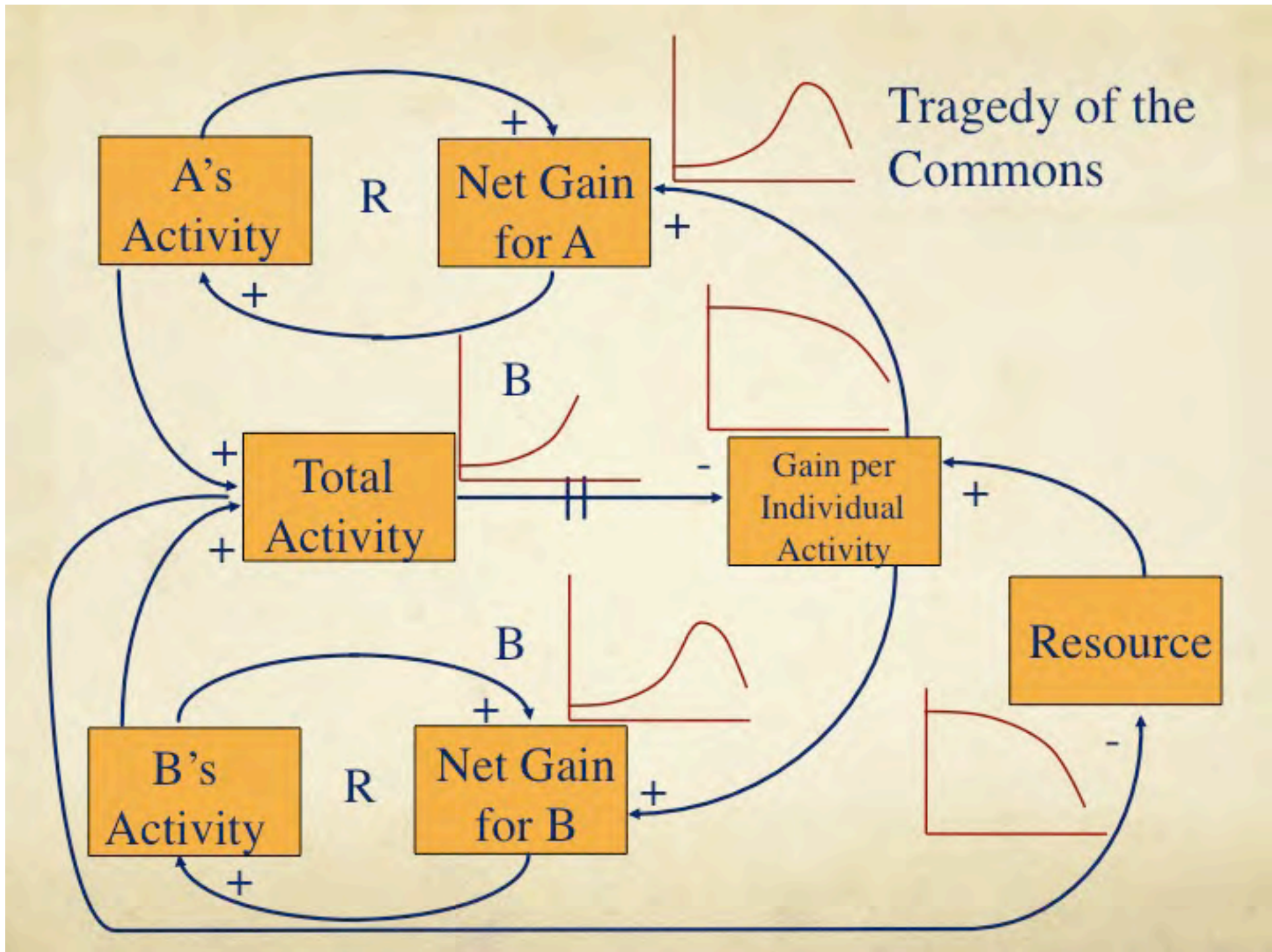
During each round:

1. A generation can extract natural resources for ten seconds using the family's utensil.
2. Graph results for each generation

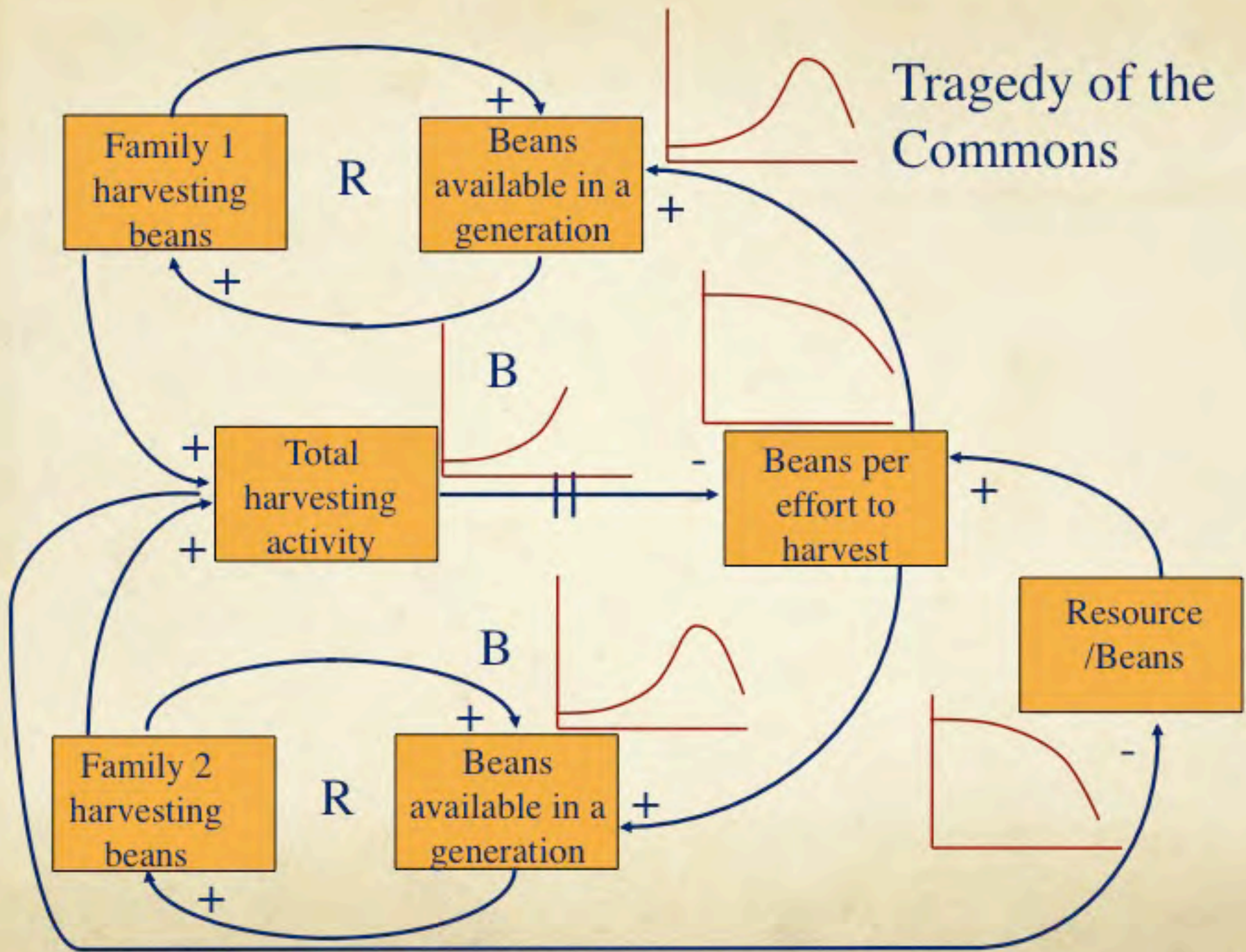






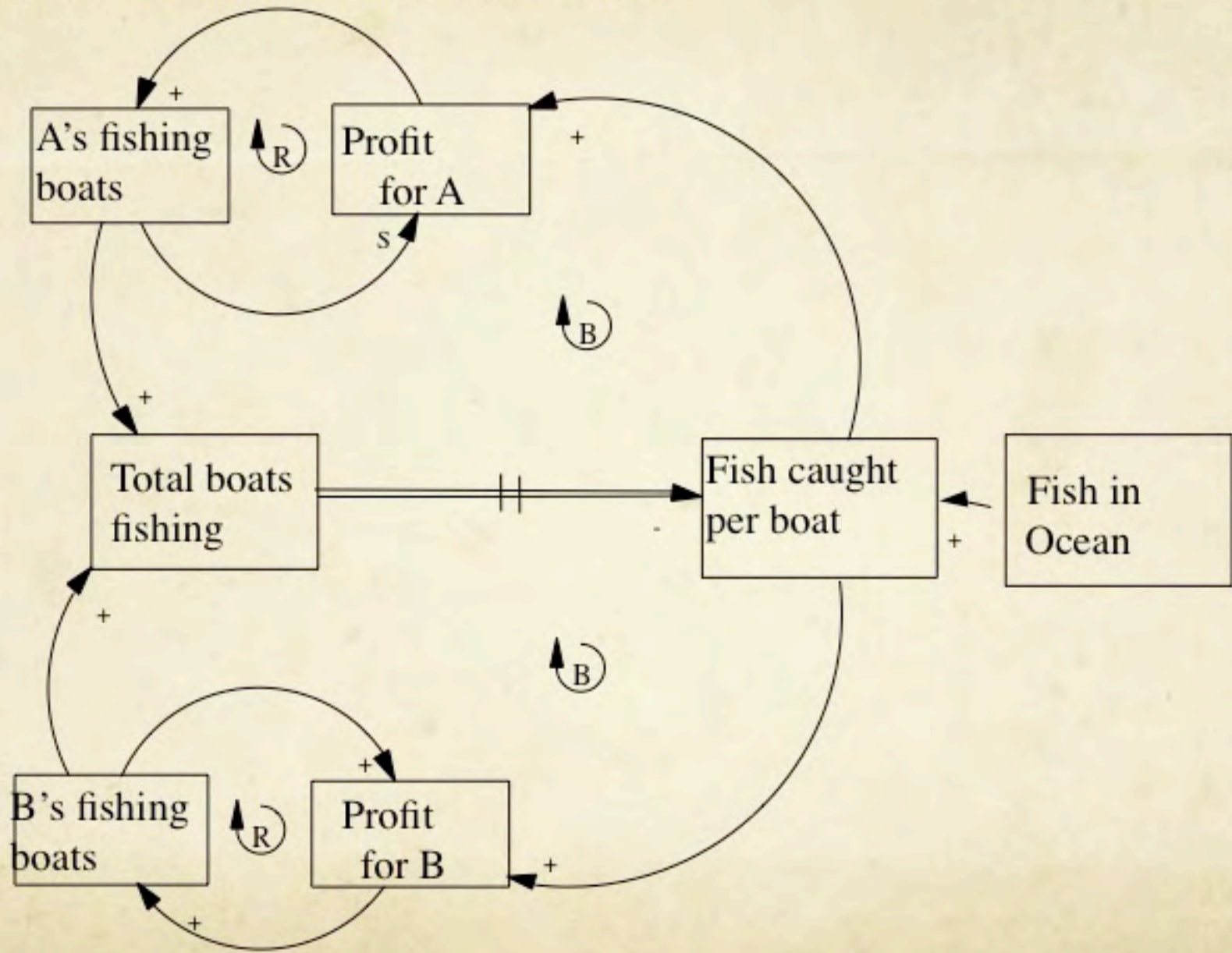


# Tragedy of the Commons

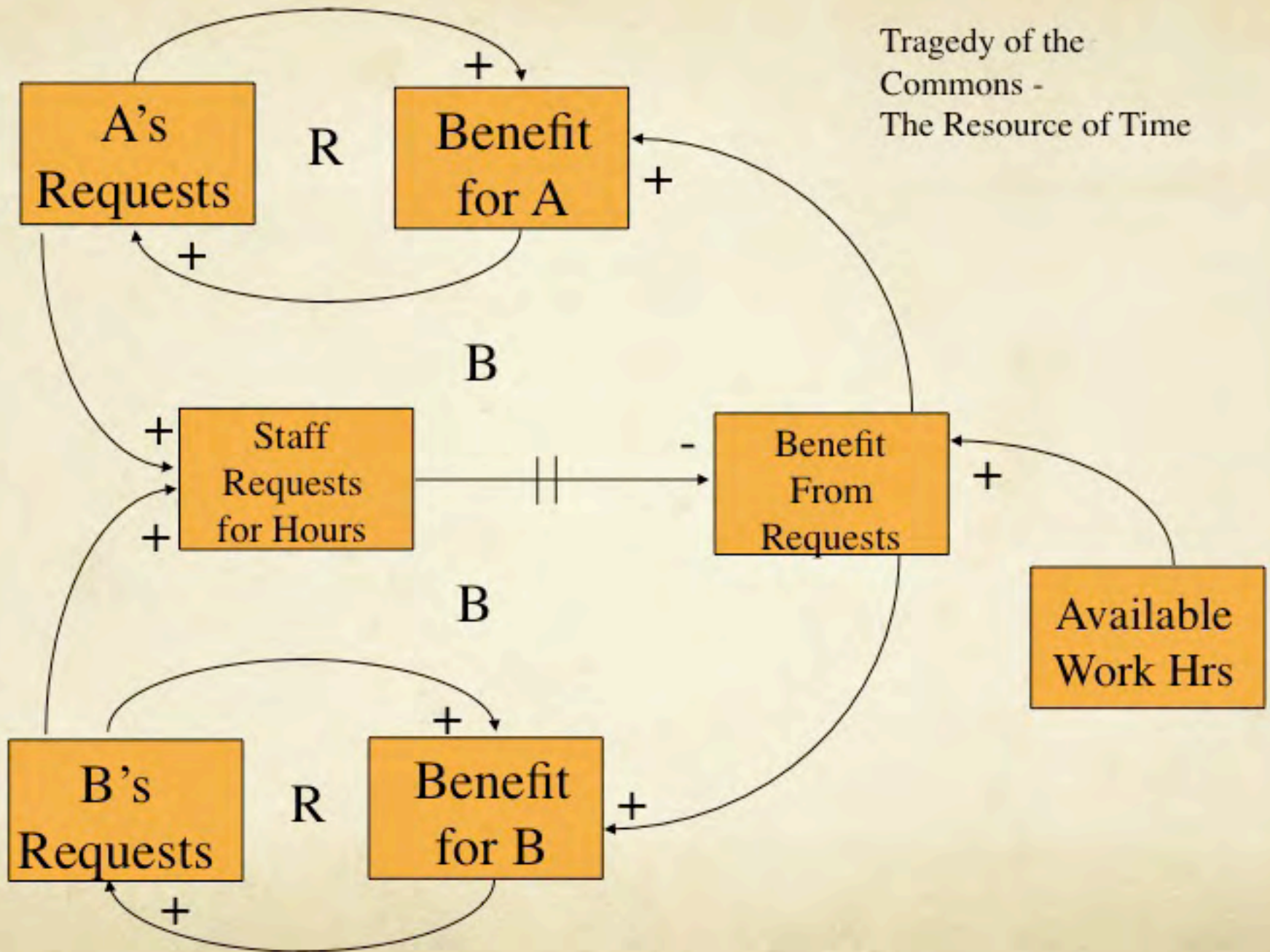




# Tragedy of the Commons - Middle School Science



Tragedy of the Commons -  
The Resource of Time





**What are your limited resources?**

**Where are the “commons” in your system?**





**Represent one of your resources (commons) using the tragedy of the commons archetype and consider how this activity/representation might enable a conversation about resource use.**

## Next Session: Tuesday, January 12th

- Reading Assignment: *Thinking in Systems*, Chapter 7, “Living in a World of Systems,” pp 166 - 185.
- For this last session, you will be expected to share one example of how you have applied (a habit, tool, exercise or strategy) to your work as a school leader.