

Using Systemic Communication to Improve Problem Solving

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**How well are students able to understand
and operate in a complex system in order
to achieve a desired result?**

This workshop will allow you to experience
what 7th grade students did as they used
systems thinking tools to:

- Evaluate information
- Evaluate problem solving strategies
- Improve questioning strategies
- Increase structural understanding of a complex system there by increasing their leverage within that system

Systems Thinking Tools

- Behavior-over-time-graphs (BOTGs)
- Ladder of Inference
- Iceberg
- Systemic communication

Systemic Communication is a communication strategy that

- Blends Jay Forrester's definition of systems thinking -a way of looking at the world to understand better how the past led to the present and how present actions control the future
- With Peter Senge's idea of dialogue - a process of collective thinking and inquiry, a process transforming the quality of conversation and, in particular, the thinking that lies beneath it

Systemic Communication (cont)

- To create a process of collective thinking and inquiry that leads to better understanding of how the past led to the present and how present actions control the future

History

- Of the unit
- Of Zork

Interactive Fiction

Project Z

What is Zork?

Zork is a robotic character and you are its control central! This is an interactive fictional story where you help the character through its conflicts and take it through the story. You won't be able to help learning as you go, so put on that thinking cap!

Objectives:

General:

- Use context clues to identify new words
- Make inferences and draw conclusions
- Identify facts
- Follow written directions
- Make decisions and solve problems based on written information
- Read for information
- Transform written information to graphic data and back; mapping
- Develop vocabulary
- Summarize
- Synthesize
- Build questioning skills
- Work together as a class

Specific Literature:

- Cognitive strategy for finding critical questions in literature
- Literary analysis

Cooperative Skills:

- Stay with group
- Communication
- Participation by all
- Direct group work
- Express support
- Ask for help

REQUIREMENTS:

Groups must work together to gain points through the reading of Zork.
Grade will depend on the following:

1. Accuracy of Group Zork Map (20)
2. Individual rough map (5)
3. Journal: * Records the exact place where you got your points and how
 - * Matches with the amount of points you have on screen
 - * Contains a running BOTG of your points by day
 - * Contains an entry for every RAAD discussion
 - * Can be used in any other helpful way your group decides on (You can use it to help keep track of where you leave items). (20)
4. RAAD discussion (10)
5. Communication and Collaboration with partner (10)
6. Communication and Collaboration with small group (5)

7. Game Points:
 300 - 350 20 points
 250 - 200 15 points
 150 - 199 10 points

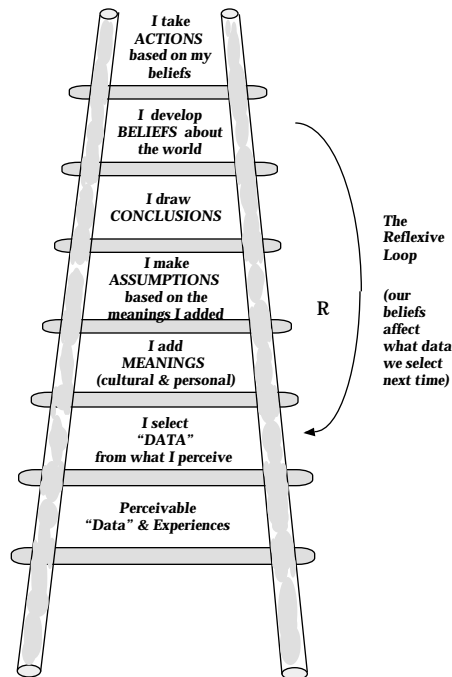
Total Points: 90

A+ 98 - 100 points
 A 94 - 97 points
 A- 90 - 93 points
 B+ 87 - 89
 B 84 - 86
 B- 80 - 83
 C+ 77 - 79
 C 74 - 76
 C- 70 - 73

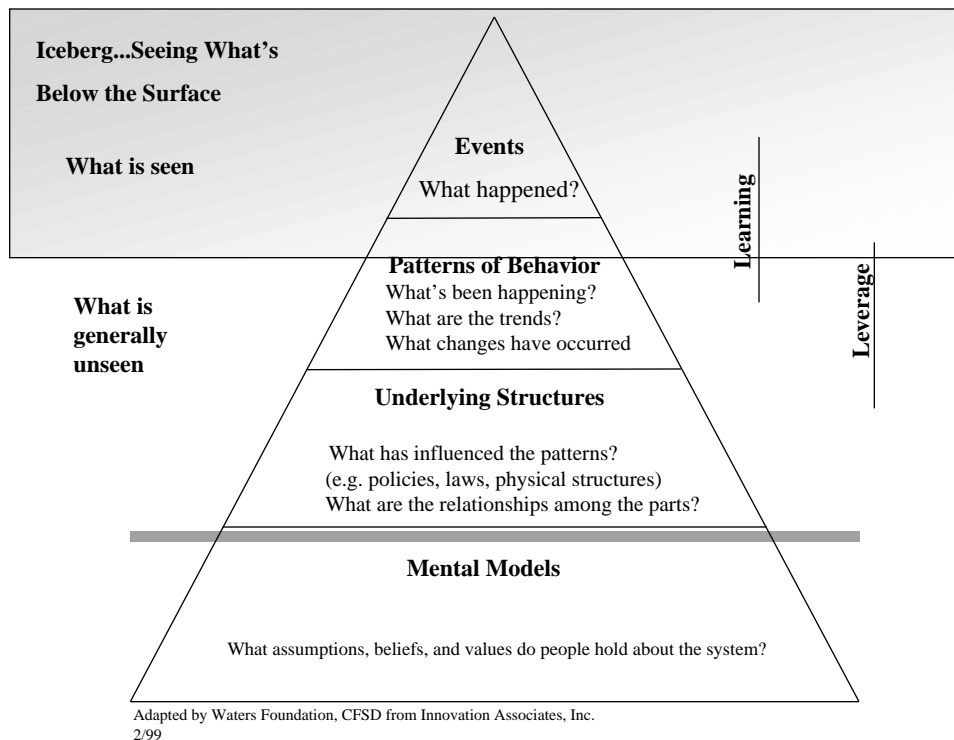
So, you may be asking, *How do I get an A or A+?* It's easy. For each group of four that completes the game in all of Ms. Dean's classes, every group will receive an additional point. Here's a tip, there will be anywhere from 18 to 21 groups of four. You do the math!

Good Luck!

Ladder of Inference



Adapted from The Fifth Discipline Fieldbook Last modified - 1/1999



Journal entry

- How are you doing? (BOTG)
- What were your most successful and least successful strategies?
- How has your thinking changed?
- How does Zork relate to real life?
- What do you think of this unit?

What the kids said:

- “(Zork) taught people better writing skills, new words, & showed us to work together.”
- “I’ve become much more organized and I work in a logical order....I’ve been working together in groups and joining forces with other people.”
- “Our least successful strategy was to think that we could finish all by ourselves, thinking that everything we did was right. Our most successful strategy was to be open-minded.”
- “It was fun and it taught us to work with others. It was challenging but it kept my interest.”

- “Our thinking has changed tremendously during Zork. We have started to save before every possibly dangerous move, when 2 weeks ago we would have taken the risk. We are more cautious and careful and think things through before acting them out.”
- “Our graph skyrocketed up in points, and our strategy is working well. Our strategy right now is basically save, listen to directions, and pay attention to the small things around us.”
- “Our strategies were basically helping other people and in turn they helped us. Sometimes we took advice from untrustworthy people.”
- “Our bad strategies were doing things too fast and not thinking about what we are doing.”

- “Teamwork is the key to success!”
- “It is important to consider all the facts/elements, It is a good exercise for someone who wants to be a lawyer.”
- “I have become more patient + I have learned how to better deal with my partner. Also I think more about everything I do + I think it helps me in real life too.”
- “The Zork final really connected real life and Zork and taught us to work together.”
- “We’re doing great! We finished the game. Our graph never shows a decrease in points.”
- “My thinking has changed. Now, instead of trying to figure out how I’m going to get through the game, I see a bigger picture. I am trying to get us through as a class.”

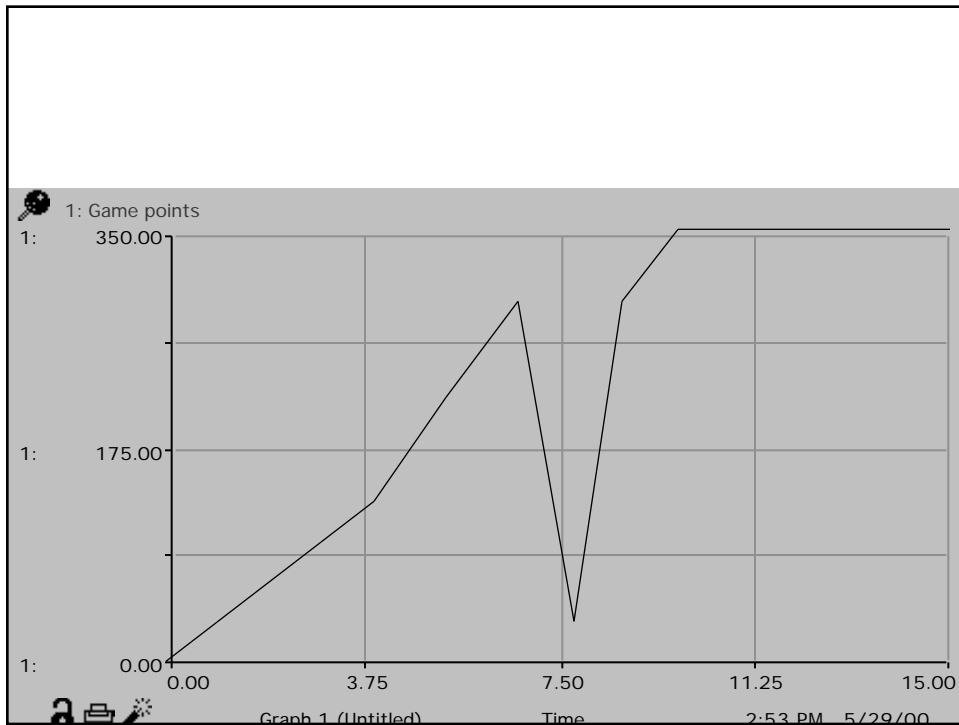
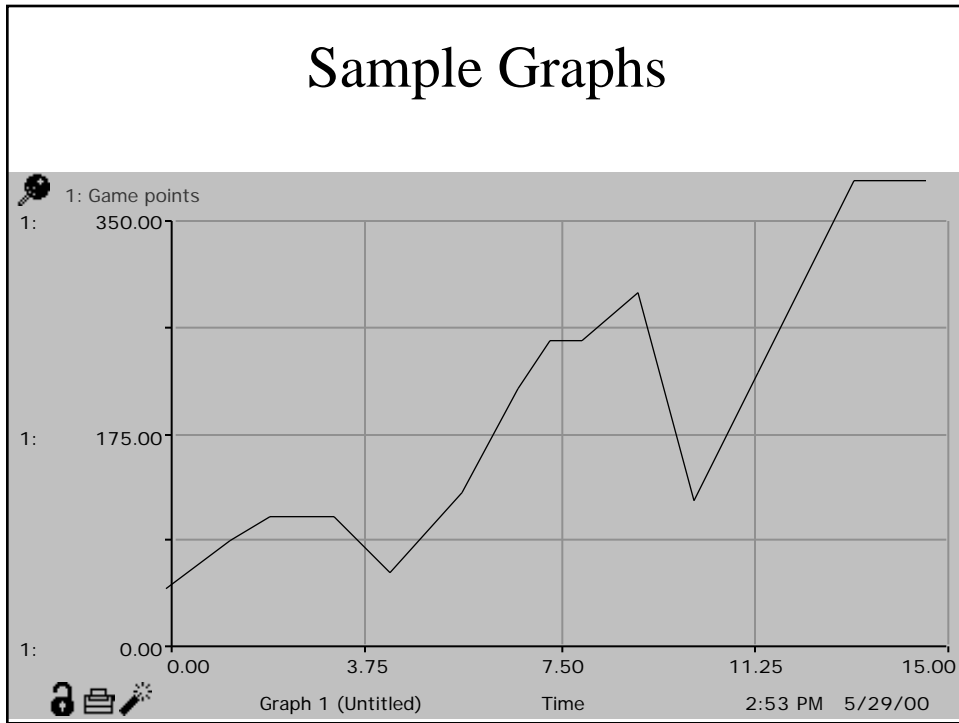
- “I think Zork made me look at everything from different perspectives it also made me think about working with groups and problem solving.”
- “In real life, if you don’t work together, you can’t accomplish much.”
- “...you learn to be more observant & you learn to work together more.”
- “I also learned to be able to survive in life, you probably need help from people. If they try to help you, you need to be able to cooperate with other people.”
- “From Zork I learned that before I say or do something stupid I should think about it first.”
- “I learned each decision you make changes everything and unlike the game you can’t restore your life to change a bad decision that you made. I learned problems always occur even when you think it will be fine.”

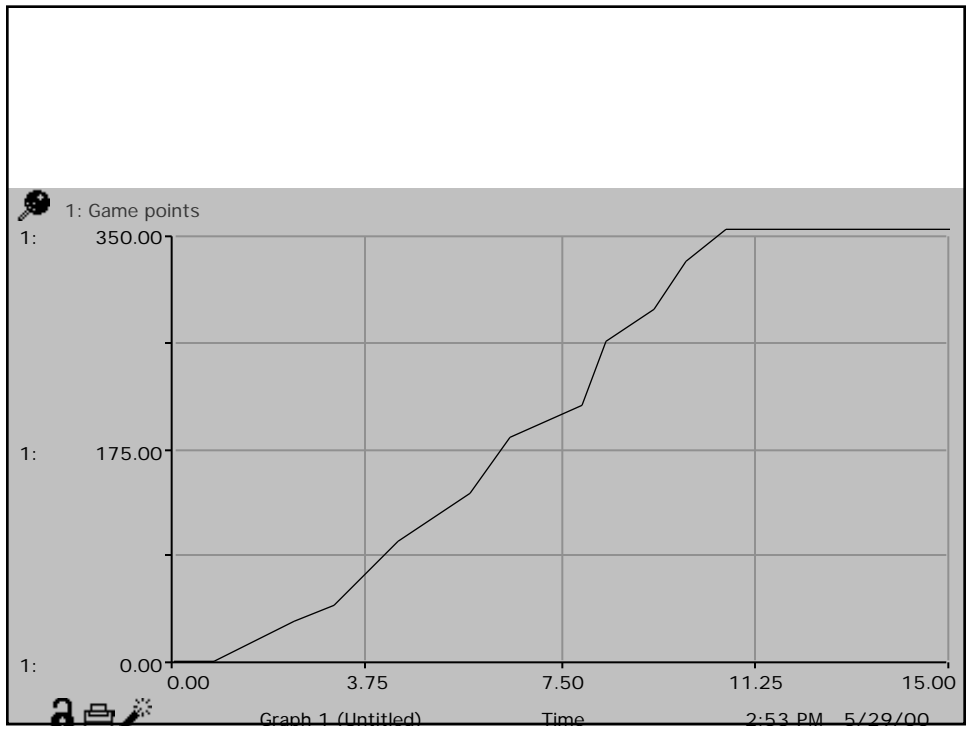
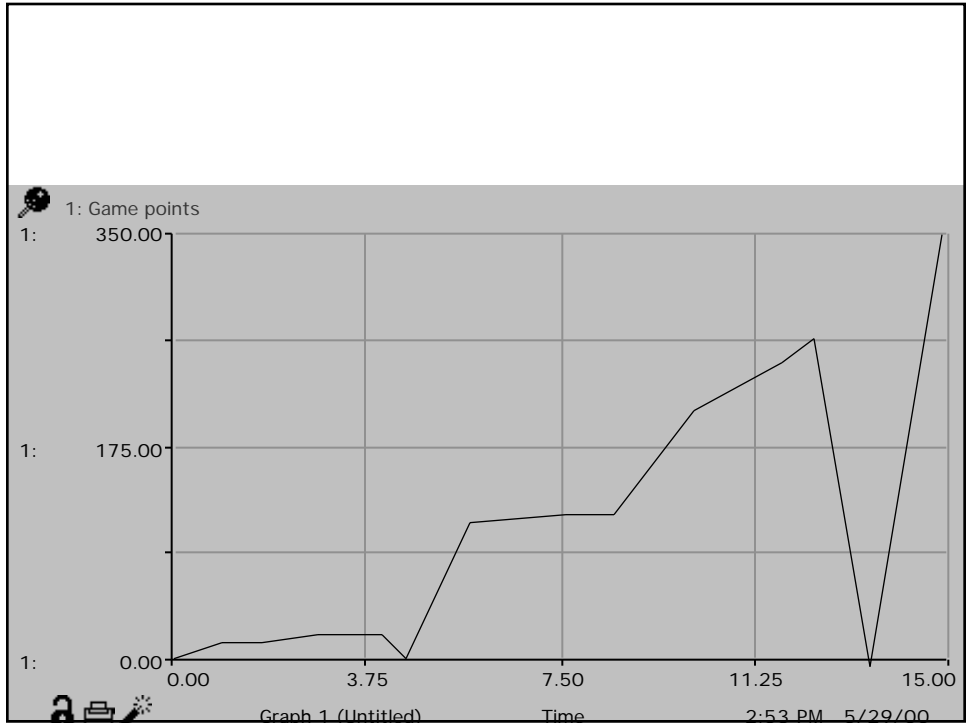
- “I think instead of being greedy, helping each other works alot better.”
- “In real life you have to have some sort of plan....”
- “I liked this unit how it prot the hole class together and not ...to leave people behind.”
- “I think that sometimes in life people get too caught up in themselves....I hope that because of this unit we won’t do that any longer instead we will help each other and in turn we will all succeed.”
- “...it started as a game and ended as a life impacting situation.”
- “In...life sometimes the direction that you need to go isn’t the direction you do go. Sometimes you can change it and go back. Sometimes you can’t.”

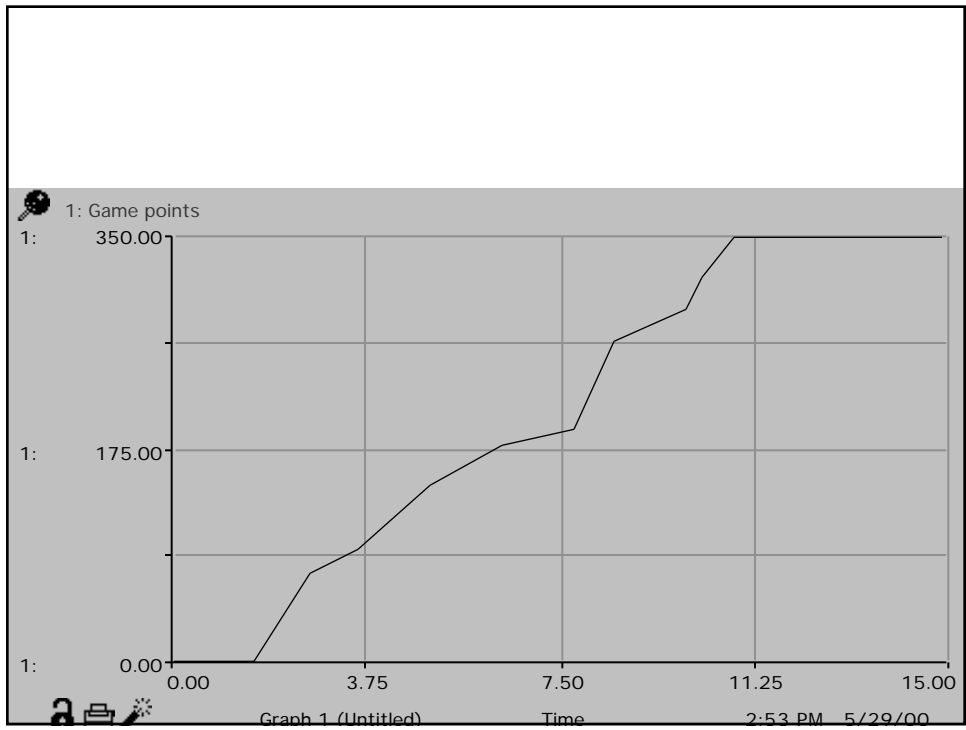
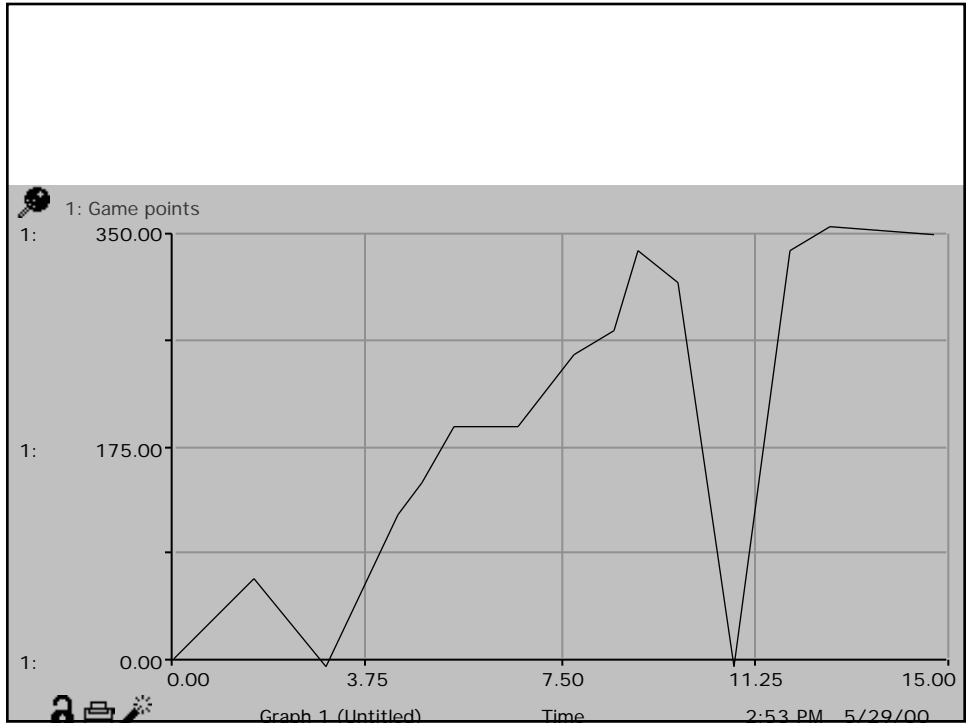
How they did:

- Out of 52 groups of four, 51 finished by day fifteen
- From the first round of RAD dialogues in 9 classes, 5 event level questions were asked, 3 pattern questions, and 1 structure question
- After the second round, 1 event level question was asked, 3 pattern, 3 structure, and 2 mental model.
- By the third round, the students figured out they didn’t need to ask us any questions any more

Sample Graphs







How they did: (cont)

- Record for the fastest game - 23 minutes
- Record for the game with the least number of moves - 331

New structures created by the students:

- Community clue board
- Community points list
- Community maps
- Talking outside of class (between classes, lunch, in other classes)
- Research (internet, older students who had played)
- Individuals and teams helped other teams that needed help
- Play the game as a class