



## Systems + *Literacy*

### WORKSHOP OUTLINE

#### Learning in the 21<sup>st</sup> Century

People are talking, a lot about the skills our children will need to thrive in the 21<sup>st</sup> century.

- What kind of future are we preparing our students for?

#### Thinking about (Living) Systems

Is everything a system? If not...

- What is a system?
- Why are the obstacles to thinking about systems?
- What are the *habits of mind* of one applies systems thinking in everyday situations?
- Where do we see these habits being encouraged or demonstrated in school?
- What are the *deeper questions* a systems thinker asks?

*Systems Thinking* can be an antidote to:

- Fragmented thought
- Jumping to conclusions
- Short-sighted decision making
- Event focus
- Excessive reductionism

*A Bold Claim:*

Systems thinking will make students better thinkers, better readers, better consumers and better citizens.

*Weaving Systems Thinking into the Curriculum Web*

Sometimes bringing systems thinking into schools has to be like bringing in a Trojan horse. It has to look like it is something else.

- Where does systems thinking fit into a curriculum web?
- Systems + *Literacy* Mash Ups: How do systems thinking and literacy skills mesh? What about Critical Thinking?
- How can teaching kids to “think about systems” improve comprehension and enhance understanding?
- What lies beyond “chain of event” maps?

### ***Using Systems Stories***

When we combine **Systems** + *Literacy*, we repurpose compelling stories (including folktales, fables, picture books and chapter books) to introduce the key concepts of systems thinking.

*A Five-Step Systems Thinking Flow:*

1. *Tell the Story* (retelling helps to improve comprehension)
2. *Name the Elements* (and build vocabulary)
3. *Describe the Changes Over Time* (create graphs)
4. *Make the System Visible* (help us see the threads of cause and effect)
5. *Test and Share* (talk with peers, make recommendations)

### **My Teachers**

Here is a short list of Literacy development resources:

Stephanie Harvey and Anne Goudvis *Strategies That Work: Teaching Comprehension to Enhance Understanding* (2000)

Hope Vestergaard, *Weaving the Literacy Web: Creating Curriculum Based on Books Children Love* (2005)

Ellin Oliver Keene and Susan Zimmermann's *Mosaic of Thought: Teaching Comprehension in a Reader's Workshop* (1997)<sup>1</sup>

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# Classroom Activities/Systems + Literacy

**More, more, more!**  
*Understanding reinforcing feedback*

**Activities:**  
Read & Compare 2 (or more) stories  
Gecko's Complaint  
Dexter Bottle Book  
Graph behavior-over-time  
Look for similar patterns

**Literacy/Critical Thinking link:**  
Ask questions  
Identify connections  
Create ladder vocabulary on graph  
Identify and visualize the "the system"  
Analyze Perspectives

**Curriculum links:**  
Language arts, social studies  
natural science

**Extension:** Run the "Living Loops" activity (ST Playbook)





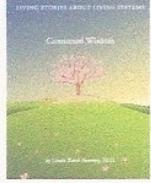

**Nothing Stands Alone**  
*Understanding interdependence*

**Activities:**  
Read & Compare stories:  
Gecko's Complaint  
The Old Ladies Who Like Cats  
Look for interconnections

**Literacy/Critical Thinking link:**  
Ask questions  
Identify and visualize interconnections  
Look for similar patterns of interconnection

**Curriculum links:**  
Language arts, social studies,  
Ecosystems/natural science

**Extension:** Run the "Web of Life" activity (ST Playbook)





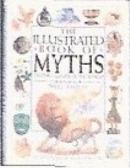
**Thinking Like a Bathtub**  
*Understanding stocks & flows*

**Activities:**  
Read folktale  
Look for similar (stock/flow) patterns in other stories

**Literacy/Critical Thinking link:**  
Ask deeper questions  
Create ladder vocabulary on graph  
Visualize the connections

**Curriculum Link:**  
Math, science, social studies

**Extension:** Play the Forster & Lambcock simulation  
[www.seed.slb.com/en/scicr/wato/n/climate\\_change/stock.htm](http://www.seed.slb.com/en/scicr/wato/n/climate_change/stock.htm)



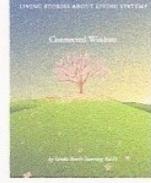

**Why You Don't Get 2 Cows If You Cut a Cow In Half**  
*Understanding Systems Integrity*

**Activities:**  
Read & Compare 2 stories  
Belly and Other Members  
Parts of the House Argue  
Look for similar patterns

**Literacy/Critical Thinking link:**  
Ask questions  
Visualize the connections

**Curriculum link:**  
Ecosystems/natural science, social studies

**Extension:** Play the "Triangles" game (ST Playbook: Vol. III)



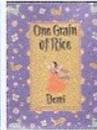

**The Power of Doubling**  
*Understanding Exponential Growth*

**Activities:**  
Read & Compare stories  
One Grain of Rice (younger)  
Sissa and the Troublesome Trifles (older)  
Look for and discuss similarity in patterns

**Literacy/Critical Thinking link:**  
Ask questions  
Create ladder vocabulary on graph  
Visualize the connections

**Curriculum link:**  
Math, science, language arts, unit on money

**Extension:** Do the "Paperfold" activity (ST Playbook: Vol. I)

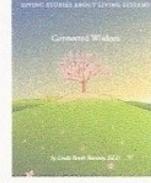




**What Goes Around Comes Around**  
*Understanding Natural Cycles*

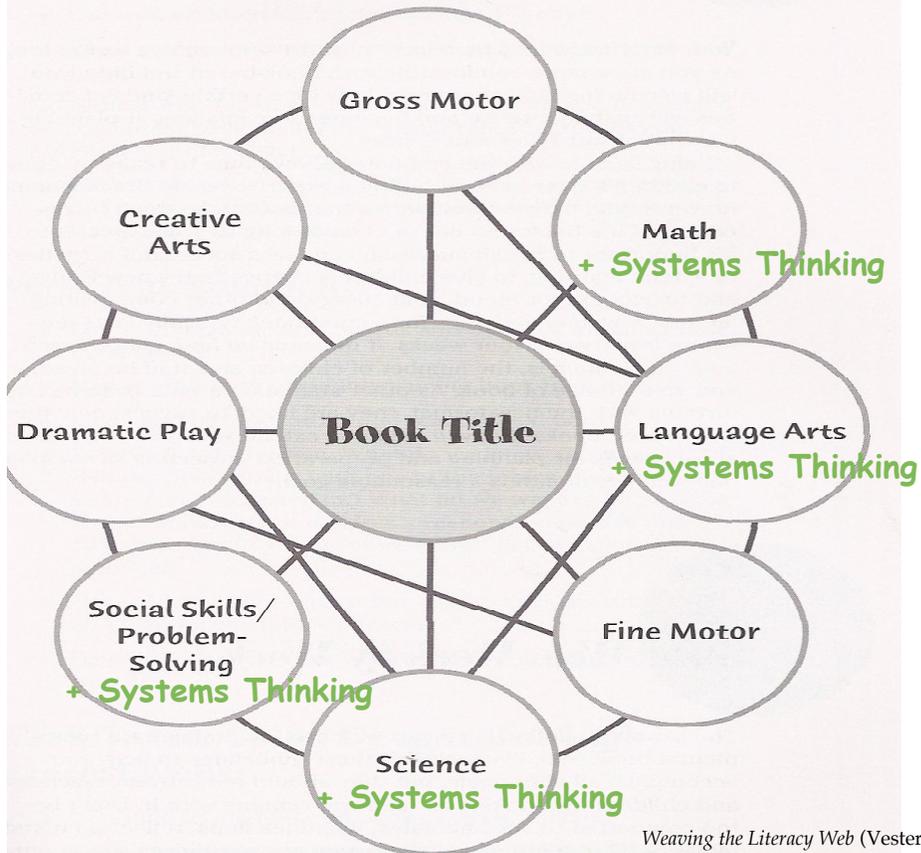
**Activities:**  
Read & Compare 2 stories  
Tale of the Sands  
The Myth of Persephone  
Look similar patterns

**Literacy/Critical Thinking Link:**  
Ask deeper questions:  
What happens when we interrupt natural cycles?  
Visualize the connections

**Curriculum Link:**  
Ecosystems/natural science, personal health



## A Basic Book Web



*Weaving the Literacy Web* (Vestergaard, 2005)

**Literacy Skills of  
Proficient Readers**  
(Harvey and Goudvis, 2000)

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**Search for connections**  
between what they know & the new information  
they encounter in the texts they read.

**Ask questions**  
of themselves, the authors they encounter, and  
the texts they read

**Draws inferences**  
during and after reading

**Distinguish**  
important from less important ideas in text

**Synthesize information**  
within and across texts and reading experiences

**Repair**  
faulty comprehension

**Monitor**  
the adequacy of their understanding.

**Visualize & create images**  
using the different senses to better understand  
what they read.

**Systems Thinking  
Habits of Mind**  
(L. Booth Sweeney, 2008)

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**Looks for connections**  
and thinks about the interrelations that  
make up the "whole."

**Asks deeper questions**  
For instance, "what happens next?"

**Pattern Collection**

**Distinguish important from less**  
important ideas in text

**Changes Perspective** to increase  
understanding

**Surfaces and tests assumptions**  
about how the world works and looks for  
how they may limit thinking.

**Makes systems visible**  
using the different senses to better  
understand what they read.