Fun & Games with Systems Theory: Interactivities for Learning

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Systems thinking became fun and games...

• Over time....since early 1990s
• Moved from reading assignment (Anderson, Carter & Lowe) to an abridged version w/ case study
• Study guide / vocabulary words
• Class case study
• Toys as demo in lecture, MIT beer game
• Experiential learning
http://beergame.mit.edu/
Kolb’s model of experiential learning

1. Concrete experience
2. Observation and reflection
3. Forming abstract concepts
4. Testing in new situations
Application of Kolb’s model

- **Concrete**: play at designated stations
- **Observation & reflection**: at each station, and through discussion with peers
- **Forming abstract concepts**: journaling about the systems principles they saw
- **Testing in new situations**: applying to a case study
## Concept Distribution

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<th>Principle 1: 3 levels of system</th>
<th>Principle 2: Connected, boundaries, energy</th>
<th>Principle 3: Equilibrium, feedback</th>
<th>Principle 4: Context</th>
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<td>YoYo &amp; Puzzle</td>
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<td>Parachute</td>
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<td>Slinky</td>
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<td>Obstacles</td>
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Principles of Systems Theory

- Principle 1: Levels of systems
- Principle 2: Systems are connected
- Principle 3: Systems maintain equilibrium
- Principle 4: Systems exist in a context
Principle 1: Levels of System Ecology:

– Microsystem
– Mezzosystem (meso)
– Macrosystem
Slinky
Microsystem

• An individual, group or family
• One’s physical state
• The smallest social interactions within primary relationships
• Usually based on enduring, intimate (close) relationships
Mezosystem

- The relationships of micro systems interacting with each other
- The client’s immediate social network
- Can include agency service delivery systems
Macrosystem

- The upper levels of a bureaucracy
- Values, cultural ideals
- Concerns of society on a large scale
Principle 2: Systems are Connected

- **Boundaries**: define a system and its internal operations
- **Open systems**: permeable; allow for growth, input, output, interactions
- **Closed systems**: no input, no interactions from outside, entropy
- **Energy exchange**: systems interact through exchange of energy
Principle 3: Systems maintain equilibrium

- **Homeostatic** balance--relatively fixed interaction pattern & rigid control on relationship patterns
  - Minimal adjustments, quick return to previous state

- **Steady state** balance--dynamic balance & favors responding to environmental change
  - Enacts flexible roles and functions, sustains these adaptations after the change has been resolved.
You maneuver around it in a quick adjustment, without changing your direction of travel, and resume your path.

Homeostatic balance
Detour

Steady state balance

• You must stop your direction of travel and change your route. May take a while.
Feedback

• Either there is no data (feedback) coming in (negative feedback = none)
• Or there is feedback (positive feedback) indicating a change (adjustment) is needed
Reinforcing feedback

http://www.systems-thinking.org/arch/arch.htm
Balancing feedback

http://www.systems-thinking.org/arch/arch.htm
Braking feedback

http://www.systems-thinking.org/arch/arch.htm
Principle 4: Systems exist in a context

• Context has two elements, time and place

• Time:
  – biological, historical and political time

• Place:
  – geographic, political and psychological place
Parachute
Before Columbine:
Macro-system=
Community, State, national beliefs & values regarding school allow Ms. Smith to take away the little knife Mike brought

After Columbine:
Macro-system=
State & national beliefs changed & legislation was passed to require that Mike be suspended 180 days if he brings a little knife
Timeline of systems perspective in social work

- Hearn, Gordon (1958, 1969)
- van Bertalanffy, (1971) (physics and biology)
- Pincus & Minahan (1973)
- Siporin (1975) (ecological systems)
- Bronfenbrenner (1979) (eco. systems)
- Payne (2005)
References


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