

Appendix A.

Prompt Progression Framework for Experiential System Dynamics Learning

Seeing What Was Invisible: Journaling, Stockfinder, and the
Emergence of Systemic Thinking in Organizational Change Education



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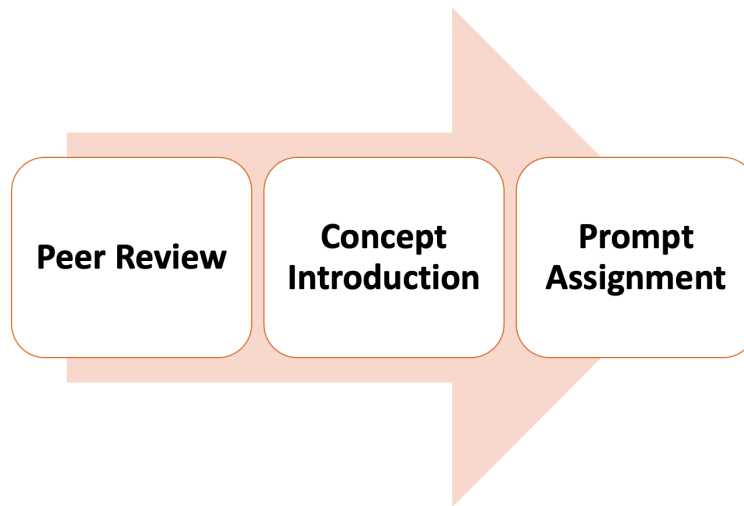
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The prompt sequence presented in this appendix builds on prior work in System Dynamics education that emphasizes **writing, observation, and real-world grounding** as pathways to developing systemic thinking. In particular, it draws on:

- the use of notebooks as a learning tool (Joy, 2003),
- Systems Thinking is a discipline centered on mental model development (Senge, 1990),
- learning through interaction and feedback (Richmond, 1993), and
- approaches that connect System Dynamics concepts to real-world observations (Fisher, 2010).

The prompts are designed as a **progressive scaffold**, guiding students from identifying accumulations to recognizing dynamic behavior and feedback structures in everyday contexts.

Importantly, the prompts were not implemented in isolation, but as part of a recurring instructional loop consisting of:



At the beginning of each session, students engaged in peer review of prior entries, exposing them to alternative perspectives and supporting the expansion of mental models. This was followed by the introduction of a new System Dynamics concept, which provided a conceptual lens for interpretation. Finally, students received a prompt to apply this lens through observation and reflection before the next session.

This iterative cycle integrates individual reflection, social learning, and conceptual scaffolding, enabling students to progressively develop systemic thinking through repeated practice.

All System Dynamics terminology used in the prompts (e.g., stocks, flows, and feedback structures) is consistent with definitions provided in the System Dynamics Glossary (Ford, 2019).

Prompt Progression:

Session	Concept	Prompt (Summary)	Objective
A1	Stocks (Accumulations)	Identify three things that accumulate in your environment. Explain why they grow or shrink and what	Introduce accumulation as a fundamental system property.

		increases or decreases them.	
A2	Endogenous & Exogenous Variables	Select one stock. Identify internal (endogenous) and external (exogenous) factors affecting it. Reflect on which has greater influence.	Develop a distinction between internal vs external drivers of system behavior.
A3	Invisible Stocks	Identify three non-visible accumulations (e.g., stress, trust, motivation). Describe how you detect them and what influences them.	Expand perception from visible to latent system elements.
A4	Flows (Inflows/Outflows)	Choose one stock and describe what increases and decreases it. Reflect on the imbalance between inflows and outflows.	Introduce mechanisms of change in accumulations.
A5	Manifest & Latent Structure	Describe what is visible in a system and what hidden elements influence it. Explain how the unseen shapes outcomes.	Build awareness of the underlying structure beyond observable events.
A6	Behavior Over Time (BOTG)	Describe and/or draw how a stock changes over time. Identify patterns (growth, decline, oscillation, etc.).	Shift from static thinking to dynamic pattern recognition.

A7	Feedback Loops (Reinforcing)	Identify processes that amplify or stabilize the system. Describe at least one reinforcing and one balancing loop.	Introduce feedback structure as the driver of system behavior.
A8	Feedback Loops (Balancing)	Identify processes that amplify or stabilize the system. Describe at least one reinforcing and one balancing loop.	Introduce feedback structure as the driver of system behavior.
A9	Integrative Review	Review earlier entries. Identify how your understanding has changed and which concepts became clearer.	Promote synthesis and integration of systemic thinking.
A10	Closing Reflection	Reflect on what you now see differently. Identify one system you understand in a new way.	Consolidate learning and mental model transformation.

Peer Review Format Used Across Sessions

Concept: Learning through exposure to others' perspectives

At the beginning of most sessions, students exchanged notebooks with a nearby peer to review the most recent entry. The peer was invited to:

- read the latest reflection,
- provide a brief written comment, or
- respond using a simple symbolic reaction (e.g., emoji).

Peer feedback typically included affirmations, clarifying questions, and suggestions for further reflection, such as:

- “Keep going.”
- “This observation is important because...”
- “You could connect this with...”
- “What causes this to increase?”

This interaction was intentionally designed to be **lightweight and low-friction**, encouraging frequent participation without overburdening students.

Objective:

To reinforce consistency and accountability in journaling while expanding students’ mental models through exposure to alternative perspectives and interpretations.

Note on Instructional Design

The prompt sequence was intentionally designed to move students from **event-based observation** toward **structural and dynamic thinking**. Representative prompts are included in the main text, while this appendix provides the full progression to support transparency and replicability.

References:

- Ford, D. N.** (2019). *System dynamics glossary*. System Dynamics Review, 35(4), 355–364. <https://doi.org/10.1002/sdr.1641>
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- Senge, P. M.** (1990). *The fifth discipline: The art and practice of the learning organization*. New York, NY: Doubleday.