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| **2017 OBTC Teaching Conference for Management Educators** |

1. Loopy-System Structural Maps

A business system is composed of a set of describable beliefs, behaviors and/or resources and the relationships between them which can be described and drawn. A system structural map is the result of our working backwards from an event to the people and things involved and their relationships to each other (Kirkwood, 1998). When we detail this out or draw it, we have a representation of the system structure (Anderson & Johnson, 1997). This session introduces and provides practice in a short session for NON-Operations classes to give students a feel for systems thinking and causal loop diagramming.

System Thinking, Causal Loops, System Maps

1. Teaching Implications:

We share a lesson that introduces the students to the skills needed to handle the elements of thought related to inferences, conclusions and implications (Paul & Elder, 2009) when there is a system involved. Systemic thinking is defined. The need to explicitly include context, timing and time lags is presented and the steps to produce a causal loop diagram are detailed. We will provide a description of the unit, student learning objectives, a handout of the content of the session, and a handout of a homework assignment. We demonstrate an in-class lecture, activity and homework debriefing.

## Student Learning Objectives

At the completion of this lesson and associated homework, the student will…

### 1: be able to explain what a nested socio-technical system is.

### 2: describe what system elements are involved in the current problem to be solved (scenario) and how one system element is related to another system element.

### 3: develop a behavior-over-time graph (BOT) and successfully place time on the x-axis and the behavior on the y-axis.

### 4: develop a causal loop diagram from a scenario, academic concepts involved, and a behavior over time graph.

### 5: explain how elements of thought, universal intellectual standards and persuasive logic all connect to enable the identification of assumptions, the reasoning to the conclusion/claim and the detailing of implications.

## Pre-class Preparation for Students

Students should be assigned to read and the handout on Systemic Thinking and Causal Loops and a content reading such as the Paul and Elder text

Relevant Management Topics

This unit is useful as a short session in the following typical undergraduate management courses:

* **Introduction to Management** as a link to/example of operation studies.
* **An Operations Class** as a clarifying/extension lecture on causal loops and their practical use.
* **Business Communications** as a demonstration of more advanced critical thinking than that found in basic texts such as Paul and Elder (2009).
* **Integrated Business** classes as a tool to understand the structure of organizations and the relationship across disciplines.
* **Any Project Oriented course** to be used either as a project planning tool or as a self-assessment tool to determine what will be needed or has occurred.

This unit may be useful as part of a graduate level introduction to business and business thinking course. Some graduate organizational behavior courses have included a beginning unit on logic or critical thinking and this may fit into that slot as well.

1. Session Description and Plan:

This session includes the “outside” perspective of the general overview and discussion of the provided handouts. The session also includes an “inside” perspective of the delivery of a mini-lecture that models the lecture to be given to students by the attendees.

| Minutes Used [**[[1]](#footnote-1)**] | Activity Description |
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| 0 – 5 [0-7] | (5 minutes) Welcome to attendees, Introduction of facilitators, Brainstorm on critical thinking in a business context. |
| 5-10 [7-14] | (5 minutes) Link to brainstorm and presentation of overview of session. |
| 10 – 15 [14 –21] | (5 minutes) Hand out session take-homes (available as [Appendix A](#_Appendix_A:_Homework)). |
| 15 – 30 [21 – 41] | (15 minutes) Mini-Lecture on Systemic Thinking and Causal Loops Handout |
| 30-40 [41 – 46] | (10 minutes) In- Session Exercise * Have each participant map the college experience for their students at their institutions.
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| 40-45 [46-56] | (5 minutes) Exercise Debriefing  |
| 45-50 [56-66] | (5 minutes) Mini-Lecture Covers* Explain homework sheet
* Explain How students can be assigned to “map” projects in other classes, etc.
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| 50-60 [66 – 75] | General Q & A  |

1. Application to Conference theme (*Navigating the Changing Currents*?)

It is unfortunate but many students coming from K-12 systems have failed to learn to think well or to have experiences that allow them to experience aspects to even develop inductive understandings. Thus, as faculty to meet this changing need in students we need to provide tools that enable students to make sense of new conditions and allow them to link them to the classroom experiences. This exercise helps them to learn to make inferences and to understand ripple effects of decisions, solutions, and even inaction.

1. Unique Contribution to OBTC:

This session extends workshops that were taught at the OBTC in 2015. This presentation follows the general pattern of the earlier sessions but is focused on the integration of systems thinking in an easy to do and easy to learn process. It is intended to be the fourth chapter of five chapters in a text for a .5 credit module on critical thinking for business students.

# References

Anderson, V., & Johnson, L. (1997). *System Thinking Basics.* Waltham, MA: Pegasus Communications, Inc.

Kirkwood. (1998, Feburary 14). *Open classes.* Retrieved August 1, 2013, from University of Arizona: http://public.asu.edu/~kirkwood/sysdyn/SDIntro/ch-1.pdf

Paul, R., & Elder, L. (2009). *The Miniature Guide to Critical Thinking: Concepts & Tools* (6th. ed.). Berekely, CA, USA: The Foundation for Critical Thinking.

1. “[]” indicates the timing adjustment for a 75-minute session. [↑](#footnote-ref-1)