FLOW SYSTEM

PARTICIPANT WORKBOOK

Complexity Thinking

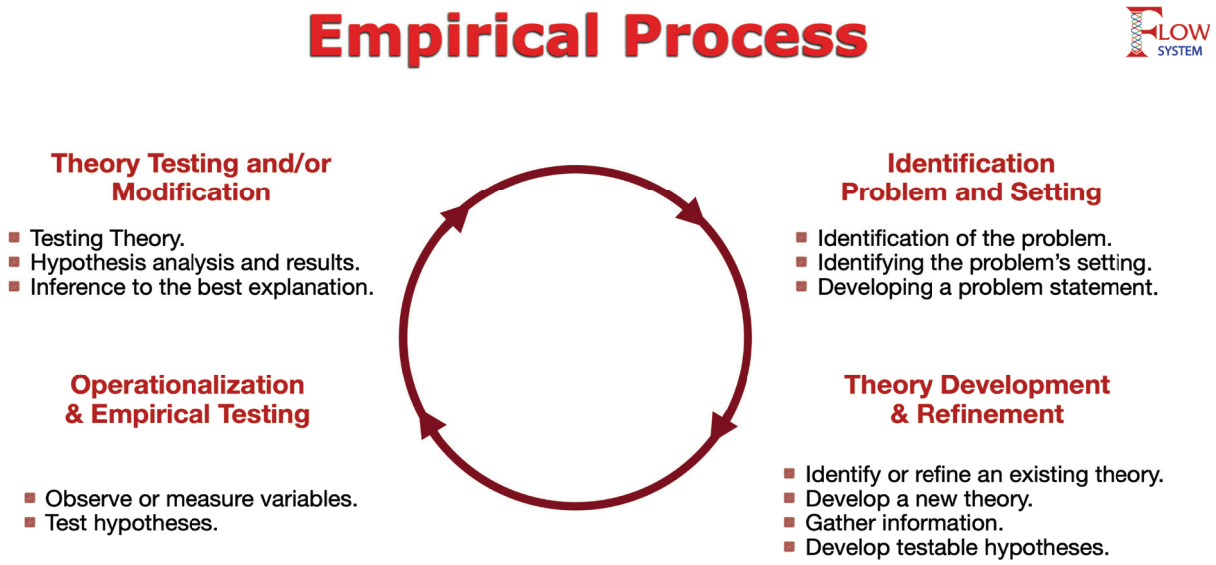
Workbook: Empirical Process Control

getflowtrained.com/playbook/empirical-process-control/

Empirical Process Control

The empirical process involves four general steps: empirical observation, theory development/refinement, operationalization and empirical testing, and theory testing/modification.

In the table below, fill in the cells to help guide you through an empirical process. Select a real problem and work your way through the empirical process. This exercise will involve each of the following sub-steps highlighted below:



Empirical Observation	
Identify a Problem Clearly describe what the problem is, not the emotions surrounding the problem. Describe the problem in relation to the impact it has on the organization's goals or objectives.	
Identify the Problem's Setting Describe the setting, the context, the environment related to the problem.	
Develop a Problem Statement Specifically state the goal of the research, the expected outcome. Clearly describe the problem and impact on stakeholders. Do not indicate cause of problem (bias).	

Theory Development/Refinement	
Theory Develop a new theory, refine or identify an existing theory to help guide your study. Theory explains or predicts a phenomenon. Describe what phenomenon the theory is focused on.	
Gather Information Review the literature, historical records, interviews, surveys, etc. Determine if the process is deductive (theory and information determines hypothesis), or inductive (observations define theory).	
Develop Testable Hypotheses Identify specific variables available. A hypothesis is a testable proposition to guide research. One hypothesis per test.	

Operationalization and Empirical Testing

Observe or Measure Variables Develop a data collection plan (e.g., surveys, performance records, quality measures, customer feedback, observations). Know purpose of data. Deductive: Theory and hypothesis first, followed by data collection. Inductive: Observations or data determine theory.	
Test Hypotheses Determine analysis technique required to test hypothesis/ hypotheses. One technique (test) per hypothesis.	

Theory Testing/Modification	
Test Theory Were the theory's statements supported from the analysis, or were they not supported? Identify which statements of the theory were supported and identify why other statements were not supported.	
Hypothesis Analysis and Results Analyze results (quantitative, qualitative, mixed method). Which hypotheses were supported, and which were not supported? If not supported, identify why the alternative hypothesis held true.	

Theory Testing/Modification (cont.)

Inference to the Best Explanation

Describe the best explanation.

Note: Inference requires applying knowledge of the context (literature, theory) based on the study's results.

We infer what would be true if the results (the data) were true by providing the best explanation (literature, theory).

Be cognizant that data is not without error and the data from one study is a small view of the whole organization.

Multiple studies involving various perspectives are required before any policy changes are recommended. Knowledge is cumulative and should be treated as such.

Connect the Three Helixes:

Flow can only be achieved when the three helixes are interconnected. To identify how this could occur, the next exercise requires the reader to identify examples of different methods from each of the other two helixes (distributed leadership, team science) that might work well with, or support, weak signal detection. Knowledge of all three helixes will be required to make these connections.

Connect the Helixes	
Select a scenario or problem that would include a benefit from empirical process control practices.	
Identify three methods from distributed leadership that could work with empirical process controls and give a brief description about how they complement one another.	
DL Method 1:	
DL Method 2:	

Connect the Helixes	
DL Method 3:	
Identify three methods from the team science helix that could work with empirical process controls and give a brief description about how they complement one another.	
TS Method 1:	
TS Method 2:	
TS Method 3:	
Provide a description explaining which methods from each of the three helixes (with empirical process control being the CT method) work best for the scenario/ problem identified earlier.	