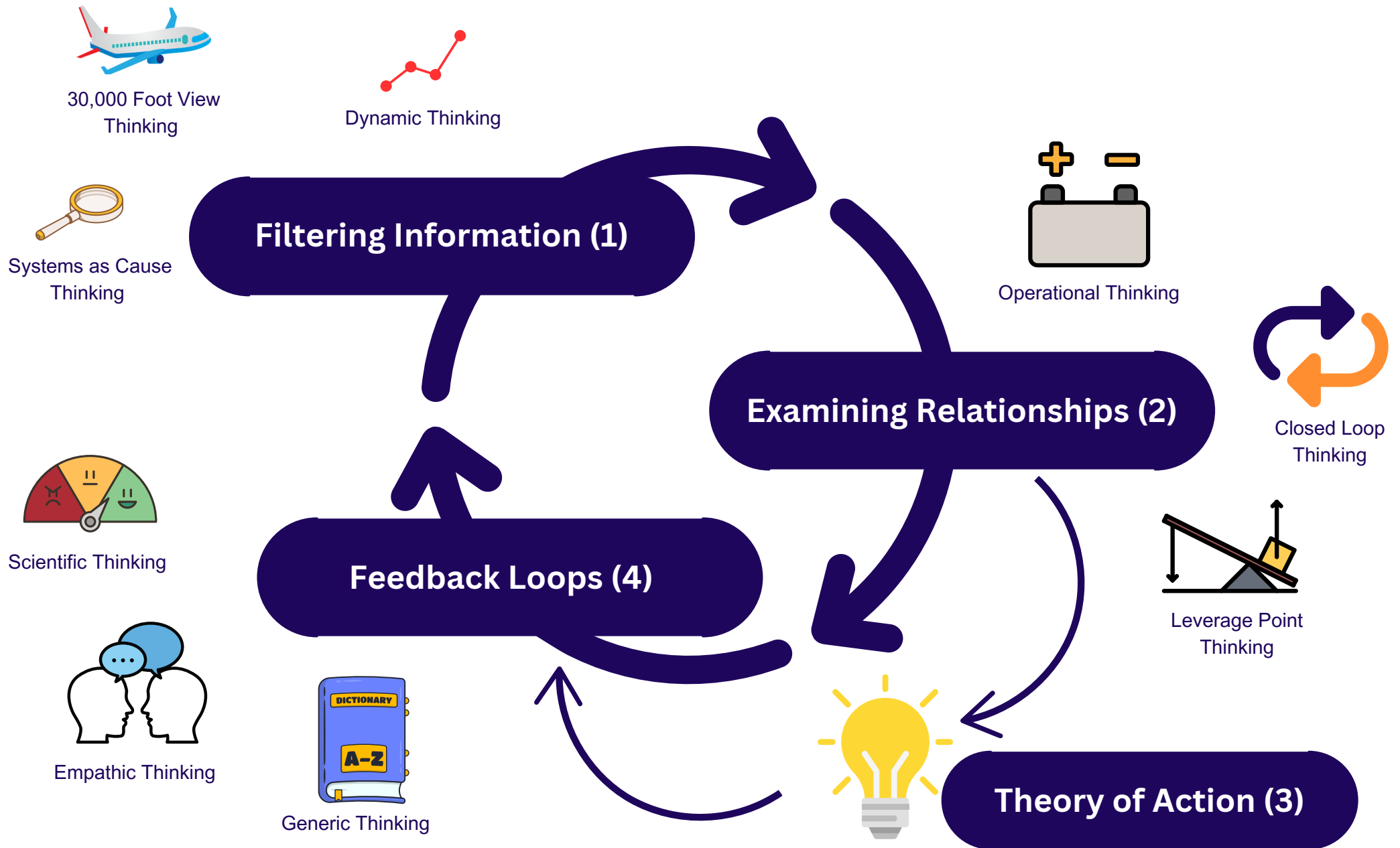


# Building and Testing Mental Models






### Filtering Skills (Phase 1)

School leaders who master filtering skills can construct models that reflect and define their school's current reality or condition (system). These skills help guide decision-making and drive meaningful change through disciplined, thoughtful approaches. Drawing from concepts like GFL Adapted Deming Point #11, which emphasizes long-term measures of student success, including well-being and transferrable skills, leaders can focus on sustainable development. These skills encourage multiple perspectives—like viewing the situation from above—which helps identify root causes, consider patterns, and avoid hasty solutions by carefully examining all relevant factors.

**GFL Adapted Deming Point # 11** - Develop measures that matter for the long-term vitality and development of students. Consider measures around transferrable skills, student well-being, and student engagement.

..

| Category              | Type of Thinking  | Definition  | Example   | Questions   |
|-----------------------|---|---|---|---|
| Filtering Information | <b>30,000 Foot</b><br>       | The big picture view, as if looking down to the ground from an airplane.<br><br>*Helps to see all the factors and parties that should be included in the system.  | Viewing results data across a large sample set such as test results across a district of high schools, or survey data from a consortium such as NAIS DASL.                    | What are all the factors at play? Have we included all the people who will be impacted by the situation we are reviewing?                   |
|                       | <b>Systems as Cause</b><br> | The most basic example, the simplest explanation, is the likely root cause of the phenomena or issue being examined.<br><br>*Helps to narrow down to the details. | Students are not meeting form submission deadlines. The root cause is that the form is buried on the SMS and is not accessible.   | What is the root cause of this issue, and are there external factors clouding my judgment?  |
|                       | <b>Dynamic</b><br>         | Distancing decisions from single events and looking for patterns instead.<br><br>*Prevents jumping to conclusions and hasty application of misguided solutions.   | The AP English Class had poor results this year. Rather than basing a plan of action on a single result, historical performance is examined to identify trends and anomalies. | How does the event that we are examining relate to patterns in our school? Was the event caused by the patterns or is it an isolated issue? |

**Examining Relationships (Phase 2)**

Understanding cause-and-effect dynamics within systems can lead to substantial change. Leaders can shape improvements that benefit the entire system by understanding and examining relationships. Deming’s Point #5 emphasizes the need to focus on improving the overall teaching and learning system, as the majority of outcomes—about 85%—are shaped by the system itself rather than individual efforts. Addressing systemic issues is crucial rather than trying to “fix” individuals to achieve better results.

**GFL Adapted Deming Point # 5** - Constantly improve systems of teaching and learning. Understand that 85% of results are from the system. To improve outcomes, improve the system rather than “fixing” individuals.

..

| Category                | Type of Thinking              | Definition   | Example   | Questions   |
|-------------------------|-------------------------------|--|---|---|
| Examining Relationships | <p><b>Operational</b></p>     | <p>Understanding cause and effect - using the concept of stocks (conditions in the system or desired results) and flows (actions that cause change to the conditions). Consideration of both inputs and outputs around a desired condition or result.</p> <p>*Helps to clarify and articulate cause and effect relationships in the system.</p>  | <p>To improve students' mathematics outcomes, the team examines a series of stocks and flows - Stock: The availability of math resources is limited. Flow Action: The team invests in additional textbooks and online math tools. Effect: With better resources, students have access to more practice and support, potentially improving their math performance.</p>                                 | <p>Have we accounted for all of the flows, both inputs and outputs that are impacting the stock? Have we included both positive and negative flows in our model? Have we accounted for variation in the impact (magnitude or rate) of the various flows impacting the stock.</p>  |
|                         | <p><b>Closed Loop</b></p>     | <p>Effect is also cause. The idea that relationships have impact in both directions and that in a two way interaction - each part impacts the other.</p> <p>*Helps to identify and predict unintended consequences of decisions.</p>   | <p>Good teachers have academically successful students. Academically successful students help teachers teach at a high level. The coach loves their team, so the team wants to play well for the coach, which results in the coach loving to work with the team.</p>  | <p>Are we considering both sides of this relationship? How is the desired result impacting by the two way relationship we are observing? Which side of the relationship should we act on to achieve the desired change or outcome?</p>  |
|                         | <p><b>Leverage Points</b></p> | <p>Leverage points are strategic places within a complex system where a small shift or intervention can lead to significant changes across the entire system. In systems thinking, identifying and acting on leverage points.</p> <p>*Helps to create high-impact results with focus on key areas that drive larger system-wide improvements</p> | <p>Creating structured time for collaborative planning or cross-departmental meetings can lead to improved instructional strategies, more cohesive curriculum, and ultimately better student outcomes. This relatively small intervention can ripple through the system, resulting in more engaged teachers and improved student performance without making sweeping, resource-intensive changes.</p> | <p>What small changes or adjustments in the school’s processes or structures could lead to substantial improvements in student learning and engagement? Are there existing areas in the school where efforts or resources are already concentrated, but with a slight shift in focus, could yield more significant, long-term improvements?</p> |

### Theory of Action (Phase 3)

At this planning stage, the school improvement team has evaluated the state of the school or the specific area that has been identified for improvement; it is time to take action. In testing mental models, this is the phase where the team develops a theory about what changes can be made or where new approaches and practices may be adopted. Simply stated, the Theory of Action is what the team feels can be done to achieve desired outcomes or improvements in the system. The worksheet below guides that discussion, asking the team to clarify the focus area and the desired result precisely. This helps constituents understand the “why” behind the action while also establishing a results criteria to test against in the feedback phase that follows next in the cycle.

**GFL Adapted Deming Point # 14** - Proceed with urgency, the time for transformation is right now. Everyone in the school has a contribution and responsibility for making the transformation happen.






| Because of our concerns about ...  | We propose that we develop ...   | Which will result in ...   |
|--|--|--|
| <p><b>Example #1</b></p> <p>Student disengagement in many of our classrooms.</p>                                   | <p>More “student talk” in classrooms where they are expected to speak respectfully and professionally to one another.</p>  | <p>Greater energy level in classrooms since staff don’t have to drag students along but rather allow them to learn from each other</p> |
| <p><b>Example #2</b></p> <p>Student participation in class is limited by fear of judgement and peer criticism.</p> | <p>Private learning techniques that allow anonymous participation such as visible thinking routines or reading strategies that allow for discussion without the attribution of initial ideas to individual students.</p> | <p>More willingness to contribute to class discussion and increased focus on ideas rather than individuals.</p>                        |
|  |  |  |
|  |  |  |

**Feedback Loops (Phase 4)**

Testing mental models and responding to feedback are essential for school improvement using systems thinking. By employing simulation techniques or analyzing real results, schools can predict outcomes and establish feedback loops to evaluate the effectiveness of their Theory of Action. These loops enable teams to adjust mental models to align with reality, forming the foundation of the Plan-Do-Study-Act (PDSA) process. Deming's Point #7 emphasizes the importance of collaborative leadership, empowering faculty and staff to make real-time adjustments that improve student learning. Effective feedback systems, supported by a shared language across departments, facilitate cross-disciplinary communication and help teams refine strategies and implement changes that lead to system-wide improvements

**GFL Adapted Deming Point # 7-** Build collaborative leadership structures that empower faculty and staff to make needed changes in real time to improve student learning.

..

| Category       | Type of Thinking   | Definition  | Example   | Questions   |
|----------------|--|---|---|---|
| Feedback Loops | <p><b>Scientific</b></p>  | <p>Using simulation techniques (or actual results) to test and predict outcomes. Establishing feedback loops or sources of data that help us understand the impact or effect of our Theory of Action.</p> <p>*Helps a team adjust mental models that reflect what is really happening in the system and forms the foundation of the PDSA Process.</p> | <p>Using techniques such as DataWise or Instructional Rounds (Harvard Project Zero) to declare a Theory of Action, and then test that theory through direct observation and collaborative data analysis.</p>  | <p>What changes do we want to see in the results we are getting? How might we change our practice to address the related problems?</p>  |
|                | <p><b>Empathic</b></p>   | <p>Capacity for giving and receiving feedback on mental models.</p> <p>*Helps to provide effective feedback after testing a mental model (evaluating results and simulations)</p>   | <p>Using the ACE Habits of Mind (Harvard Project Zero) as a discussion norms that build trust and an environment where feedback is normalized as an improvement tool rather than as a personal value judgment.</p>  | <p>Do we have a shared commitment to <b>Action</b>, assessment, and adjustment? Are we intentionally <b>Collaborating</b> in support of ongoing growth in our practices? Do we have relentless focus on <b>Evidence</b> in all conversations?</p> |
|                | <p><b>Generic</b></p>   | <p>The development and use of common language and terms that are not specific to a discipline or role to enable cross-departmental or cross-disciplinary communication about systems thinking and improvement.</p> <p>Helps to provide effective feedback after testing a mental model (evaluating results and simulations)</p>                       | <p>Instructional improvements that are realized in elementary grades are able to be considered and adopted in upper grades because the two groups share the same improvement approaches and terminologies - such as PDSA Cycles, PLC strategies, etc.</p> | <p>What is our essential framework that allows cross departmental collaboration and feedback loops to occur?</p>  |