

DATA FLUENCY FOR ORGANIZATIONS

In our era of seemingly ubiquitous data--big data, cloud-based data and the now infamous meta data--the notion of data fluency probably feels intrinsically relevant. Both our digital lives and our organizations are, in fact flooded with all kinds of data, both numeric and text, graphs and reports. Even staff who do not work on computers routinely often interact with data to carry out tasks such as case files, work orders, logistics plans, and more.

A natural question that emerges from underneath this mountain of data is, indeed pressing: how can we translate these many bits of data into improved services, more efficient work flows, and more creative designs? The notion of data fluency can be thought of as the skills and mindsets which support translating data into meaningful outcomes.

This document presents a brief description of some of these skills and mindsets. A framework for cultivating these skills is presented next, followed by a sample instructional plan that applies the framework's core concepts.

DATA FLUENCY MINDSETS:

- * Data is holistic: Numerical data is important, of course, and yet should also be considered alongside narrative data, case studies and similarly more relationally-oriented pieces of data.
- * Data fluency is not computer fluency: While certainly handy tools to use in collecting, storing, and analyzing data, building a data fluent culture in an organization is as much about developing conceptual understandings and mental models as it is about using any particular computer-based tool to accomplish those tasks.
- * Building meaningful relationships among staff and with clients should guide decision making. Accurate data should support rather than replace relationally and community-oriented planning.

"Data-driven decision making" is surely a useful skill to cultivate but this data-centric orientation often clouds the most important considerations required for running a great organization.
- * Data-related processes in an organization should be designed in a collaborative fashion with each and every staff member who does or will interact with the data systems being considered.

DATA FLUENCY SKILLS:

- * Confidence in each key area of what could be termed the data process. Designing interesting inquiries, crafting data collection goals, along with actually gathering data and analyzing it are all core subskills that support data fluency.
- * With mindset #2 given due respect, developing comfortable command of common data-related tools is crucial, since great tools allow us to focus our energies on the most important aspects of a project.
- * Cultivated intuition around how a real-world process or event can be meaningfully translated into a "data model." Stated more simply: a data fluent individual can decide what data is useful, and what data is superfluous.

LEARNING AND TEACHING DATA FLUENCY:

Long before data was beamed into the sky and clouds began raining down charts and spreadsheets onto our many screens, practitioners developed robust principles of skill-based learning. The following diagram captures some of these core ideas that when applied to data fluency can support great instruction. The terms in [--brackets--] should be grouped together in their columns and describe what kinds of mental activities occur during each of three phases of instruction. The lines of stars (****) capture the relationship between each group of mental activities and the phases in which they occur. The overlap of the stars between columns convey that the relationships are fluid and will take on unique forms in each teaching and learning context.

Skill-oriented learning framework:

Teachers offer: [---Examples---] [---Guidance---] [---Support---]
 Learners engage in: [---Soaking---] [----Poking---] [---Playing---]
 All brains are: [--Connecting-] [Experimenting] [---Applying--]

Phase 1: Exposure to new skills *****
 Phase 2: Practices with success *****
 Phase 3: Apply to neat projects *****

The framework presented at the bottom of page two is systematic but should not be interpreted as rigid. In fact, many folks who regularly work with data systems and analysis find the process of learning all the "ins and outs" experimental and exciting. Holistic data can bring previously hidden trends and factors into the light. Unfortunately, for many folks in organizations, their experience with data has been hijacked by spreadsheets, formulas, and prescribed work steps that preclude authentic explorations of data--even data relevant to their jobs!

An additional barrier to cultivating data fluency stems from a mismatch of skills between those folks with technical expertise in data tools and those who design data-related instructional activities. This understandable tension can be remedied through collaborative session planning with technical experts, enthusiastic teachers, and interested staff from the teams for whom the training is planned.

A final obstacle to effective data fluency training is simply a lack of enough time for learners to engage in supported practice at an appropriate--and carefully incremented--level of difficulty. The phases of the framework suggest that learning experiences should begin with high support from teachers and should involve practicing skills on examples that are relevant and "doable" without struggle. Practitioners agree that development of skills should involve repeated experiences of success before learners are invited to apply new skills to novel and inherently varied problems.

The final page of this document presents a sample instructional plan that illustrates how these principles could be applied in a common organizational setting. Many instructional details (such as the time estimated for each step) are not in the sample plan since they should best be tailored to the specific needs of the learners.

Sample Instructional Plan

LEARNING OBJECTIVE: Learners will develop suggestions for a better allocation of case types to case workers in a human services department. Spreadsheet-based pivot tables will be offered as a great tool for displaying and analyzing existing case data on which the recommendations can be based.

LEARNING CONTEXT: The staff of the department have arrived at a general conclusion that the current allocation of case managers to case types is not optimal for a number of reasons. One key reason seems to be that case managers are assigned a portfolio of cases that require vastly different levels of intensity and time. Team leaders have met with any staff interested in designing a group problem solving strategy for this particular issue and the consensus was that case managers themselves should be comfortable analyzing their own case related measurements and those of the other team members such that the new allocation is felt as fair by all members of the team.

PHASE 1 (Exposure to new skills): Instructors assemble 1 or 2 examples of case data similar to what the case workers generate daily. Pivot tables have been used to analyze that sample data to ensure that the example cases clearly show how pivot tables can be useful.

The initial examples participants engage with may be on paper only so as to reduce the complexity of the practice. Soon, live pivot tables are presented and some basic inquiry questions provided to guide learners in their first experiences. Instructors provide a decent amount of whole-group instruction with bites of partner work time peppered in to make any explanations tangible with quick turn-around.

PHASE 2 (Practice with successes): After briefly assessing the group's comfort with the core pivot table analysis skills, a new example is provided. This time, instructors take on a more guide-like rather instructor-like role allowing folks who are comfortable to work at their own pace. Instructors are now able to give small-group support to learners who can use re-teaching or more micro-level pointers to carry out the task at hand. This process continues until confidence is sustained by most if not all learners.

PHASE 3 (Apply to neat projects): Training flow changes at this stage now that learners have developed skills and mindsets needed to apply the principles of pivot-table aided analysis to a new context, ideally a "real-world" scenario, such as their own case data. Since the data learners will be engaging with has not been prepared by the instructors, the application process will be varied across learners and instructors should be prepared to offer new skills as needed to aid in the completion of the project. This final phase will likely span several class sessions, perhaps over a few days. The learning process should conclude with a whole-group presentation of findings with time built in for reflecting on the learning process and brainstorming improvements in the process or next steps in analysis.