



# Using Implementation Science to Systematically Identify Opportunities for Learning and Improvement

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*November 2020*

**Government agencies want to operate efficient and effective services. Agency staff often understand the importance of learning and improvement to increase their services' value for taxpayers, improve communities, reduce waste, fix problems, support families, and many other essential functions. Even when staff want to improve their results, it can be difficult to figure out where to focus, and especially how to systematically decide where to pay the most attention and why. This brief will help government managers use implementation science to systematically identify opportunities to improve operations, achieve their missions, and—if in the federal government—implement the Foundations for Evidence Based Policy Making Act of 2018 (Evidence Act). This brief is organized in three sections answering the following questions:**

- What is organizational learning and improvement, and how does it help managers?
- What is implementation science, and how can it help managers?
- How can managers use implementation science to systematically identify opportunities for learning and improvement?

# What Is Organizational Learning and Improvement, and How Does It Help Managers?

Managers, especially those entrusted with government funds, are charged with efficiently and effectively providing consistent services to people that need their help. The type of help depends on the agency's specific mission and program goals. Regardless of the mission and goals, managers need actionable information (e.g., data) to do their jobs well.

Gathering *and using* actionable information is the foundation of organizational learning and improvement. This process is sometimes called performance management, continuous quality improvement, and data-driven or data-informed decisionmaking. Organizational learning and improvement is also a *continuous process*, threaded throughout all organizational functions and activities, with all staff having roles. Leaders, including managers, are key to fostering a culture of learning that encourages staff to observe and reflect on their work and use data in decisionmaking; supports staff by making sure they have time to engage in these activities; and ensures staff have the skills to examine and interpret the data and the appropriate technology to gather and access the data (Derrick-Mills et al. 2014).

Since the reinventing government movement<sup>1</sup> in the early 1990s, government managers have been publicly encouraged and required to use data to assess the efficiency and effectiveness of activities in their departments, agencies, and bureaus.<sup>2</sup> At the federal level, the Evidence Act and Government Performance and Results Modernization Act<sup>3</sup> are the two current pieces of legislation that provide primary guidance for federal manager accountability, including using data and evidence to make decisions and fostering a culture of learning in their organizations. The Evidence Act<sup>4</sup> includes several features designed to support and foster a culture of learning, including the development of learning agendas and evaluation plans; specifications of specialized staff positions, authorities, responsibilities, and competencies to carry out newly required evidence and data activities; and attention to data access, security, and quality.

Still, each department, agency, division, office, bureau, and team must integrate these new activities and requirements in their own operations to successfully realize the potential outcomes of the Evidence Act. Integrating these activities and truly using data and evidence for improvement (rather than simply to report out) is challenging. Fortunately, a field called implementation science has emerged to help all kinds of managers successfully integrate new practices in their various organizations.

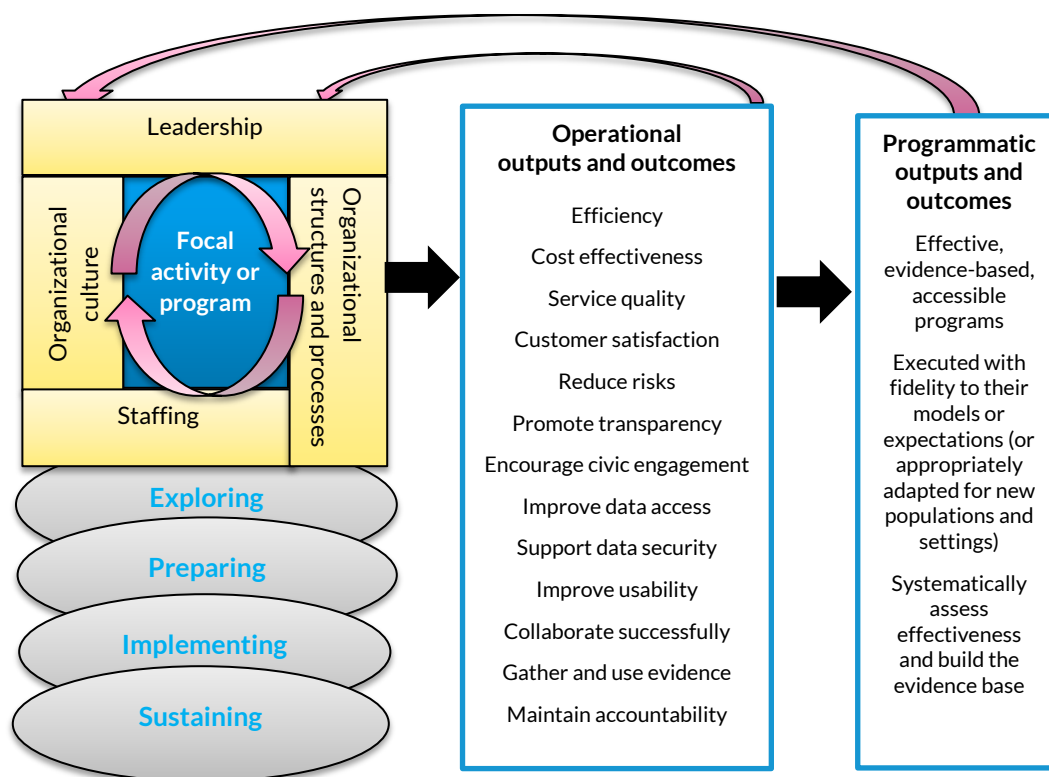
# What Is Implementation Science, and How Can It Help Managers?

Implementation science<sup>5</sup> is a field of study designed to help practitioners, particularly managers and administrators, integrate evidence-based practices in their organizations. In a service delivery context, evidence-based practices are strategies that have been tested to produce certain results for certain

people. For example, high school teachers use evidence-based practices to help their students learn math; workforce development agencies use evidence-based practices to shape activities that help unemployed people get jobs; and hospitals use evidence-based practices that reduce infections. Evidence-based practices are activities that have been demonstrated to produce the desired changes in knowledge, behaviors, or other outcomes.

In program evaluations and implementation studies, we set out an activities-outputs-outcomes sequence as a logic model.<sup>6</sup> In other words, a specific set of activities is logically related to a set of outcomes when they are performed a certain way (i.e., the way the evidence says) and a certain number of times (outputs; e.g. numbers of trainings). Each time the activities-outputs-outcomes sequence takes place, it is situated within a particular context. In governments, that context includes the rules, regulations, policies, and procedures governing use of resources, approved or required strategies, and designated funding and other resources (e.g., equipment and technology). Every context or environment has its own constraints that guide managers' behaviors.

**FIGURE 1**  
Implementation Science Dimensions and Stages Contributing to Outputs and Outcomes



Source: Author's adaptation.

Notes: See box 1 below for descriptions. The set of dimensions, stages, and processes depicted here takes place in the context of each department, agency, division, office, and bureau. Managers must consider the rules, regulations, policies, and procedures that govern their actions, provide resources, and mandate constraints as they make plans and decisions.

Implementation studies have long shown that activities are not always performed consistently over time, exactly as specified (i.e., from a management perspective, “maintaining fidelity” to the operating plans). Of course, some differences from plans do and should occur on purpose. Managers have to adapt plans as they learn more about constraints, as timelines and expectations change, and as observations and reflections on data show that adjustments are needed. Sometimes, however, staff actions do not align with the planned activities, and managers are not immediately aware that activities and plans are not in alignment. These unsystematic changes are concerning because they create inconsistencies in how operations are conducted. As more evidence-based practices have developed, research has shown that certain organizational dimensions and processes (or mechanisms) can better support consistent implementation of evidence-based practices across and within settings. These processes can also help managers detect unplanned changes earlier so they can determine how to best address the issues. Managers may decide to embrace the new actions as innovations that improve efficiency or effectiveness. On the other hand, they may determine that staff need more training or policies need refining to better clarify how to adhere to the current plans.

Implementation science emerged from those studies as the set of dimensions, actions, and stages that support consistent, effective practices from start-up through long-term sustainability. Implementation science focuses on four operational dimensions that support the focal practices and activities: leadership, staffing, organizational structures and processes, and organizational culture. These dimensions of support are embedded in a continuous process of reflection and feedback. In addition, implementation science identifies four stages of support: exploring, preparing, implementing, and sustaining. The combination of the dimensions and structures contributes to achieving operational outputs and outcomes,<sup>7</sup> which in turn contributes to successful programmatic outputs and outcomes (e.g., mission-strategic outputs and outcomes). Each operational dimension has a role in each implementation stage, as shown in figure 1. See box 1 for a brief overview of the implementation science dimensions and stages.<sup>8</sup>

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#### BOX 1

##### Implementation Science Dimensions and Stages

- **Leadership dimension (top yellow box):** speaks to leaders’ ability to provide technical and adaptive leadership to support staff in learning, exhibiting appropriate behaviors, and carrying out required actions.
- **Organizational structures and processes dimension (right-hand yellow box):** includes descriptions of how activities within the organization will be accomplished, data and information systems that support the sharing of and reflection on information, communication systems, and other pathways and processes for capturing and distributing information for decisionmaking.
- **Staffing dimension (bottom yellow box):** includes identifying the knowledge, abilities, attitudes, and behaviors of staff positions needed; recruiting and hiring staff with those skill sets; training and coaching staff to develop those skill sets; and creating systems to assess if staff performance demonstrates the expected behaviors.

- **Organizational culture dimension (left-hand yellow box):** Often referred to as the way things get done. This is more about guiding principles and underlying expectations, including both what leaders expect of staff and what staff expect of each other. It is reflected in the ways people interact with each other and not only what they do but how they do it.
- **Continuous feedback and improvement loop (pink loop):** reflects an ongoing process of observing the activities, actions, and behaviors of staff, leadership, and interactions with clients and the community; collecting data about those observations; reflecting on those data; seeking feedback from clients and the community on the ongoing processes; and using the information to improve actions and activities and refine policies and procedures. The pink arrows returning from the outputs and outcomes are also part of this continuous feedback and improvement process.
- **Four stages of support (gray bubbles):** recognize that implementation of practices is a dynamic process. Ideally, before agencies adopt a new practice, they explore whether and how that practice matches their agency's needs (when strategies are mandated, this stage occurs when the mandate is formulated rather than by the implementing agency). If they decide to adopt the practice, they spend some time preparing the agency and staff for the start of the new practice. The implementation stage occurs when the practice becomes fully integrated in the organizational operations. Finally, the agency must sustain the practice as a consistent routine. Each stage is an active process with contributions from the five dimensions.

**Source:** Author's adaptation of the Active Implementation Framework and National Implementation Research Network Framework.<sup>9</sup>

**Notes:** Implementation always occurs within a particular context, and managers need to take that context into account as they make decisions. Implementation science focuses on the dimensions and processes within the decision environment.

In other words, any practice, activity, or program does not exist in a vacuum and cannot operate by itself. For example, a classroom teacher using a special teaching method to help her students learn to read does not have full control over the materials and equipment in her classroom, how many students she teaches, the mix of student abilities, the other subjects she is required to cover, and so on. To successfully implement her specialized activity (blue box inside the yellow boxes), she needs the support of leadership (top yellow box) to align policy, procedures, and resources (right-hand yellow box); to create reasonable performance expectations (bottom yellow box); and to be receptive to making changes based on challenges (left-hand yellow box) identified through continuous observation and reflection (pink cyclical arrows). Her activities are more likely to be successful from the start if the organization has proactively identified potential challenges and misalignments while exploring (top gray bubble) the possibility of adopting this new teaching practice, taking steps to prepare the classroom and align policies (second-level gray bubble), continuing to refine supports and resources (third-level gray bubble), and maintaining the activity as a key routine (bottom gray bubble), rather than simply moving on to the next new strategy.

Similarly, each government analyst, budget staff member, data professional, and frontline staff member needs an integrated set of supports and guidance to successfully achieve operational and mission-strategic outcomes, and to adopt continuous learning and improvement practices embedded in the Evidence Act. In the next section, we discuss how managers can use implementation science to systematically identify opportunities for continuous learning and improvement.

# How Can Managers Use Implementation Science to Systematically Identify Opportunities for Learning and Improvement?

As discussed in the previous section, implementation is no longer a black box<sup>10</sup> where failures to attain desired outcomes mysteriously happen. Implementation science provides managers with a framework to anticipate and prevent challenges and a set of dimensions for focusing learning, improvement, and sustaining consistent practices over time.

## Using Implementation Science as a Focusing Lens

Basically, implementation science focuses questions on the following dimensions (at four points in time): leadership dimensions, staffing dimensions, organizational structures and processes, organizational culture, and continuous feedback loops. Using an agency’s operational objective to “promote transparency” as the focal activity (middle blue box from figure 1), we illustrate how managers can use the implementation science dimensions and stages to systematically identify opportunities for learning and improvement (figure 2).

Thus, implementation science reminds us that implementation is a *process*. We can’t adopt new objectives, strategies, and activities and expect them to work without effort. We need to identify how we will integrate them in our existing organizational structures and cultures. And we need to revisit how well they are staying integrated as other activities, strategies, goals, objectives, and staff come and go. Implementation science points to key dimensions of our operational structures where challenges can occur, and therefore where we should be systematically focusing our attention for learning and improvement.

**FIGURE 2**  
**Systematically Identifying Opportunities for Learning and Improvement**  
*Questions to ask to promote transparency*

Implementation dimensions and stages	Preparing	Implementing	Sustaining
	<b>What can we do to actively anticipate and prevent barriers?</b>	<b>How do we attain consistency and measure our success?</b>	<b>How do we continue our success over time?</b>
Leadership	<ul style="list-style-type: none"> <li>▪ How will we demonstrate that this is a key priority?</li> <li>▪ Where might leaders need to negotiate with other agencies to assure we can accomplish our goals?</li> </ul>	<ul style="list-style-type: none"> <li>▪ When are we listening to staff concerns?</li> <li>▪ When are we celebrating success?</li> <li>▪ How are we supporting staff time and resources needed?</li> </ul>	<ul style="list-style-type: none"> <li>▪ How are we letting staff know this is still a leadership priority?</li> <li>▪ When are we making time to examine and reflect on the data?</li> </ul>

Implementation dimensions and stages	Preparing	Implementing	Sustaining
	What can we do to actively anticipate and prevent barriers?	How do we attain consistency and measure our success?	How do we continue our success over time?
Staffing	<ul style="list-style-type: none"> <li>What knowledge, skills, and abilities do our staff need to promote transparency?</li> <li>Do current staff have these competencies?</li> <li>What training or coaching do staff need to develop the abilities?</li> </ul>	<ul style="list-style-type: none"> <li>Are staff evaluated on how well staff promote transparency?</li> <li>How are we measuring staff ability to promote transparency?</li> <li>What booster trainings will we offer to increase consistency?</li> </ul>	<ul style="list-style-type: none"> <li>As staff and supervisors change, how are we ensuring consistent expectations are applied?</li> <li>How are we ensuring staff continue to receive booster trainings on how to promote transparency?</li> </ul>
Organizational structures and processes	<ul style="list-style-type: none"> <li>Are transparency and how to promote it clearly defined in our operating manuals?</li> <li>How will we communicate new expectations to staff?</li> <li>What changes do our data systems need to support transparency and tracking it?</li> </ul>	<ul style="list-style-type: none"> <li>Do our transparency policies align with all current policies?</li> <li>Are our data systems helping us be more transparent?</li> <li>Are we providing communication avenues so staff and stakeholders can share challenges or concerns?</li> </ul>	<ul style="list-style-type: none"> <li>Does transparency still mean the same thing?</li> <li>Do our data systems need to be updated to integrate new information or meet new standards of transparency?</li> <li>Do we still have avenues for stakeholders and staff to share concerns?</li> </ul>
Organizational culture	<ul style="list-style-type: none"> <li>How does the agency currently view transparency?</li> <li>Do we think some staff are opposed to this change in approach?</li> </ul>	<ul style="list-style-type: none"> <li>Are we all working together to promote transparency?</li> </ul>	<ul style="list-style-type: none"> <li>Are we all still working together consistently to promote transparency?</li> </ul>
Continuous feedback loop	<ul style="list-style-type: none"> <li>When and where can we regularly examine and discuss the data?</li> <li>Who will be responsible for making sure we are continuously reflecting on progress?</li> </ul>	<ul style="list-style-type: none"> <li>When and where are we regularly examining and discussing the data?</li> <li>How are we measuring our success?</li> <li>How are we using what we find in decisions?</li> </ul>	<ul style="list-style-type: none"> <li>When and where are we regularly examining and discussing the data?</li> <li>Do we need to update our measures of success?</li> <li>Are we continuing to use what we find in decisions?</li> </ul>

**Note:** The exploring stage is not included here because the decision to adopt “promote transparency” as an objective has already been made. In government settings, the initial decision to adopt a particular approach is not often made at same level where the approach is implemented.

## Summary

- Managers, especially those entrusted with government funds, are charged with efficiently and effectively providing consistent services to people that need their help.
- Managers need actionable information to effectively guide operations, programs, and staff.
- Gathering *and using* actionable information is the foundation of organizational learning and improvement.
- Any practice, activity, or program does not exist in a vacuum, cannot operate by itself, and cannot consistently achieve its desired outputs and outcomes without integration in its operational environment. Although logic models set out logical (and sometimes evidence-based linkages from activities to outputs to outcomes), the ability to maintain a consistent, systematic approach is often challenged by other factors in the operational environment beyond the program's specific activities.
- Implementation science identifies the key dimensions of the operational environment and reminds us that implementation is a *process* with multiple stages.
- Managers can use implementation science to systematically identify opportunities for improving any type of agency-operational or mission-strategic activity or program.
  - » We provide a blank worksheet to apply the framework we discussed in the appendix to help managers and their teams use implementation science in this way, as illustrated in figure 2.



# Appendix. A Framework for Systematically Identifying Opportunities for Learning and Improvement

Focal Activity: \_\_\_\_\_

Implementation dimensions and stages	Preparing	Implementing	Sustaining
	<i>What can we do to actively anticipate and prevent barriers?</i>	<i>How do we attain consistency and measure our success?</i>	<i>How do we continue our success over time?</i>
Leadership			
Staffing			
Organizational structures and processes			
Organizational culture			
Continuous feedback loop			

## Notes

- <sup>1</sup> Reinventing government is a phrase coined by David Osborne and Ted Gaebler in their book titled, *Reinventing Government: How the Entrepreneurial Spirit is Transforming the Public Sector* (New York: Plume, 1993).
- <sup>2</sup> Since the early 1990s, various legislative and executive orders have instructed federal managers and agencies on how to demonstrate accountability and manage performance. These include the Government and Performance Results Act of 1993, Clinton's National Performance Review in 1993, Bush's Program Assessment Rating Tool (PART) enacted in 2002, and Obama's High Priority Performance goals. See Government and Performance Results Act of 1993, Pub. L. 103-62, 107 Stat. 285; "A Brief History of the National Performance Review," University of North Texas Libraries Federal Depository, February 1997, <https://govinfo.library.unt.edu/>; "The Bush Administration's Program Assessment Rating Tool (PART)," [everycrsreport.com](http://everycrsreport.com), November 5, 2004, [https://www.everycrsreport.com/reports/RL32663.html#:~:text=The%20Program%20Assessment%20Rating%20Tool%20\(PART\)%20is%20a%20set%20of,influence%20funding%20and%20management%20decisions](https://www.everycrsreport.com/reports/RL32663.html#:~:text=The%20Program%20Assessment%20Rating%20Tool%20(PART)%20is%20a%20set%20of,influence%20funding%20and%20management%20decisions;); and "Building a High Performance Government: Achieving the Administration's High Priority Performance Goals," Executive Office of the President of the United States, May 18, 2010, [https://www.nsf.gov/oirm/bocomm/meetings/may\\_2010/Master\\_Presentation\\_5-2010.pdf](https://www.nsf.gov/oirm/bocomm/meetings/may_2010/Master_Presentation_5-2010.pdf).
- <sup>3</sup> Government Performance and Results Modernization Act of 2010, Pub. L. No. 111-352, 1115.
- <sup>4</sup> "M-19-23: Memorandum for Heads of Executive Departments and Agencies: Phase 1 Implementation of the Foundations for Evidence-Based Policymaking Act of 2018: Learning Agendas, Personnel, and Planning Guidance," Executive Office of the President, Office of Management and Budget, July 10, 2019.
- <sup>5</sup> As in any field or discipline, implementation science is studied and described by multiple authors. We draw primarily from the Active Implementation Framework developed by Fixsen and the National Implementation Research Network. Some key sources of this work include the following: Fixsen et al. 2015 and 2005. Other frameworks include the Interactive Systems Framework (Wandersman et al. 2008) and EPIS Framework (Aarons, Hurlburt, and Horwitz 2011).
- <sup>6</sup> The University of Kansas Community Tool Box provides an online resource for learning more about logic models and other tools that help managers and practitioners improve practice. Logic models are covered in "Chapter 2, Section 1: Developing a Logic Model or Theory of Change, Community Tool Box," accessed October 23, 2020, <https://ctb.ku.edu/en/table-of-contents/overview/models-for-community-health-and-development/logic-model-development/main>.
- <sup>7</sup> The operational outputs and outcomes indicated here are a combination of traditional performance measurement outcomes and outputs identified by Poister (2015) and Agency-Operational expectations identified in the memorandum cited in note 4.
- <sup>8</sup> In a 2019 literature synthesis of more than 100 sources on implementing change in justice agencies, we provide detailed information about strategies that support implementation in each of these dimensions (see Derrick-Mills et al. (2019), and in a 2019 resource guide we translate the literature synthesis into more actionable advice for managers (see various fact sheets and the resource guide at "Bridging Research and Practice Project to Advance Juvenile Justice and Safety," Urban Institute, accessed October 23, 2020, <https://www.urban.org/policy-centers/justice-policy-center/projects/bridging-research-and-practice-project-advance-juvenile-justice-and-safety>).
- <sup>9</sup> See note 5.
- <sup>10</sup> Implementation is often referred to as a black box, suggesting we are in the dark about the mechanisms and processes that lead to successful or unsuccessful outcomes.

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## Acknowledgments

This report was funded by the Annie E. Casey Foundation and the W.T. Grant Foundation through the Urban Institute's Federal Evaluation Forum. We are grateful to them and to all our funders, who make it possible for Urban to advance its mission. The views expressed are those of the author and should not be attributed to the Urban Institute, its trustees, or its funders. Funders do not determine research findings or the insights and recommendations of Urban experts. Further information on the Urban Institute's funding principles is available at [urban.org/fundingprinciples](http://urban.org/fundingprinciples).



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