The Science and Practice of Integrating Science into Practice: the Active Implementation Frameworks

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“It is one thing to say with the prophet Amos, ‘Let justice roll down like mighty waters’ …

… and quite another to work out the irrigation system.”

William Sloane Coffin
Social activist and clergyman
The Vision

... all young children have access to high quality childcare so that they arrive at school ready to succeed

... every student receives his or her education in a supportive social and effective academic environment

... every person with a behavioral or mental health challenge has access to effective treatment and/or community supports

... every citizen has access to preventive health care and effective medical treatment
Formula for Success

- Effective Interventions
- Effective Implementation Methods
- Enabling Contexts

= Socially Significant Outcomes
Active Implementation is defined as a specified set of activities designed to put into practice an activity or program of known dimensions.
Need a New Approach

• In many cases, what we have been doing in health and human services is not working
  – Research to Practice gap
    • We don’t use what works
  – Implementation gap
    • We don’t use innovations with **fidelity**
    • We don’t build capacity to **sustain** innovations
    • We don’t **scale** innovations to provide benefits to citizens and society
Need a New Approach

- This gap has implications for...
  - Practitioners (or intervention users)
  - Program administrators
  - Program purveyors
  - Technical assistance providers
  - Grants managers / project officers
  - Evaluators
  - Researchers
  - Policy Makers and Champions

So what guidance can we extract from the research evaluation literature and from the successes of others?
Implementation

Review and synthesis of the implementation research and evaluation literature (1970 – 2004)

- Multi-disciplinary
- Multi-sector
- Multi-national
Experimental Data Show These Methods, When Used Alone, Are Insufficient:

- Implementation by laws/mandates/regulations
- Implementation by providing funding or incentives
- Implementation without changing supporting roles
- Diffusion/dissemination of information
- Training alone, no matter how well done

Data: 5% to 15% Realize Intended Outcomes

Fixsen, Naoom, Blase, Friedman, Wallace, 2005
What’s the Way Forward
Active Implementation Frameworks

• We want to move from “making lists”...to “making sense”

• The value of frameworks is
  – To enhance communication among partners (e.g. provides a common language to support the work)
  – To facilitate planning and to provide a structured approach to problem-solve complex challenges
  – To more easily share and apply improvements
  – To promote the ability to generalize beyond the immediate project or initiative and increase the relevance of ‘lessons learned’
Active Implementation Frameworks

- **INTERVENTIONS**
  - To experience the benefits of the intervention, what exactly are practitioners saying and doing?

- **STAGES**
  - What steps lead to successful implementation?

- **DRIVERS**
  - What critical program and organizational supports are needed to implement and scale-up effective practices?

- **TEAMS**
  - Who guides and manages the implementation and scale-up process?

- **CYCLES**
  - How can teams and organizations efficiently solve problems and get better?

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APPLIED IMPLEMENTATION SCIENCE

- Usable Intervention Criteria
- Implementation Drivers
- Implementation Stages
- Implementation Teams
- Improvement Cycles
Formula for Success

Effective Interventions

Effective Implementation Methods

Enabling Contexts

= Socially Significant Outcomes
Usable Intervention Criteria

- Clear description of the program
  - Philosophy, values, principles (guidance)
  - Inclusion – exclusion criteria (beneficiaries)

- Clear essential functions that define the program (core components)

- Operational definitions of essential functions (practice profiles; do, say)

- Practical performance assessment
Usable Intervention Criteria

For more information, go to:

http://implementation.fpg.unc.edu/sites/implementation.fpg.unc.edu/files/resources/AIHub-Handout2-DevelopingPracticeProfileGuide.pdf
Take a moment to think about a change effort or a program in which you are involved.

- Use these criteria to assess to what extent the change effort or the program meets the usable intervention criteria?
- In what ways is it well-defined? In what ways is it more loosely defined?

  • Clear description of the program
    • Philosophy, values, principles (guidance)
    • Inclusion – exclusion criteria (beneficiaries)
  • Clear essential functions that define the program (core components)
  • Operational definitions of essential functions (practice profiles; do, say)
  • Practical performance assessment
Usable Intervention Criteria

Implementation Drivers
Implementation Stages
Implementation Teams
Improvement Cycles
Formula for Success

Effective Interventions

* * *

Effective Implementation Methods

* * *

Enabling Contexts

= 

Socially Significant Outcomes
Integrated & Compensatory Leadership Drivers

Consistent Uses of Innovations

Reliable Benefits

Competency Drivers
Help to develop, improve, and sustain practitioners’ competence and confidence to implement effective practices

Organization Drivers
Help ensure sustainability and improvement at the organization and system levels

Leadership Drivers
Help guide leaders to use the right leadership strategies for the situation

Integrated & Compensatory
Implementation Drivers

Competency Drivers

- Coaching
- Training
- Selection

Integrated & Compensatory

Organization Drivers

- Systems Intervention
- Facilitative Administration
- Decision Support Data System

Leadership Drivers

- Reliable Benefits
- Consistent Uses of Innovations
- Performance Assessment (fidelity)

Leadership Drivers

- Consistent Uses of Innovations
- Reliable Benefits
- Performance Assessment (fidelity)

Integrated & Compensatory
Practitioner (teacher, clinician, medical provider, case manager, trainer, supervisor, coach, administrator, etc.) performance assessments are designed to assess the use and outcomes of the skills that are required for full and effective use of the effective approach:

- Reflect the philosophy, values, principles that guide the approach
- Align with the core components of the approach (non-negotiables)
Coaching

- Coaches have four main roles: supervision, teaching in context, assessment and feedback, and emotional support.

- Coaches can support the practitioners through the early stages of implementation until the new practice behaviors are more skillfully embedded in the practice setting.

- Skilled coaches are able to provide practitioners with the craft or practice knowledge that is needed to supplement the formal knowledge that is presented in training, which enables practitioners to see how what they have learned is relevant to their practice.
## Training and Coaching

### OUTCOMES

% of Participants who Demonstrate Knowledge, Demonstrate New Skills in a Training Setting, and Use new Skills in the Classroom

<table>
<thead>
<tr>
<th>TRAINING COMPONENTS</th>
<th>Knowledge</th>
<th>Skill Demonstration</th>
<th>Use in the Classroom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory and Discussion</td>
<td>10%</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>+Demonstration in Training</td>
<td>30%</td>
<td>20%</td>
<td>0%</td>
</tr>
<tr>
<td>+++ Practice &amp; Feedback in Training</td>
<td>60%</td>
<td>60%</td>
<td>5%</td>
</tr>
<tr>
<td>++++ Coaching in Classroom</td>
<td>95%</td>
<td>95%</td>
<td>95%</td>
</tr>
</tbody>
</table>

Joyce and Showers, 2002
Pre-service and in-service training are efficient ways.

- To provide knowledge about the effective program or practice related to.
  - Philosophy, values, principles
  - Core components (non-negotiables)
  - Rationales of key practices
- To provide opportunities to practice new skills to criterion
- To provide opportunities to receive feedback in a ‘safe’ and supportive training environment
Selection

- Selection of *sites/agencies or practitioner* (case manager, teacher, trainer, supervisor, coach, administrator, etc.) should align with the knowledge, skills, and abilities needed to deliver the effective practice with fidelity
  - Consider recruitment methods that will successfully produce the “well-suited” candidates
  - Develop selection criteria that reflect the critical skills, abilities, propensities necessary to deliver the program or practice as intended that are difficult to teach in training (e.g. social skills, common sense, empathy, good judgment, ethics, knowledge of the field, willingness to learn)
Reflection

• Turn to the person sitting next to you –
  – Share an implementation experience in which one or more of the competency drivers was used effectively to support the change process.
    • Performance assessment
    • Coaching
    • Training
    • Selection
  – What was that like for you and others involved?
**Decision Support Data System**

- System to assess key aspects of the overall performance of the organization and system to help ensure continuing implementation of practitioner competencies over time
  - Data or information to use to make decisions related to the overall performance of the organization and system
  - Data or information to develop and improve the effective approaches so that the intervention continues to meet the needs of individuals over time
Facilitative Administration

- Facilitative administrative practices purposefully install and implement policies and practices.
  - to support the work of practitioners
  - to reduce implementation barriers
  - to create hospitable environments for practitioners to fully and effectively implement the effective program or practice
• Systems intervention addresses:
  – issues outside of the organization’s direct control
  – issues that impede practitioners’ ability to provide effective programs to individuals

• Critical systems intervention activities:
  – To identify and eliminate or reduce such barriers or to enhance and sustain those policies and regulations that facilitate the work at hand

• Purpose of systems intervention:
  – to create an environment and a set of conditions that supports the new way of work
Reflection

• Turn to the person sitting next to you –
  – Share an implementation experience in which
    one or more of the organization drivers was
    used effectively to support the change process.
    • Decision-Support Data Systems
    • Facilitative Administration
    • Systems Intervention
  – What was that like for you and others involved?
Leadership Challenges

• Tame Problems
  – Often complicated (e.g. safety of nuclear generators, air traffic control)

• Wicked Problems
  – They are messy, devious, and fight back when you try to “solve” them
Leadership

• Based on a meta-analysis of 30 years of leadership studies, transformation leaders make changes that “disturb every element of a system.” They:
  – Break with the past,
  – Operate outside of existing paradigms,
  – Conflict with prevailing values and norms,
  – Find solutions that are emergent, unbounded, and complex.

Waters, Marzano, McNulty (2003)
Leadership

- Different challenges call for different strategies
  - Technical Strategies
  - Adaptive Strategies

- According to Ron Heifetz and his colleagues at Harvard’s Kennedy School of Government, one of the biggest mistakes “leaders” make is to incorrectly identify the type of challenge they are facing
  - Using technical approaches for adaptive issues (and vice versa)
Technical Challenges

- Perspectives are aligned (views, values)
- Definition of the problem is clear
- Solution and implementation of the solution is relatively clear, although may be complicated
- There can be a “primary” locus of responsibility for organizing the work

Technical Responses

- Use established norms/goals
- Define problems
- Provide solutions
- Clarify roles and responsibilities
- Assign tasks
- Manage conflict
- Maintain order

Heifetz, Leadership without Easy Answers, 1996
Adaptive Challenges

• Legitimate, yet competing, perspectives emerge
• Definition of the problem is unclear
• There are different perspectives on the “issue” at hand
• Solution and implementation is unclear and requires learning
• Primary locus of responsibility is not a single entity or person

Adaptive Responses

• Get on the Balcony
• Identify the Adaptive Challenge
• Regulate Distress
• Maintain Disciplined Attention
• Give the Work Back to the People
• Protect All Voices

Heifetz, 1996
Examples

Technical
• Funding scholarships
• Building hospitals
• Installing inventory controls for a food bank
• Developing malaria vaccine within a malaria-infected region

Adaptive
• Reforming public education
• Providing affordable healthcare
• Increasing organizational effectiveness
• Achieving 80% vaccination rates

Integrated and Compensatory

• **Integrated**
  – Consistency in philosophy, goals, knowledge and skills across these processes (S/T/C/PA/DSDS/FA/SI)

• **Compensatory**
  – At the practitioner level
  – At the program level
APPLIED IMPLEMENTATION SCIENCE

- Usable Intervention Criteria
- Implementation Drivers
- Implementation Stages
- Implementation Teams
- Improvement Cycles
Formula for Success

Effective Interventions

Effective Implementation Methods

Enabling Contexts

= Socially Significant Outcomes
Implementation Takes Time

Major Implementation Initiatives occur in stages:

- Exploration and Sustainability
- Installation
- Initial Implementation
- Full Implementation (Sustainability & Effectiveness)

Fixsen, Naoom, Blase, Friedman, & Wallace, 2005
A Key to Successful Implementation

The way in which a change process is conceptualized is far more fateful for success or failure than the content one seeks to implement.

*You can have the most creative, compellingly valid, productive idea in the world, but whether it can become embedded and sustained in a socially complex setting will be primarily a function of how you conceptualize the implementation-change process.*

(Sarason, 1996, p. 78)
Implementation Stages

Exploration
- Assess needs
- Examine intervention components
- Consider Implementation Drivers
- Assess Fit

Installation
- Acquire Resources
- Prepare Organization
- Prepare Implementation Drivers
- Prepare Staff

Initial Implementation
- Adjust Implementation Drivers
- Manage Change
- Deploy Data Systems
- Initiate Improvement Cycles

Full Implementation
- Monitor & Manage Implementation Drivers
- Achieve Fidelity & Outcome Benchmarks
- Further Improve Fidelity & Outcomes

2 - 4 Years
**Goals for Today**

- **Exploration**
  - Stage-matched activities:
    - Examine degree to which the Evidence Based Practice, best practice, systems change meets the needs in the settings identified
    - Determine whether moving ahead with the initiative and implementation is desirable and feasible
    - Create readiness for change at many levels
  
  **“Pay now or pay later.”**
What happens during Exploration?

- Form “Exploration Workgroup”
- Analyze data related to “needs”
- Identify options and assess feasibility
- Reassess, revise, prioritize, rescope
- Formalize structures
Goals for Today

Sustainability

• Stage-matched activities:
  • Ensure funding streams for desired change and necessary infrastructure (fiscal sustainability)
  • Ensure high fidelity and positive outcomes through infrastructure improvement and maintenance (programmatic sustainability)
  • Plan for turnover (programmatic sustainability)

“The only thing harder than getting there is staying there.”
Exploring the Intervention Landscape

<table>
<thead>
<tr>
<th>Effective Approaches</th>
<th>First Step</th>
<th>Next Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOT Effective Approaches</td>
<td></td>
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</table>
Installation

- Stage-matched activities:
  - Make the structural and instrumental changes necessary to initiate services

“If you build it, they will come” . . . but you actually have to built it!
Installation

• Initiate the implementation infrastructure by planning for and developing…
  • Interview protocols
  • a training plan to respond for staff turnover
  • a plan for initial and ongoing coaching
  • a plan for assessing performance of staff, supervisors, coaches
  • a plan modifications to the data system
  • a plan for identifying administrative issues
  • a plan for identifying broader systems issues
Initial Implementation

*Survive the awkward stage!*

- Stage-matched activities:
  - Learn from mistakes
  - Continue “buy-in” efforts
  - Manage expectations

“Anything worth doing…is worth doing poorly.”
Initial Implementation

• Begin managing the initial phases of implementation…
  • Provide new, effective strategies
  • Manage staff turnover
  • Manage change process
    • Change practice
    • Change organizational and community structure and culture
    • Put infrastructure components in place
    • Overcome fear and inertia
**Full Implementation**

- **Stage-matched activities:**
  - *Maintaining* and *improving* skills and activities throughout the system
  - Components integrated, fully functioning
  - Skillful practices by front line staff, supervisors, administrators
  - Changes in policy that are reflected in practice at all levels
  - Ready to be evaluated for expected outcomes

  "The only thing worse than failing and not knowing why you failed, is succeeding and not knowing why you succeeded."
  ~ Jane Timmons-Mitchell
Drivers X Stages

In each Stage, we are considering the competency and organizational Drivers?

- In Exploration, WE ASK: How are we planning for…?
- In Installation, WE ASK: How are we developing and/or installing…?
- In Initial Implementation, WE ASK: How we are supporting and problem solving…?
- In Full Implementation, WE ASK: How are we improving and sustaining…?
Reflection

• Turn to the person sitting next to you –
  – Share an implementation experience in which you have seen careful attention paid to the critical staged-matched activities for the exploration and/or installation stages?

  – What was that like for you and others involved?
APPLIED IMPLEMENTATION SCIENCE

Usable Intervention Criteria
Implementation Drivers
Implementation Stages
☑ Implementation Teams
Improvement Cycles
Formula for Success

Effective Interventions

Effective Implementation Methods

Enabling Contexts

= Socially Significant Outcomes
Successful implementation on a useful scale requires organized, “expert” assistance:

- An individual or group of individuals with programmatic content expertise who actively works to implement the approach as intended and to good effect
- These experts accumulate data & experiential knowledge, & become more effective and efficient over time
- They work simultaneously at Multiple Levels of the systems
Organized, Expert Assistance

• **Purveyors** – a group of individuals representing a program or practice who actively work with organizations and communities to help them implement a practice or a program with fidelity to good effect

• **An Intermediary Purveyor Organization** that develops expertise in implementation and a “bridge” or expert with multiple effective strategies (a new way of doing T & TA) connecting providers and purveyors

• “Local” **Implementation Team** with the knowledge, skill, freedom, and authority to act (e.g. within a larger organization or a collaboration of agencies)
Organized, Expert Assistance

...[practice] change is an ongoing process that requires constant attention.

Once a new practice has been embedded in an agency or system, [we] cannot just walk away.

There must be systems and procedures in place to assure fidelity and adherence to the model. Without some type of CQI in place, whether it is delivered by the intermediary or whether it is built into the provider agency or system itself, there is likely to be model drift over time.

Franks, 2010
Implementation Teams

• Focus is on
  – Quality, integration, sustainability of Drivers
  – Data-based Decision-making (e.g. fidelity & outcomes)
  – Alignment (funding and policy)
  – Problem-Solving and Sustainability

• Provide the structure to support organizational capacity development to support sustainable, high quality, integrated services
Implementation Teams

• Minimum of three people (four or more preferred) with expertise in:
  • The usable, effective practice
  • Implementation
  • Organization change

• Tolerate turnover; teams are sustainable even when the players come and go
  (Higgins, Weiner, & Young, 2012; Klest & Patras, 2011)
Linked Teaming Structure

State Leadership Team

State Implementation Team

Local/Regional Leadership Team

Local/Regional Implementation Team

Organized, Expert Assistance
## Organized, Expert Assistance

<table>
<thead>
<tr>
<th>INTERVENTION</th>
<th>IMPLEMENTATION</th>
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<tbody>
<tr>
<td>Effective</td>
<td><strong>Organized, Expert Assistance</strong></td>
</tr>
<tr>
<td></td>
<td><strong>80%, 3 Yrs</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Effective use of Implementation Science &amp; Practice</strong></td>
</tr>
</tbody>
</table>

- Fixsen, Blase, Timbers, & Wolf, 2001
- Balas & Boren, 2000
- Green, 2008
• Turn to the person sitting next to you –
  – Share an implementation experience in which you have experienced expert support from some form of organized, expert assistance, OR in which there was a concerted effort to build internal capacity to support high quality use of a strategy?

  – What was that like for you and others involved?
Usable Intervention Criteria
Implementation Stages
Implementation Drivers
Implementation Teams
✓ Improvement Cycles
Formula for Success

Effective Interventions

Effective Implementation Methods

Enabling Contexts

Socially Significant Outcomes
Enabling Context

Existing System

Effective Innovations Are Changed to Fit The System

Existing System Is Changed To Support The Effectiveness Of The Innovation

Effective Innovation
Changing on Purpose

New practices do not fare well in existing organizational structures and systems

• Effective innovations are changed to fit the system, as opposed to existing systems changing to support effective innovations.

People, organizations, and systems . . .

• Cannot change everything at once (too big; too complex; too many of them and too few of us)
• Cannot stop and re-tool (have to create the new in the midst of the existing)
• Cannot know what to do at every step (we will know it when we get there)
• Many outcomes are not predictable (who knew!?)
Why Improvement Cycles?

- It’s a hallmark of a Learning Culture
- Learning is Good!
- Perfection is impossible
- Avoid having the “perfect” become the enemy of the good
- In a complex environment your “solution” will change the problem – You need to see what “emerges” from implementation
PDSA Cycles: Trial & Learning

**Plan**
Decide what to do

**Cycle**
Do over and over again until intended benefits realized

**Act**
Make Adjustments

**Do**
Do it (be sure)

**Study**
Look at the results

Shewhart (1924); Deming & Juran (1948); Six-Sigma (1990)
Improvement Cycle Uses

• Rapid Cycle Teams
  – Problem-solving
  – Practice Improvement

• Usability Testing

• Policy-Practice Feedback Loops

• Transformation Zones
Rapid Cycle Teams

• Problem-solving during early efforts
  – Team Lead identified
  – Right people on the team
  – Time-limited to address the problem
  – Team disbands

• Practice Improvement
  – On-going efforts to improve practices and competencies
  – Use data to achieve better outcomes and “embed” solutions
Usability Testing

• 4 or 5 “typical users” to try out the current version of the implementation methods and the innovation
• Fix the problems from the first “trial”
• Repeat with a new group of 4 or 5 typical users
• Fix the problems form the second “trial”
• After 4 or 5 “trials” you should have most of the problems solved
Improvement Cycles

![Graph showing the relationship between the number of test users and usability problems found. The graph indicates an increasing trend with a slight plateau.](image)
Usability Testing

- The use of larger samples under more representative conditions
- Test the innovation with a more diverse group
- Test the implementation methods with a more diverse group
- Getting ready to scale up
Policy-Practice Feedback Loops

- Policy that enables practice
- Practice that is informed by policy

The PDSA cycle in slow motion
- Monthly instead of hourly, daily cycles
Creating an Enabling Context

Adaptive Challenges

- Philosophical Differences
- Loss
  - identity
  - power/authority
- New expectations
- Changes to existing “ways of work”
  - Time/scheduling
  - Requisite Skills
Building Capacity to Scale Up

• Effective strategies may not fare well in existing organization and systems structures
• Organization and system changes are essential to successful implementation of effective practices and policies
• Scaling up the desired outcomes requires BOTH effective approaches AND effective implementation practices
• Scaling up effective practices requires the scale-up of capacity
Transformation Zones

• A “vertical slice” of an organization or system
  – Small enough to be manageable
  – Large enough to include nearly all of the relevant aspects of the current system
Transformation Zones

• Make use of an innovation in practice (operationalize, fidelity, outcomes)
• Establish implementation supports (work on practical Drivers and Stages)
• Engage leaders in the PEP-PIP improvement cycle to align system components and functions
• Create capacity and momentum for larger scale changes
Transformation Zone
Use New, Effective Practices
Develop Implementation Infrastructure
Change System
Reflection

• Turn to the person sitting next to you –
  – Share a professional experience in which an intentional improvement process was supported or encouraged?

  – What was that like for you and others involved?
Formula for Success

Effective Interventions × Effective Implementation Methods × Enabling Contexts = Socially Significant Outcomes
Implementation Gap

Why Focus on Implementation?

“People cannot benefit from interventions they do not experience.”
Summary

Socially Significant Outcomes through the Active Use of Effective Implementation Strategies --

• Effective, well-defined interventions or approaches
• A change process that embeds and sustains the effective, well-defined intervention in a real-world setting
  – “stage-matched” activities to guide the process
  – “implementation drivers” to build the infrastructure
• Improvement processes that shape the context to support the effective intervention
• Implementation teams to “make it happen”
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http://nirn.fpg.unc.edu/
www.scalingup.org
www.implementationconference.org
Implementation Science

Implementation Research: A Synthesis of the Literature


HTTP://NIRN.FPG.UNC.EDU
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