Implementation Science: Building the Bridge Between Science and Practice

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“In theory there is no difference between theory and practice; in practice, there is.”

variously attributed to
Jan La Van De Snepscheut
or Albert Einstein
or Yogi Berra
The Challenge

Science to Service Gap

- What is known is not what is adopted to help children, families, and individuals.

Implementation Gap

- What is adopted is not used with fidelity and good outcomes for consumers.
- What is used with fidelity is not sustained for a useful period of time.
- What is used with fidelity is not used on a scale sufficient to impact social problems.
Science “to” Service

Evidence-Based Innovations

IMPLEMENTATION
Best Practices

SERVICE

Implementation Research
Science “to” Service

Evidence-Based Innovations

IMPLEMENTATION Best Practices

SERVICE

Implementation Research
Implementation research is the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice, and, hence, to improve the quality and effectiveness of health services and care.

....the study of influences on healthcare professional and organisational behaviour

~Eccles and Mittman, 2006
Implementation science is the scientific study of variables and conditions that impact changes at practice, organization, and systems levels; changes that are required to promote the systematic uptake, sustainability and effective use of evidence-based programs and practices in typical service and social settings.

~Blase and Fixsen, 2010
National Implementation Research Network
Student Outcomes (DV)

Intervention Processes

Behavior of
- Teachers
- Parents
- School Staff
- School and District Administrators
- SEA Staff

(DV) (IV)

Implementation Processes

Implementation Fidelity

Intervention Fidelity
Implementation Science

Implementation Research: A Synthesis of the Literature


*Download all or part of the monograph at:*

http://www.fpg.unc.edu/~nirn/resources/detail.cfm?resourceID=31
Effective Implementation

- Changing the behavior of educators and administrators
- Creating the setting conditions to facilitate these changes
- Creating the processes to maintain and improve these changes in both setting conditions and behavior of well-intentioned adults
- So that students benefit
HOW: Effective Implementation

Practice, program and systems change through...

Multi-dimensional, fully integrated use of implementation frameworks:

- Implementation Drivers
- Implementation Stages
- Implementation Teams
- Improvement Cycles
HOW: Effective Implementation

Practice, program and systems change through...

Multi-dimensional, fully integrated use of implementation frameworks:

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- Implementation Stages
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Implementation Drivers

- Common features of successful supports to help make full and effective uses of a wide variety of innovations
  - Staff Competency
  - Organizational Supports
  - Leadership
Improved outcomes for Students

Performance Assessment (fidelity measurement)

Coaching

Systems Intervention

Facilitative Administration

Decision Support Data System

Competency Drivers

Organization Drivers

Integrated & Compensatory

Leadership

© Fixsen & Blase, 2008
Improved outcomes for Students

Performance Assessment (fidelity measurement)

Coaching

Training

Selection

Competency Drivers

Implementation Lens
"All organizations [and systems] are designed, intentionally or unwittingly, to achieve precisely the results they get."

R. Spencer Darling
Business Expert
Improved outcomes for Students

Performance Assessment
(fidelity measurement)

Coaching

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Competency Drivers

Training

Selection

Organization Drivers

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Improved outcomes for Students

Performance Assessment
(fidelity measurement)

Coaching
Systems Intervention
Facilitative Administration
Decision Support Data System

Competency Drivers
Training
Selection

Adaptive
Integrated & Compensatory

Technical

Leadership

© Fixsen & Blase, 2008
HOW: Effective Implementation

Practice, program and systems change through...

Multi-dimensional, fully integrated use of implementation frameworks:

- Implementation Drivers
- Implementation Stages
- Implementation Teams
- Improvement Cycles
Implementation Takes Time

Major Implementation Initiatives occur in stages:

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

Fixsen, Naoom, Blase, Friedman, & Wallace, 2005

Implementation Takes Time

2 - 4 Years
Stages of Implementation

EXPLORATION

INITIAL IMPLEMENTATION

FULL IMPLEMENTATION

INSTALLATION

2 - 4 Years

Leadership

Integrated & Compensatory Drivers

Competency Drivers

Organization Drivers
HOW: Effective Implementation

▸ Practice, program and systems change through...

▸ Multi-dimensional, fully integrated use of implementation frameworks:
  - Implementation Drivers
  - Implementation Stages
  - Implementation Teams
  - Improvement Cycles
Who is accountable for assuring that the Independent Variables are fully in place?
Capacity Building

- Letting it happen
  - Recipients are accountable

- Helping it happen
  - Recipients are accountable

- Making it happen
  - Purposeful use of implementation practices and science
  - Implementation teams are accountable

Based on Greenhalgh, Robert, MacFarlane, Bate, & Kyriakidou, 2004
Capacity Building

- Letting it happen
  - Recipients are accountable
- Helping it happen
  - Recipients are accountable
- Making it happen
  - Implementation Teams are accountable: THEY DO THE WORK (Heart of Scaling)

Based on Greenhalgh, Robert, MacFarlane, Bate, & Kyriakidou, 2004
# Implementation Science

## Implementation

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Impl. Team</th>
<th>NO Impl. Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective</td>
<td>80%, 3 Yrs</td>
<td>14%, 17 Yrs</td>
</tr>
<tr>
<td>Effective use of Implementation Science &amp; Practice</td>
<td></td>
<td>Letting it Happen Helping it Happen</td>
</tr>
</tbody>
</table>

Fixsen, Blase, Timbers, & Wolf, 2001

Balas & Boren, 2000
School Wide PBS

SWPBS # of Schools

Aug 04  Aug 05  Aug 06  Aug 07  Aug 08  Aug 09

0  2,000  4,000  6,000  8,000  10,000  12,000
School Wide PBS

SWPBS % of Schools

14% in 17 Years (1992-2009)
Organized, Implementation Support
Simultaneous, Multi-Level Interventions

Implementation Teams

- Educator Confidence & Competence
- School & Community Supports
- Management (leadership, policy)
- Administration (HR, structure)
- Supervision (nature, content)
- District Supports
- State Support & Leadership
Implementation Teams

Organized, Implementation Support

Simultaneous, Multi-Level Interventions

State Support & Leadership

District Supports

Supervision (nature, content)

School & Community Supports

Management (leadership, policy)

Administration (HR, structure)

Educator Confidence & Competence

We tend to focus on isolated parts of the system and never see our deepest problems of solving problems (Senge, 1990). We wonder why our snapshot of the system seems so deep and we never seem to solve the problems we set out to solve.

Simultaneous, Multi-Level Interventions
HOW: Effective Implementation

Practice, program and systems change through...

Multi-dimensional, fully integrated use of implementation frameworks:

- Implementation Drivers
- Implementation Stages
- Implementation Teams
- Improvement Cycles
PDSA Cycles: Trial & Learning

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

Plan – Decide what to do
Do – Do it (be sure)
Study – Look at the results
Act – Make adjustments
Cycle – Do over and over again until the intended benefits are realized
Learning Organizations

Trial and Learning:

- Rapid Cycle Teams
  - Problem Solving
  - Practice Improvement
- Usability Testing
- Transformation Zones
- Policy – Practice – Policy Feedback Loops
Learning Organizations

**Trial and Learning:**
- Rapid Cycle Teams
  - Problem Solving
  - Practice Improvement
- Usability Testing
- Transformation Zones
- Policy – Practice – Policy Feedback Loops
Practice-Policy Feedback Loops

PEP-PIP Cycle

- Policy enabled practice (PEP)
- Practice informed policy (PIP)

The PDSA cycle in slow motion

- Monthly instead of hourly, daily cycles
Policy → Practice

Policy (Plan) → Practice (Do) → Policy Enabled Practices (PEP) → Policy
  - Structure
  - Procedure
  - Practice
Policy ↔ Practice
Feedback Loops

FORM SUPPORTS FUNCTION

Policy (Plan) → Practice (Do)
Study - Act
Feedback

Policy Enabled Practices (PEP)
Practice Informed Policy (PIP)
Expert Implementation Support

Structure → Procedure → Practice
System Alignment

Federal Departments

State Department

Districts

Schools

Teachers/Staff

Effective Practices & Effective Schools

Implementation Teams

FORM SUPPORTS FUNCTION
Think about the implications for the 5 IES Goal Areas.

- How is implementation research currently incorporated?
  - Are there measures of independent variables?
  - Might “implementability” become as important as evaluability?

- Is there merit in IES more strongly infusing implementation research agendas into each goal area?

- Is there an opportunity for a conversation about a new goal area related to implementation science?
Eight Hypotheses about Implementation

The conditions, challenges, issues that impact the development and value of Implementation Research
Hypothesis 1

Science will not impact educational settings by doing more or better research on interventions.

- An intervention supported by 10 rigorously conducted randomized clinical trials (RCTs) is not more readily implementable than an intervention supported by 1 rigorously conducted RCT.

- Research on interventions helps schools, communities, Districts and states choose what to adopt.

- Intervention research results do not help implement those interventions in educational settings.
Hypothesis 2

Implementation is implementation across domains and service sectors

- Agriculture
- Business
- Child Welfare
- Education
- Juvenile Justice
- Early childhood
- Substance Abuse Services

The commonalities are striking.
Hypothesis 2

What is learned about implementation in one domain can be used to inform implementation practice and science in other domains.

Concerted efforts to collaborate and learn across domains promise to rapidly advance the practice and science of implementation in the next decade.
SAVE THE DATES
August 15 - 17, 2011
Marriott Wardman Park
Washington, DC

For more information please visit:
www.implementationconference.org
Across Domains...

Best Data Show These Methods, When Used Alone, **Do Not** Result In Uses of Innovations As Intended:

- Diffusion/ Dissemination of information
- Training
- Passing laws/ mandates/ regulations
- Providing funding/ incentives
- Organization change/ reorganization
Leading to Hypothesis 3

Implementation research findings will become more socially significant as implementation practices improve.

Implementation researchers can only study what is being done in practice. Thus, if we are engaged in poor implementation practices, we will study poor implementation practices.

We need to ‘build better laboratories’ to study implementation, organization, and systems change ~ create more hospitable environments.
Hypothesis 4

Better Laboratories consist of:

- Administrators and educators that have access to and make use of:
  - Intervention Science - the “what”
  - Implementation Science – the “how”

- Program developers of evidence-based programs who create “implementation organizations” (e.g. purveyor groups; implementation teams) to help others use their evidence-based programs

- Policy makers and funders who understand the need for and are willing and able to fund implementation infrastructure and purveyor services
Hypothesis 5

Implementation science is multi-dimensional and requires study over time and among education, community, and system players and partners.
NIRN - Multilevel Influences on Implementation

Multilevel Influences on Successful Implementation

Core Implementation Components:
- Training, Coaching, Performance Measurement

Organizational Components:
- Selection, Program Evaluation, Admin, Systems Intervention

Influence Factors:
- Social, Economic, Political
Hypotheses About The Proposed Relationships among External Influence Factors, Organizational and Core Implementation Components and Fidelity and Sustainability Outcomes

<table>
<thead>
<tr>
<th>External Influence Factors</th>
<th>Organizational Components</th>
<th>Core Implementation Components</th>
<th>Possible Fidelity Outcomes</th>
<th>Possible Sustainability Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabling</td>
<td>Strong</td>
<td>Strong</td>
<td>-&gt; High</td>
<td>Long Term</td>
</tr>
<tr>
<td>Enabling</td>
<td>Strong</td>
<td>Weak</td>
<td>-&gt; Low/Medium</td>
<td>Medium Term</td>
</tr>
<tr>
<td>Enabling</td>
<td>Weak</td>
<td>Strong</td>
<td>-&gt; High</td>
<td>Medium Term</td>
</tr>
<tr>
<td>Enabling</td>
<td>Weak</td>
<td>Weak</td>
<td>-&gt; Low</td>
<td>Short Term</td>
</tr>
<tr>
<td>Hindering</td>
<td>Strong</td>
<td>Strong</td>
<td>-&gt; High</td>
<td>Medium Term</td>
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</table>

Implementation Research: A Synthesis of the Literature, 2005
Hypothesis 6

Students cannot benefit from instructional practices and interventions that they do not experience.

...National Implementation Research Network
## Effective Interventions Need Effective Implementation

Longitudinal Studies of a Variety of Comprehensive School Reforms

<table>
<thead>
<tr>
<th>Effective Interventions</th>
<th>Actual Supports Years 1-3</th>
<th>Outcomes Years 4-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every Teacher Trained</td>
<td>Fewer than 50% of the teachers received some training</td>
<td>Fewer than 10% of the schools used the CSR as intended</td>
</tr>
<tr>
<td>Every Teacher Continually Supported</td>
<td>Fewer than 25% of those teachers received support</td>
<td>Vast majority of students did not benefit</td>
</tr>
</tbody>
</table>

Aladjem & Borman, 2006; Vernez, Karam, Mariano, & DeMartini, 2006
<table>
<thead>
<tr>
<th>PRACTICE</th>
<th>IMPLEMENTATION</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Effective</td>
<td>Effective</td>
<td>Not Effective</td>
</tr>
<tr>
<td>Effective</td>
<td></td>
<td><strong>Maximum Student Benefits</strong></td>
<td></td>
</tr>
<tr>
<td>Not Effective</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Hypothesis 7 and 8

More educational benefits will accrue if educational systems perform better in delivering existing known effective instructional practices and interventions than in producing new ones.

Increased funding for implementation research will substantially improve the likelihood of instructional practices and interventions being used effectively in educational settings.
Behavior of:
• Teachers
• Parents
• School Staff
• School and District Administrators
• SEA Staff

Fidelity Matters
Higher Fidelity is correlated with better outcomes across a wide range of programs and practices
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• Teachers
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Fidelity Matters
Higher Fidelity is correlated with better outcomes across a wide range of programs and practices

Fidelity

Intervention Processes

Student Outcomes

HOW?
Summary

Implementation Science

- Can make a difference in successfully using scientific findings about interventions in educational setting
- Requires better ‘laboratories’
- May yield a significant ROI for society
- Requires more financial support and attention
- Will be methodologically challenging
- Will benefit from cross-sector collaboration
For Discussion

Think about the implications for the 5 IES Goal Areas.

- How is implementation research currently incorporated?
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The Science and Practice of Using Science in Practice

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