



The Science of Implementation

NCSM 2019



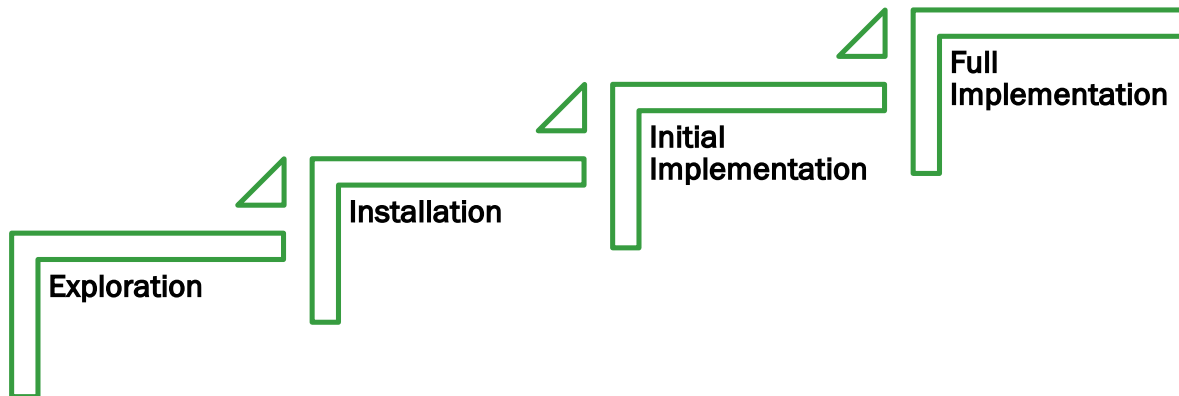
origoeducation.com

Implementation Science

Implementation Science is the study of factors that influence the full and effective use of innovations in practice. The goal is not to answer factual questions about what is, but rather to determine what is required.

NIRN (2015)

Phases of Implementation



Retrieved from: <https://implementation.fpg.unc.edu/?o=nirn>

The knowing and doing gap

The science related to developing and identifying evidence-based programs and practices has improved significantly.

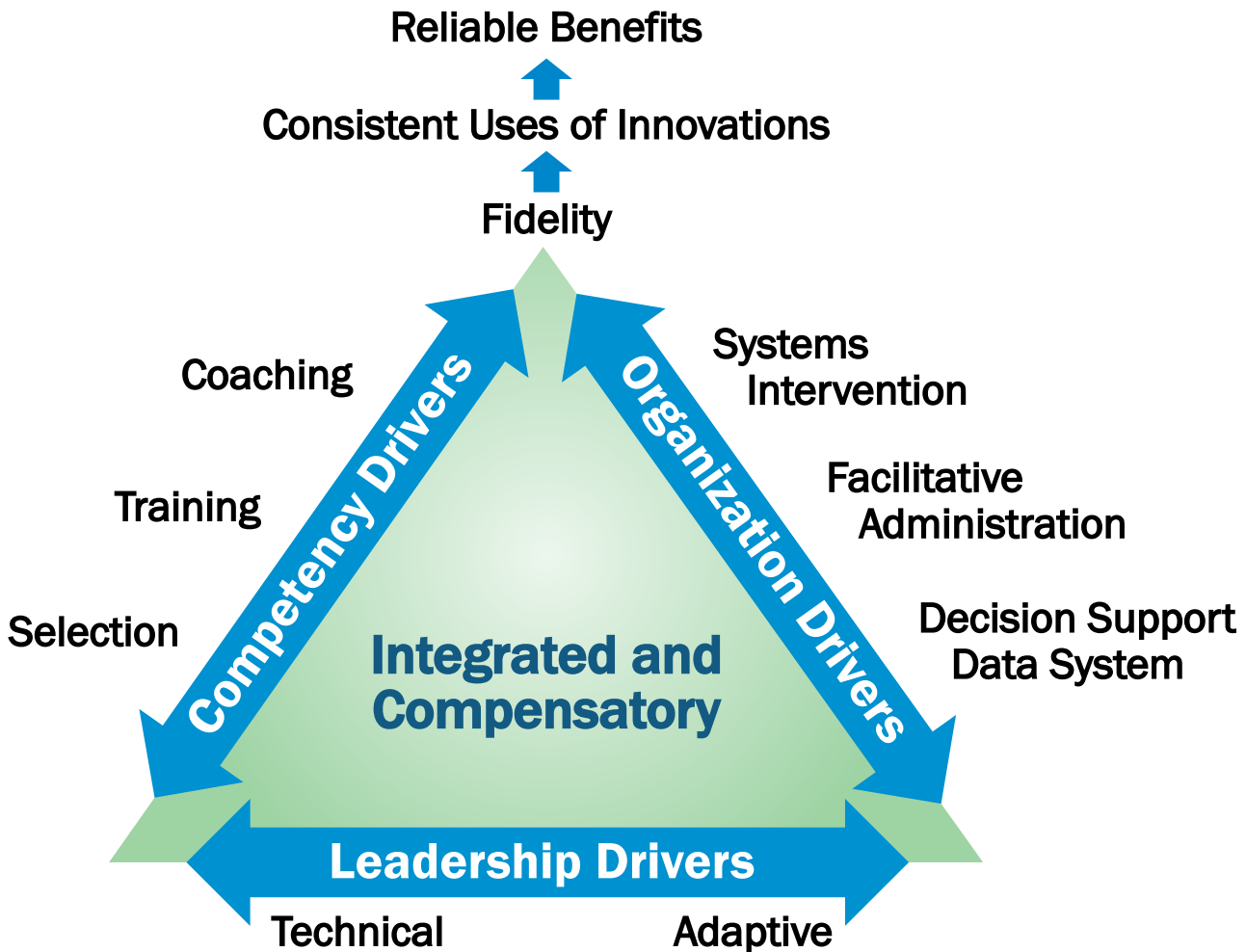
The science related to implementing these programs, with high fidelity, in real-world settings, has lagged far behind.

The lag time for translating research into practice has been documented as 20+ years.

This gap is a critical issue – students cannot benefit from interventions they do not receive.

The U.S. Department of Education (2011)

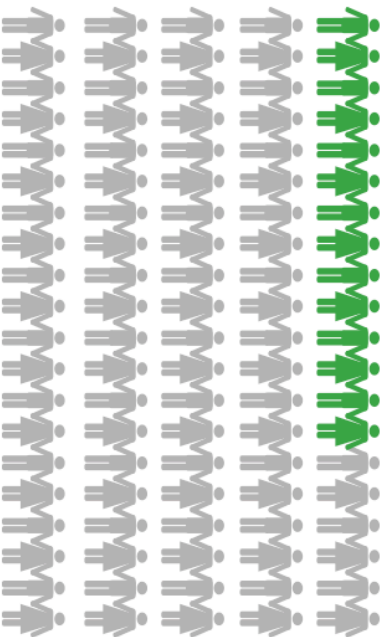
Implementation Drivers



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The power of teams

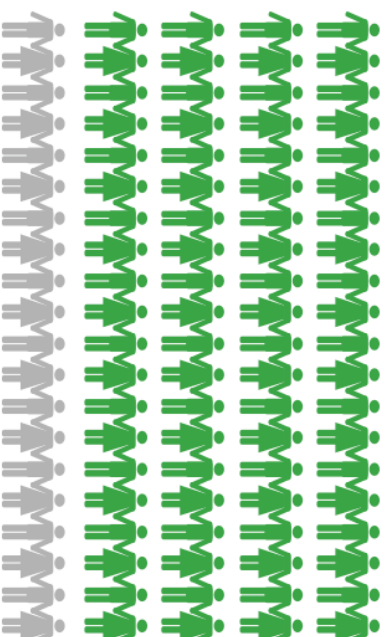
No Implementation Team



from
Letting it
Happen



Implementation Team



to
Making it
Happen



Improvement in
Intervention Outcomes

Fixsen, Blase, Timbers, and Wolf (2001)
Ballas and Boren (2000)
Green and Seifert (2005)

TASK & SHARE	FOCUS LESSON, GUIDED MATH, & STATIONS		GUIDED MATH & STATIONS	
NUMBER SENSE ROUTINE/ SENSE MAKING ROUTINES	NUMBER SENSE ROUTINE/ SENSE MAKING ROUTINES		NUMBER SENSE ROUTINE/ SENSE MAKING ROUTINES	
MATH TASK One task is given, students work in collaborative groups. The teacher moves to small groups and provokes thinking through asking good questions. This task typically has multiple entry points, allowing for all students to have access to this problem. This could be a parallel task or open-ended question, one that supports differentiation.	FOCUS LESSON Whole group focus lesson that is well planned to allow for differentiation.		GUIDED MATH Teacher meets with groups of students in heterogeneous and/or homogeneous groups for small group instruction.	STATIONS Students are working on engaging activities that are mathematically purposeful. These activities could be in the form of a single, cognitively demanding question or a variety of stations in which student choice is a factor.
STUDENT SHARE Students share out about the various strategies that were used. Students ask questions, clarify their thinking, modify their work, and add to their collection of strategies in their tool box.	GUIDED MATH Teacher meets with groups of students in heterogeneous and/or homogeneous groups for small group instruction.	STATIONS Students are working on engaging activities that are mathematically purposeful. These activities could be in the form of a single, cognitively demanding question or a variety of stations in which student choice is a factor.	REFLECTION	
REFLECTION	REFLECTION		REFLECTION	

ORIGO Stepping Stones in Math Workshop

Sense-Making/Number Sense Routine 5 Minutes		
Whole Group	Students stand in a circle. Teacher asks the students to make a prediction about what number we would land on if we counted around the circle by 2's. Begin the count around and pause halfway around the circle. Allow students to revise their estimate based on this new information. If time, start at a number above 50 and count backwards by 2's!	PPG; Grade 3: Throughout the Year; Consideration 8
Focus Lesson 10 Minutes		Stepping Stones Location
Whole Group Standards: 3.4a, 3.4b, 3.4c	3.31 Multiplication: Introducing the twos facts In this lesson, students use the doubles strategy to multiply by two. The turnaround idea is reinforced so students recall that they can multiply by reading a multiplication equation in either order.	Channel: <i>Stepping Stones</i> Lesson: 3.3.1 Topic: Multiplication: Introducing the twos facts Planning: Steps 1-2
Guided Math 45 Minutes		Stepping Stones Location
Group 1	Ariel, T.J.; Kameron; Brianna	Channel: <i>Stepping Stones</i> Lesson: 3.3.1 Planning: Step 3
Group 2	Julie; Jenny; Michael; Barbara; Brian	Channel: <i>Stepping Stones</i> Lesson: 3.3.1 Planning: Step 3
Group 3	Micah; Adrienne; Lisabeth; Theresa; Courtney	Channel: <i>Stepping Stones</i> Lesson: 3.3.1 Planning: Differentiation Extra Practice: Fundamentals Game "Seeing Double"
Math Stations 45 Minutes		Stepping Stones Location
Math Journal	Student Journal - Independent Daily Spaced Learning	Print: Student Journal pages 3.3.1
Math Practice	Maintaining Concepts and Skills – Independent Daily Spaced Practice	Print: Student Journal pages 3.3.1 Maintaining Concepts and Skills
Math Games	Do the D's; Doing the Difference; Double Double; Double Double Again; Pick a Product; Seeing Double; Times That; Times This; Times Tussle;	Channel: Fundamentals ; Filter: Multiplication
Problem Solving	Activities 1, 2, 3, or 4	Channel: <i>Stepping Stones</i> Module 3 More Math > Problem Solving 1

ORIGO Stepping Stones in Math Workshop

Investigation	Activities 1, 2, 3, or 4	Channel: <i>Stepping Stones</i> Module 3 More Math > More Math > Investigation 1
Thinking Tasks	Ongoing STEM Questions 1-3	Channel: <i>Stepping Stones</i> Module 3 More Math > Thinking Tasks > Questions 1-2
Enrichment Activities	Activities 1, 2, 3,	Channel: <i>Stepping Stones</i> Module 3 More Math > Enrichment 1
Reflection 5 Minutes		
Whole Group	Student Reflections about the twos facts Students share their reasoning regarding strategies used with the turnaround idea to recall multiplication equations in either order.	Channel: <i>Stepping Stones</i> Lesson: 3.3.1 Topic: Multiplication: Introducing the twos facts Planning: Steps 1-2
Community – At Home		
Individual Practice	In this activity a double strategy is used for the twos multiplication facts (e.g. see 2×9 and think double).	Channel: <i>Step It Up!</i> 3.3.1 Channel: <i>Stepping Stones</i> Module 3 Mathematics > Newsletters

Look-fors: ORIGO *Stepping Stones* Classrooms

The following look-fors support teachers and principals in having discussions about instructional decision-making when using *ORIGO Stepping Stones*. Each section illustrates how teachers show fidelity to the scope and sequence of the program while responding to student needs using sound instructional practice. First-year implementers are generally at the *beginning* end of the continuum, while experienced implementers are expected to make more intentional instructional decisions.

Each step of a *Stepping Stones* lesson has its own look-fors. These could be adjusted for any program. The questions/conversation starters often reference good math instruction for any program. Questions pertaining to Workshop Model are also included.

PLANNING

Early adopters – Does the teacher begin to **intentionally**:

- Read and reflect on the focus paragraph at the beginning of the lesson?
- Read each step of the lesson before teaching, thinking about the intent of each bullet and the purpose of each question?
- Examine each resource in the playlist before teaching?
- Plan for needed resources for each step of the lesson?
- Examine the differentiated instruction provided for the lesson?
- Plan for Maintaining Concepts and Skills?

Approximately, second semester - Does the teacher begin to, **intentionally**:

- Plan at the module level, understanding how the content develops through the series of lessons?
- Use the module resources provided for deeper understanding of the content?
 - Mathematics focus
 - Learning Targets
 - MathED videos
- Plan the module collaboratively if possible?
- Plan for:
 - Maintaining Concepts & Skills (may be part of “must do” station)
 - Differentiation – Lesson: Differentiation
- Station activities for Workshop: Investigations, Problem-solving, Cross-curricula Links, Enrichment, Thinking Tasks, Big Book Tools, Flare, Fundamentals
- Use the assessments to guide instruction?
 - Daily independent practice (Step Up) – Lesson Steps
 - Observations from discourse – Lesson, Ongoing Practice, & More Math activities
 - Formative pretests – Assessment tab
 - Summative check-ups, interviews, and performance tasks – Assessment tab

Quarterly Tests – Assessment tab

Questions or Conversation Starters (will vary based on teacher’s level on the continuum):

- What do we want students to learn?
 - Describe the big math ideas for this unit. How will you keep your students focused on those ideas?
 - What mathematical processes are addressed within this unit?
- What does research indicate about the best practices to teach the concepts in this unit?
- Which visual models and tactile materials will you incorporate to help students with the conceptual understanding of the big ideas in this unit?

- How will you promote communication and collaboration among students during this unit?
- How will students be encouraged to think critically and use creativity during this unit?
- How will we know when students have learned what we want them to learn?
- What assessments (formative, common formative, & summative) have you and your team chosen to guide your instruction for this unit? Why did your team choose those assessments?
- What other ways will you be monitoring students during this unit?
- Discuss how you chose the station activities for this unit.
- Discuss how you chose the Workshop Model you will use for each lesson.

STEP 2: STARTING THE LESSON (Connecting to prior learning, often a number sense routine.)

<p>Does the teacher begin to/intentionally:</p> <ul style="list-style-type: none"> • Use some/all of the projected images (<i>Flare</i> and/or <i>Staticware</i>)? • Engage students in <i>Starting the Lesson</i> or using visual models, tactile materials, literature, and/or discourse? • Use the instructional space flexibly? • Ask questions that illuminate students' understanding? • Monitor and adjust for student understanding? 	<p>Do the students:</p> <ul style="list-style-type: none"> • Connect new concepts and/or skills to previous learning? • Have an opportunity to share thinking with another student and/or with the teacher?
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Questions or Conversation Starters:

- Tell me about how the visual models and tactile materials, literature, etc. appropriately and effectively in help students achieve deeper conceptual understanding?
- How did you know students had achieved the intended learning for this section of the lesson?
- Discuss the adjustments you made for students who did not learn.
- Discuss the adjustments you made for the students who already had the understanding before the lesson began.

STEP 3: TEACHING THE LESSON (this section is the focus lesson for whole group instruction and includes the Step-In discussion)

<p>Does the teacher begin to/intentionally:</p> <ul style="list-style-type: none"> • Consider the intention of each bullet of Step 3? • Model and/or provide concrete/pictorial materials as needed? • Vary times students work/talk with a partner and work independently? • Guide students through the Step-In discussion (journals normally closed during this time)? • Ask questions that illuminate students' understanding? • Monitor and adjust for student understanding? 	<p>Are the students:</p> <ul style="list-style-type: none"> • Using the program manipulatives/tools (numeral expanders; ten frames; Unifix cubes; number tracks; hundred charts etc...) when appropriate? • Given an opportunity to share thinking and/or strategies with the teacher or with each other? • Individually accountable for responding in some way? • Staying engaged?
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Questions or Conversation Starters:

- Tell me about the big ideas you wanted students to learn, and how you focused students on these ideas.
- How were the standards of mathematical practice addressed in the lesson?
- What adjustments, if any, did you make in the provided lesson, and why did you make those adjustments?

- How did you know students had achieved the intended learning for this section of the lesson?
- Discuss the adjustments did you made for students who did not learn.
- Discuss the adjustments you made for the students who already had the understanding before the lesson began.

STEP 3 (continued): TEACHING THE LESSON: Journal, Step-Up and Step-Ahead: (Processing lesson content; Independent Practice and Check for Understanding/Formative Assessment for the day's learning targets)

<p>Does the teacher begin to/intentionally:</p> <ul style="list-style-type: none"> • Provide each student an opportunity to complete the journal independently as a check for understanding? • Ask questions that illuminate students' understanding? • Make an informed decision as to whether students will complete the Step-Ahead independently or with a partner? 	<p>Are the students:</p> <ul style="list-style-type: none"> • Completing the Student Journal independently as an exit/check for understanding? • Using the program manipulatives for support (numeral expanders, Unifix cubes, number tracks, etc...) when appropriate?
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Questions or Conversation Starters:

- Tell me about the plans you have to assist students who were not successful with the Step Up independent practice.
- Tell me about the plans you have for students who need enrichment.

STATION WORK and Guided Math (for Workshop schools)

<p>Does the teacher begin to/intentionally:</p> <ul style="list-style-type: none"> • Establish routines/procedures to set students up for success during Station time? • Provide effective differentiated lessons for students during Guided Math? • Provide meaningful independent activities to engage students during station time? (Teacher may find activities in More Math Tab: Investigations, Problem-solving, Enrichment, Cross-curricula activities, Thinking Tasks; Big Book Tools/Activities; Flare; Fundamentals.) • Provide Station activities that allow students to work collaboratively and independently. • Provide station activities that focus on current and previous units. 	<p>Are the students:</p> <ul style="list-style-type: none"> • Follow established routines/procedures during station time, staying on task? • Follow established routines/procedures so that they are sharing thinking with each other (without one student dominating, guiding the thinking of others in the group)? • Successful during Guided math instruction? • Sometimes working collaboratively and sometimes independently?
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NOTE: Maintaining Concepts and Skills may be used during this time as a "must do" station or during another time of day.

Questions or Conversation Starters:

- Tell me how you determine what the lessons will be for Guided Math.
- Tell me how you determine which students to bring to a Guided Math group.
- Tell me how you plan for working with all students in Guided Math over a period of time (those who need extra help, extra practice, and enrichment).
- What routines and procedures do you have in place to ensure success during station time?

- Tell me how you select activities for stations. Do you select both independent and cooperative activities? Do you select activities that practice content and skills for the current unit as well as activities that practice content and skills from previous units?
- Tell me how you determine how long to leave station activities in place.

STEP 4: REFLECTING ON THE WORK

<p>Does the teacher begin to/intentionally:</p> <ul style="list-style-type: none"> • Stop and gather students with enough time to provide reflection? (normally 5-10 minutes) • Ask questions to solicit student thinking, strategies and understanding of the task? • Ask students to verify and/or justify their thinking? • Give and solicit specific feedback about the math and/or the work-time? • Listen-in on student partner-sharing? • Use the time for formative assessment (discussion or exit item)? 	<p>Are the students:</p> <ul style="list-style-type: none"> • Sharing their thinking with the group or a partner as a result of the task completed? • Comparing work with peers or teacher in order to assess whether it is correct? To share different strategies?
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DATA TEAMING

<p>Does the team begin to/intentionally:</p> <ul style="list-style-type: none"> • Prioritize Major Content for students who require Tier 2 intervention? • Use the assessment to guide instruction: <ul style="list-style-type: none"> ○ Teacher created assessments ○ Formative pretests ○ Summative check-ups, interviews, performance tasks ○ Quarterly Tests • Collect a wider variety of assessment information (formative, summative, formal, informal) to show development of mastery over time (as opposed to one grade derived from one assessment at the end of the unit)? • Have a plan for how to structure support when students require more instruction or practice?
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